Critical Success Factors for Knowledge Transfer via Australian and Malaysian Government Education Websites: A Comparative Case Study

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RMIT UNIVERSITY
Critical Success Factors for Knowledge Transfer via Australian and Malaysian Government Education Websites: A Comparative Case Study

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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March 2011
Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

Signature: ……………………………………………………………………………………………

Name: Nurdiana Azizan

Date: ……………………………………………………………………………………………
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To all who have been directly or indirectly involved in making my PhD journey an enjoyable and memorable experience, thank you and may God bless you.
For my mother

Your love and prayer have been essential for every moment of my life
List of Publications

The following papers were written based upon the research reported in this thesis:


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<td>AIMQ</td>
<td>Aim quality</td>
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<tr>
<td>AUSED</td>
<td>Australia Education Department</td>
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<tr>
<td>AGLS</td>
<td>Australia Government Locator Service</td>
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<td>AGIMO</td>
<td>Australian Government Information Management Office</td>
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<tr>
<td>B2B</td>
<td>Business-to-Business</td>
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<td>B2G</td>
<td>Business-to-Government</td>
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<td>CiRM</td>
<td>Citizen Relationship Management</td>
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<td>C2C</td>
<td>Citizen-to-Citizen</td>
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<td>Citizen-to-Government</td>
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<td>Critical Success Factors</td>
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<td>Electronic banking</td>
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<td>Electronic mail</td>
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<td>Educational Management Information Systems</td>
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<td>ERP</td>
<td>Enterprise Resources Planning</td>
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<td>Government-to-Non-profit organisation</td>
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<td>HRM</td>
<td>Human Resource Management</td>
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<tr>
<td>HTML</td>
<td>HyperText Markup Language</td>
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<td>Information Communication and Technology</td>
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<td>MP</td>
<td>Malaysia Plan</td>
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<td>MSC</td>
<td>Multimedia Super Corridor</td>
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<td>Network-based Customer Service System</td>
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<td>Non-profit organisation-to-Government</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
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<td>oriDB</td>
<td>Online Researcher Information Database</td>
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<td>United Nations</td>
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<td>URL</td>
<td>Uniform Resource Locator</td>
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<td>Vision 2020</td>
<td>The year where Malaysia will become a developed country</td>
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<td>Voluntary Retirement Scheme</td>
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Abstract

This study focuses on critical success factors (CSFs) for the transfer of knowledge from Government to users (citizens, business entities, employees and other government agencies) via both an Australian and a Malaysian government education website, from the perspective of the Government website provider.

CSFs are defined as “the limited number of areas in which results, if satisfactory, will ensure successful competitive performance for the organisation” (Rockart 1979). It has been recognised that there are generally a small number of such attributes that, if performed well, will create opportunities for success (King 2001). Knowledge transfer (KT) is defined as a process that includes “any exchange of knowledge between or among individuals, teams, groups or organisations” (King 2006, p.538). It is the process by which knowledge is transmitted to and absorbed by users. Knowledge in this research concerns government knowledge resources made explicit and available to users via the government website. A failure by organisations to appreciate and facilitate KT via this means can adversely affect the time spent by those seeking knowledge, increase the costs associated with KT errors, and result in an inadequate flow of essential knowledge to recipients.

This research has adapted Szulanski’s widely accepted and recognised KT model as a lens to study CSFs. The model consists of four stages: initiation; implementation; ramp-up; and integration.

The research has employed an interpretive case study approach, applying qualitative data capture and analysis methods. The case study research method enables examination and scrutiny of rich organisational situations and supports the use of multiple data capture and analysis techniques, so facilitating the triangulation of analysis outcomes. Specifically, an adapted form of Rockart’s CSF method was adopted for data collection, including introductory workshops, interviews and focus groups, supported by document analysis.

The case studies were conducted at one government agency in Melbourne, Victoria, Australia (referred to as AUSED) and one in Putrajaya, Malaysia (referred to as MASED). AUSED and MASED are both education-based organisations, chosen because this sector provides a rich environment in which to investigate CSFs for KT via government websites.
Nine officers from AUSED and fifteen officers from MASED, involved in the generation of knowledge, and the development and management of the government websites, participated in the interviews. The officers were representatives from different levels of the organisations (i.e. top, middle and operational management levels), selected in order to collect insights across the organisations. Each officer interviewed, responded to a semi-structured interview schedule that invited them to provide insights into factors considered critical at each of the four stages of Szulanski’s KT model.

A subset of these officers participated in subsequent moderated focus groups conducted at each case study organisation. The groups were asked to validate/update/reject the CSFs extracted by the researcher from analysis of their interviews. Additionally, they were presented with the CSFs extracted from the case study interviews at the other organisation, and invited to comment on differences that were apparent, indicating why, for them, any additional factors were not considered critical for their organisation.

Two forms of analysis were conducted: within-case analysis and cross-case or comparative analysis. Within-case analysis included the analysis of data from the interviews and focus groups, while cross-case analysis included the analysis of the final lists of CSFs, and associated results, from both organisations. For within-case analysis, the research used an inductive, qualitative content analysis approach, aligned to relevant concepts drawn from the extant literature in knowledge management (KM), customer service, and web-based self-service (WSS). Each of these literatures are defined and fully explored in Chapter 2 of the thesis. Comparative analysis sought to identify similarities and differences in the identified CSFs and associated results at the two case study organisations. Points of comparison included the AUSED and MASED CSF definitions, the frequency with which the respondents raised various CSFs, the feedback mechanisms identified at the two sites, and the CSFs associated with specific KT stages.

Based upon analysis of the interviews and focus groups, eleven CSFs were identified by respondents from AUSED and fourteen CSFs were identified by respondents from MASED. In addition, analysis identified feedback mechanisms used at each case study organisation which may be applied to assess, in part at least, achievement of the identified CSFs.
The CSFs identified at each organisation were grouped into six themes: management role, user focus, employee focus, content focus, technology focus and organisational culture. The relevance of CSFs to each of the four KT stages (initiation, implementation, ramp-up and integration) was also fully mapped.

Comparison of the CSF sets at the two organisations (AUSED and MASED) indicated that six CSFs were shared, or addressed closely related matters (awareness/notification, functionality/navigation, understanding recipient needs, knowledge presentation, content, and accessibility). It might be suggested that this shared set of CSFs represents a core set of CSFs that might be considered for application across multiple e-government websites. A further five, and eight, CSFs were uniquely identified by AUSED and MASED respondents, respectively.

Similarities and differences were canvassed with respondents at the focus group sessions. Subsequent analysis of the responses indicated that the positions held on the criticality of various factors might possibly be understood in terms of what might be broadly classified as organisation-political and/or social factors. These observations have been tentatively situated against literatures surrounding culture, and the approaches adopted to e-government initiatives and implementations.

It is recognised that this study identified CSFs for KT via Australian and Malaysian education-based websites only. The findings may not necessarily be applicable to other contexts (i.e. educational agencies of other national governments and/or other forms of government agency). Further, the applicability of the findings to KT via websites outside the e-government context cannot be assumed, although this has been tested in part by consideration of the alignment of CSFs with groupings and concepts identified in the KM, customer service and WSS literature. Nevertheless, this thesis argues that this study has produced a fully researched set of CSFs for KT via government education websites, from a government provider perspective, that may be considered and possibly tailored to other areas of government activity. This research also has demonstrated that Szulanski’s (1996, 2000) four stages of KT model, namely *Initiation, Implementation, Ramp-up*, and *Integration* can be applied in the e-government context to both understand the processes for KT via an e-government website, and as a theoretical lens to identify CSFs. An agenda for future research has been generated.
Chapter 1: Introduction

1.1: Introduction

“By 2020, 50% of information used by consumers and knowledge workers will be delivered automatically and contextually” (Prentice 2010)

In delivering the opening keynote address to the 21st Australasian Conference on Information Systems, Brian Prentice, Research Vice President – Emerging Trends and Technologies, Gartner, highlighted the primacy of informed decision making as a key strategic business capability of the next decade. In this thesis, consistent with this observation, the researcher reports studies that focus specifically on the delivery of government knowledge resources used by consumers and knowledge workers in the context of e-government.

The management of knowledge, particularly that generated and required by government, is increasingly important, as nations face the challenges of the knowledge economy (United Nations 2010). Although technology is not the only tool available to address the challenges of knowledge management (KM) (Davenport & Prusak 2000) it is an important facilitator. As such, governments around the world seek to take advantage of emerging technologies, in particular the website, as a platform to provide both information and services to the public.

The website, however, not only provides opportunities to government to offer information and services online to users, but also provides challenges to government to ensure that the website delivers in a form that addresses user needs and facilitates the transfer of requisite knowledge. It should be noted that the government website must meet the information, knowledge and services needs of both internal government users and those external to government (United Nations 2010). The website is also expected to provide users with what might be termed a “self-service” technology that facilitates the relationship between government and website users, by allowing users to address their knowledge needs without a requirement for government agent intervention.
In light of the above, this thesis seeks to build an understanding of the critical success factors (CSFs) for knowledge transfer (KT) via a government education website. In this study CSFs are defined as “the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation” (Rockart 1979, p. 5). Knowledge in this study is defined and scoped to include those government knowledge resources (information and services), made explicit and available for users via a government website, which become meaningful to website users (citizens, business entities, other government agencies and employees) when they interpret and apply them in context (see Chapter 2, Section 2.6).

In undertaking this study, a conscious decision has been taken to focus on the insights of website providers. Government website providers have substantial established processes and infrastructure in place to assess user responses to the websites that they provide, and the researcher has been able to tap into these insights by focussing data collection upon the more readily accessible groups of government website providers. This offsets the need to also access a wide range of government website user stakeholders. That said, future studies could seek additional validation of the CSFs determined in this study, and possibly the discovery of additional CSFs, by seeking direct recourse to government website users (see further discussion in Chapter 7).

Given the intent to focus upon the CSFs for establishing and operating government websites that facilitate the transfer of requisite knowledge between the government providers and the diverse user community, it is somewhat surprising that studies reported to date have not explicitly been underpinned by the use of a model of KT to build an understanding of the association of CSFs with specific stages of the KT process. The present research is explicitly underpinned by an adopted extant model of KT.

Finally, it is noteworthy that CSF studies have been criticised as generating results specific only to the organisation studied, and so providing limited insight into a set of critical factors that might be confidently applied across multiple organisations. This is acknowledged. In the present research, however, a decision has been taken to take a multi (two) case approach, choosing two government education websites that reside in substantially different political, technical and social contexts (Australia and Malaysia).
A study concentrating upon these two organisations, in these two countries, seeks to generate insightful points of comparison rather than to establish a comprehensive basis for the generalisation of results. The justification for these choices is explored further in Section 3.6.2. It should be noted that both countries have invested heavily in e-government and both have received positive ratings of their e-government initiatives and information communication and technology (ICT) development as expressed by various international measures (United Nations 2008). As such, it can be argued that the CSFs shared at both organisations provide at least a starting point for a set of CSFs that might have multiple website application. In addition, study of the CSFs that are specific to each website provides an opportunity to build an enhanced understanding of how local context can shape perceptions of the criticality of factors.

This chapter sets the scene for this research and is structured as shown in Figure 1.1. Specifically, a synopsis of the research topic is provided in Section 1.2. This section briefly discusses the nature of e-government, KT and CSFs (all of which will be explored in detail in Chapter 2). The chapter continues by defining the intended audience of this research (Section 1.3), followed by a discussion of the research rationale in Section 1.4. The rationale for selecting a comparative study is also explored in Section 1.5, followed by a statement of the research questions in Section 1.6. Section 1.7 introduces the methodological approach (which will be explored in detail in Chapter 3), while the anticipated contributions of the research are listed in Section 1.8. Finally, the chapter concludes in Section 1.9 by outlining the structure of the remainder of the thesis.
1.2: Synopsis

This thesis reports a study of CSFs for KT via Australian and Malaysian government education websites. The rationale for researching this topic is built upon a need to explore e-government from the perspective of KT. According to United Nations (2010, p. 84), the achievement of KT is important to government. As argued therein, “empowered citizens ... become more active in expressing their views on many issues, especially on issues concerning environment, health, education and other areas of government policy”. To be so empowered, KT should be achieved. Politicians and
decision makers inform their constituents, so empowering them, and “... politicians and decision makers are soliciting information and knowledge from the constituents online ..., seeking to respond more efficiently to their constituents” (United Nations 2010, p. 84).

Data have been collected from e-government website providers following an approach based on Rockart’s three-step CSF method, as adapted by Cooper (2009), including an introductory workshop, interviews and focus groups. The identified CSFs as perceived by the providers in both countries have been compared to identify points of similarity and difference. The results, so obtained, serve three practitioner-based purposes: (1) the identified CSFs for KT (in particular those common to both websites) may provide guidance to other government agencies when developing government websites; (2) the identified CSFs might provide criteria for other organisations (i.e. non-government organisations) to emulate the success of government websites; and (3) the governments from Australia and Malaysia might learn from each other’s experience in developing government websites that support KT. In addition, two research-based purposes are met: (1) the study provides insights into the operation of extant KT models; and (2) points of difference between the CSFs identified at the two websites serve as an opportunity to build an enhanced understanding of how local context can shape perceptions of the criticality of factors.

To facilitate a rigorous statement of the research questions, three areas for definition are now briefly introduced: Electronic Government; Knowledge Transfer; and Critical Success Factor.

1.2.1: Electronic Government

Electronic government (e-government) has been defined in various ways, with the definition used generally reflecting the objectives of each specific study. For example, some researchers define e-government in terms of the technology used to communicate with users, such as video conferencing (Choudrie, Ghinea & Weerakkody 2004), or based on automating the delivery of government services (Alonso 2008). The evolution of the internet and the World Wide Web (WWW) offers governments a platform for
providing self-service websites for the public to interact with government (Schedler & Summermatter 2007).

Several definitions of e-government drawn upon in this research include:

- “E-government indicates that modern electronic ICT-enabled management and services in public administration, particularly those which are internet or intranet based, have reached relatively high degrees of public interest and demand” (Scholl 2003, p. 1).

- “E-government uses ICT to transform legacy procedures by making the procedures more accessible, effective, accountable and citizen friendly” (Abie et al. 2004, p. 1).

- “E-government is simply a facility using information technology to deliver public services directly to the customer” (Ghapanchi, Albadvi & Zarei 2008, p. 72).

Drawing upon components of these contributions and other discussed in Chapter 2, e-government is defined and scoped for the purpose of this research as the utilisation of the Internet, particularly via websites, to improve and enhance government operations (Benefit view), to disseminate government information and services (Service view), to acquire knowledge through the website (Objective view), and to establish relationships between governments and their stakeholders, particularly citizens, employees, business sectors and government agencies (Relational view).

1.2.2: Knowledge Transfer

KT is “any exchange of knowledge between or among individuals, teams, groups, or organisations, whether intended or unintended” (King 2006, p. 538). As indicated earlier for the purpose of this research, knowledge is defined and scoped to include those government knowledge resources (information and services) made explicit and available for users (citizens, employees, business sectors and other government agencies) via government websites, which become meaningful to website users when they interpret and apply them in context.
Insofar as governments continually strive to enhance their services by becoming more customer focused (Alford 2002), this research views CSFs through the lens of KT (Ford 2001), adopting a customer-focussed stance. Specifically, an adapted form of Szulanski’s (1996; 2000) intra-organisational KT model has been employed to facilitate identification of CSFs for KT via a government website (Cooper, Lichtenstein & Smith 2006). This model has been chosen because it is widely recognised and supported through application over a number of studies. It should be appreciated, however, that Szulanski’s original KT model is designed to describe internal KT (i.e. within an organisation). Cooper, Lichtenstein and Smith (2006), however, have adapted the model to studies of CSFs for external KT in business-to-business (B2B) contexts. This research has extended application of Szulanski’s KT model, so adapted, to identify CSFs for both internal and external KT in a single e-government context (see Chapter 4 and Chapter 5).

Szulanski’s (1996, 2000) intra-organisational KT model consists of four stages, namely initiation, implementation, ramp-up and integration. The initiation stage begins when the website user has recognised a need for knowledge and starts a search for knowledge to fulfil that need. Once the need for that information is identified, the feasibility of transferring that knowledge is explored. The implementation stage begins with knowledge resources flow between the source and the recipient. The implementation related activities come to an end after the recipient begins using the transferred knowledge. The ramp-up stage begins when the recipient starts using the received knowledge. During this stage, the recipient will be concerned with identifying and resolving unexpected problems that arise while using the new knowledge. Finally, the integration stage begins after the recipient achieves satisfactory results with the transferred knowledge. The use of the transferred knowledge becomes routinised. Integration is complete when old knowledge is replaced by new knowledge or practices.

1.2.3: Critical Success Factors

CSFs, as defined in Section 1.1, are “the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation” (Rockart 1979, p. 5). Rockart introduced a three-step method of eliciting
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CSFs, involving an introductory workshop, interviews and the focus group. This method, as adapted by Cooper (2009), was chosen for this research, given its successful application for CSF elicitation in many application areas, including e-commerce web-based self-service (WSS) (Cooper, Lichtenstein & Smith 2006), total quality management (Kanji, Malek & Tambi 1999) and core information needs (Tibar 2002).

1.3: Research Audience

There are two intended audiences for this research:

1. Information technology (IT) practitioners involved in developing and managing organisational websites, particularly government websites. This audience is concerned with identifying and exploiting the critical factors that contribute to making a website a successful channel for the delivery of government knowledge resources to users; and

2. KM researchers, concerned with understanding the processes of KT, and in understanding how local context can shape perceptions of the criticality of factors affecting KT.

1.4: Research Rationale

This section briefly discusses the rationale for this research. A more detailed discussion of the rationale is developed in Chapter 2.

1.4.1: Research Rationale 1: Limited Previous Research into CSFs for KT via Government Websites

There have been many studies of CSFs in various contexts. Notable past studies of CSFs in related areas include those for IT-related WSS (Cooper, Lichtenstein & Smith 2006), which took a KT focus, CSFs for e-government implementation (Gil-Garcia & Pardo 2005) and CSFs for technology adoption for e-government (Kamal 2006). Although Cooper, Lichtenstein and Smith (2006) identify CSFs in the context of e-commerce, no studies to date have focussed explicitly on CSFs for facilitating KT via government education websites. This research seeks to fill this literature/research gap.
1.4.2: Research Rationale 2: Need to Identify CSFs for KT as a Means of Providing Strategic Guidance to Government Website Teams

Numerous studies have explored the perspectives of government providers but not in relation to CSFs for achieving KT. Research to date has focused on e-government development, management and delivery issues (Reddick 2005), perspectives of e-government challenges and opportunities (Signore, Chesi & Pallotti 2005), and perspectives of the online services available (Tolbert & Mossberger 2006). In identifying CSFs for KT, this research will provide guidance to government agencies when developing government websites. A failure to consider the elements of KT may result in costs arising from users spending excessive time searching for information (Kuhn & Abecker 1997). In seeking an understanding of CSFs for achieving KT, government providers, especially government website teams, will be supported to improve the performance of websites as vehicles for KT. Further, the identified CSFs might provide criteria for other organisations (i.e. non-government organisations) to emulate the success of government website providers.

1.4.3: Research Rationale 3: Specific Relevance to the e-Government Strategies of Australia and Malaysia

In addition to the above, the present research recognises particular relevance to developing nations, such as Malaysia. Malaysia is working towards achieving Vision 2020, the year when it will become a developed country. Every five years, the Prime Minister of Malaysia tables the Malaysia Plan (MP), a framework aimed at achieving this vision. The latest MP, the Ninth Malaysia Plan 2006–2010, was tabled on 31 March 2006. ICT is one of the key areas highlighted in the Plan, including the Multimedia Super Corridor (MSC), which has been developed to implement, integrate and enhance a number of multimedia applications. E-Government is one of these applications, tied to an objective to enhance public delivery systems through integrated and efficient ICT solutions, to ensure easier and speedier access to government services (Economic Planning Unit 2006). On 29 September 2007, Malaysia launched the national ICT project, Managed Portal Services, which involves developing and maintaining local and federal government websites (BERNAMA 2007).
Australia, on the other hand, has launched its 2006 e-Government Strategy, Responsive Government: A New Service Agenda, which seeks to provide everyone with a consistent experience when engaging with government electronically (Zhun 2007). In the year 2010, the Australian Government aims to become a connected and responsive government (Australian Government Information Management Office (AGIMO) 2006).

Literature emerging in recent years recognises that KM lies at the core of government tasks. United Nations (2008, 2010) states that the public sector needs to implement improvements in this area, paying particular attention to KT and empowering citizens. By so doing, the integration between the front and back-end of an organisation can be improved, so providing enhanced online services to users. This research promises to further develop the understanding required to achieve the visions of these two countries, by focusing specifically on the CSFs for KT via Australian and Malaysian government education websites as identified from providers’ perspectives. Further, the results of this research enable these two countries to learn from each other’s experiences implementing e-government, in particular in establishing, operating and managing government websites to achieve KT.

1.5: Selection of the Comparative Case Study Approach

The present research reports a multi-case study investigation, choosing websites that reside in substantially different political, technical and social contexts (Australia and Malaysia). It should be noted that both countries have invested heavily in e-government and both have received positive ratings of their e-government initiatives and ICT development as expressed by various international measures (United Nations 2008). The CSFs identified from the case studies for both countries are to be compared in this study, to identify points of similarity and difference. The Ministry/Departments of Education in these countries were selected as education constitutes one of the most vital and widely used of the government services (United Nations 2008).

This adoption of a comparative case study approach responds to two further research rationales.
1.5.1: Research Rationale 4: Establishing Core CSFs shared at Multiple Websites

Previous CSF studies have focussed on generating results specific to specific case study areas (i.e. Park & Gretzel 2007; Terzis & Economides 2007; Chiou, Lin & Perng 2010), so providing limited insight into a set of critical factors that might be confidently applied across multiple websites in multiple contexts. To address this, in part at least, by choosing websites that reside in substantially different political, technical and social contexts (Australia and Malaysia) it should be possible to identify a limited set of shared CSFs. As such, it can be argued that the CSFs shared at both of these websites provide at least a starting point for a set of CSFs that might have multiple website application.

1.5.2: Research Rationale 5: Building an Enhanced Understanding of how Local Context can shape Perceptions of the Criticality of Factors

Rockart (1979) acknowledges the role of local context in shaping views of the criticality of factors affecting success. In the present study, the identification of CSFs that are specific to each educational website in different countries provides an opportunity to build an enhanced understanding of how local context can shape perceptions of the criticality of factors, a comparison that can be situated against extant literature on the role that local context plays in shaping information systems (IS) design and implementation.

1.6: The Research Questions

In accord with the above discussion this thesis answers the following principal research question:

*How do Australian and Malaysian government providers use government education websites to transfer knowledge successfully to the users of those websites?*

In order to answer the principal research question, the following four subsidiary questions are addressed:
i) **Who are the key stakeholders for government education websites in Australia and Malaysia?**

To situate the challenge of transferring knowledge successfully to website users, an essential starting point is to identify those with a stake in the transfer process - the website providers and the user communities - in particular in the context of education websites.

ii) **What are the critical success factors for knowledge transfer for government education websites in Australia and Malaysia, as perceived by the website providers?**

In light of an understanding of stakeholders, it is then possible to capture the factors crucial to achieving successful KT via government education websites from the perspective of one of the key stakeholder groups - web providers. A strategy of inviting the website providers to express their perceptions as CSFs is to be employed. Further, given the focus on KT, a four stage KT process model is to be used to underpin the identification. Understanding CSFs for each stage of the KT process may provide insights that can underpin KT process improvement at each stage and build additional understandings of the KT process overall.

iii) **How might achievement of these critical success factors be measured? (i.e. What are the feedback mechanisms for the identified CSFs?)**

Identifying the feedback mechanisms for each CSF can assist the provider to ensure the CSFs are well implemented, so potentially increasing the effectiveness of KT in this context.

iv) **How might one understand the source of differences, if any are observed, between the identified critical success factors identified by the providers in both countries?**

Comparing the CSFs that have been identified in the case studies conducted in both countries will serve to identify points of the similarity and/or difference. Consideration of similarities and/or differences may provide enhanced understanding of how local context might shape perceptions of factors that are critical for the achievement of KT in the context of e-government websites.
1.7: The Research Approach Adopted

This research will employ qualitative research techniques. A case study approach, employing CSF study principles, will be adopted to examine the phenomenon in its natural setting, building an in-depth understanding and employing multiple methods of data collection (Benbasat, Goldstein & Mead 1987; Collis & Hussey 2003; Ritchie & Lewis 2003; Yin 2003; Berg 2007). This approach is deemed appropriate for the identification of CSFs for KT via the Australian and Malaysian government education websites.

An overview of the structure of this thesis is provided in Figure 1.2. Following an initial critical review of the relevant literature, and a consideration of the selection of the research method and research design, results from two case studies are reported, followed by a cross-case analysis and comparison (Benbasat, Goldstein & Mead 1987; Taylor et al. 2002). The notion of comparison in qualitative research as applied in this research is built upon developing understanding rather than measuring difference (Ritchie & Lewis 2003).

The techniques of data collection for this research include introductory workshops, interviews, focus groups and analysis of related documents. The introductory workshops, interviews and focus groups will be structured according to the CSF method, as explained in Chapter 3. As such, a rich data set will be generated (Benbasat, Goldstein & Mead 1987; Collis & Hussey 2003; Walsham 2006).

The technique used for data analysis in this research is content analysis. The analysis of the data set collected yields a set of validated CSFs for the websites studied in both countries. These lists serve three purposes. First, the lists can be used as a guideline for other government agencies in these countries that are seeking to develop websites. Moreover, the list might provide criteria for other organisations (i.e. non-government organisations) to emulate the success of e-government websites (Cunningham 1997). Second, the list of validated CSFs from both countries will be compared (through a cross-case analysis). The cross-case analysis will identify similarities and differences, leading to the identification of shared perceptions and patterns, and differences (Collis & Hussey 2003). Third, it is anticipated that the government agencies of both countries
might learn from each other’s experience in relation to the development of e-government websites.

![Diagram showing the research structure.](image)

**Figure 1.2: Overall Structure of the Research Conducted and Thesis Structure**

### 1.8: Research Contributions

The research to be reported potentially contributes in the following areas:

1) Theory:
   - The four stages of KT model proposed by Szulanski (1996, 2000) (initiation, implementation, ramp-up and integration) are to be used in this research to
identify the CSFs for KT via government education websites, so extending the area of application of the model.

- Discussion of the sources of difference between CSFs identified at the two websites will contribute to the understanding of how local context can shape perceptions of the criticality of factors affecting KT.

2) Practice:

- In identifying CSFs for KT via government education websites, IT practitioners involved in developing and managing organisational websites, particularly government websites, will be provided with insights that can contribute to making a website a successful channel for the delivery of government knowledge resources to users.

In addition, this study provides an additional exemplar of some aspects of the application of CSF approaches (Note: These methodological features have previously been explored by authors such as Cooper (2009)), including:

- Rockart’s (1979) CSF method, applied originally to single website studies, has been adapted to be applied to more than a single website, in a comparative case study.

- The interviews conducted in Rockart’s original method were held with the managers of organisations. This present research will interview respondents from multiple, different levels of the organisation, including the senior, middle and operations levels.

- The focus group proposed in Rockart’s original method was designed to confirm the CSFs identified from analysis of the interviews. In this research they will be used to both confirm the identified CSFs, and also to probe respondents concerning points of difference between the CSFs identified at the comparative sites.
1.9: Outline of Thesis Structure

In accord with the research agenda outlined above, this thesis has been structured as seven chapters (see Figure 1.2):

Chapter 1: Introduction and overview of the thesis (the present chapter).

Chapter 2: A review of the academic literature relevant to the study. This chapter reviews relevant literature on e-government, government websites, KT, and CSFs as reported in the related areas of Customer Relationship Management (CRM) and WSS.

Chapter 3: Research approach and design. This chapter discusses the paradigmatic perspective adopted by the researcher and details the methods utilised to collect data and complete the data analysis undertaken in this research.

Chapters 4 and 5: Case studies in Malaysia and Australia. These two chapters present the findings from Malaysia and Australia, respectively, deriving and reporting CSFs based upon analysis of the interviews conducted.

Chapter 6: Cross-case analysis. This chapter presents the findings from the focus groups and the comparative analysis of the CSFs from Malaysia and Australia. The comparative analysis identifies points of similarity and difference in the identified CSFs derived at the two websites in different countries, leading to the identification of shared perceptions and patterns, and differences. Insights into how local context has shaped perceptions of the criticality of factors affecting KT are explored.

Chapter 7: Conclusion. This chapter summarises the results of the study, aligning these results with the research questions, and discusses these results in relation to the objectives of the research. The chapter also discusses the contributions and limitations of the study, and proposes directions for future research.
Chapter 2: Literature Review

2.1: Introduction

This chapter presents a discussion of the theoretical foundations of this research. The discussion is structured to provide a basis for the investigations of the principal research question, and four subsidiary research questions (see Section 1.6), that are to be reported in the subsequent chapters of the thesis. Literature that deals with the key concepts of e-government, knowledge management (KM), customer service, and web-based self-service (WSS) that are relevant to this research have been reviewed.

The chapter is structured as shown in Figure 2.1. It begins with an overview of relevant e-government literature (Section 2.2), including: a definition of the term e-government; e-government services; the users of e-government; the stages of e-government development and maturity; and the benefits and challenges of e-government. The following section, Section 2.3, examines the delivery of e-government, beginning with an overview of the technologies used. Section 2.3 then discusses literature related to e-government websites, specifically focused on an examination of the features expected of an e-government website, introducing concepts and terminologies that it is anticipated will arise when researching the case organisations in these studies.

The next two sections explore e-government in Malaysia (Section 2.4) and Australia (Section 2.5), the countries in which the case study organisations are situated. Both sections address the origins and history of e-government in the two countries, including consideration of the key strategies and initiatives, present status, and possible future initiatives, concluding with a brief introduction to the chosen case study organisations.

A focus of the literature review is the critical success factors (CSFs) and concepts raised in a number of relevant associated literatures, including: KM; customer relationship management (CRM); and WSS. This underpins the development of some initial candidate CSFs, or more correctly concepts that may be relevant to the study of CSFs for knowledge transfer (KT) via e-government education websites. A discussion
of relevant KM concepts and terminology is provided in Section 2.6. This section focuses on KM processes, particularly KT models as these constitute the theoretical lens through which data will be collected and analysed. Section 2.7 presents a review of the literature on customer service, addressing the different types of services, and the characteristics of service quality and CRM. The literature on WSS is reviewed in Section 2.8, including the notion of value-added WSS and the challenges of WSS. In order to facilitate aligning results from this research with the substantial literature that has been reviewed, in Section 2.9 a proposed initial grouping of concepts that may be relevant to successful KT via websites has been synthesised from the e-government, KM, customer service and WSS literature. Before closing the chapter, insights drawn from the literature review concerning gaps in the literature that are to be addressed in this research, are collected in Section 2.10. Finally, a brief chapter summary is presented (Section 2.11).

The objectives of this chapter that are thus addressed are:

- to review and synthesise relevant existing literature related to e-government, KM, customer service, and WSS, so generating an initial understanding of some potential CSFs, or at least concepts relevant to successful KT via government websites; and in so doing
- to identify key gaps in the current literature to be addressed in this research.
2.2: E-Government: An Overview

Electronic government (e-government) can be defined in many ways. It covers all sectors of society (Elmagarmid & McIver 2001), offering a platform for interaction between people and government (Barnes & Vidgen 2003).

In this section, the definition of e-government is explored, outlining the justification for using the definition adopted in this research, which scopes the study. In doing this,
literature related to e-government services, the users of e-government, the stages of e-government development and maturity, and the benefits and challenges of e-government, are discussed.

2.2.1: Definition of e-Government

This section examines definitions of e-government drawn from the present literature. E-government means different things to different people. Some researchers define e-government as another technology wave and in terms of specific actions such as using a video conference to interact with citizens or other government services delivered through a website (Criado & Ramilo 2003; Donzelli & Bresciani 2003; Choudrie, Ghines & Weerakkody 2004). As Choudrie, Ghinea and Weerakkody (2004, p. 105) stated, “e-government includes the use of all information and communications technologies (ICT) from fax machines to wireless palm pilots to facilitate the daily administration of government”.

Other researchers define e-government more generally as automating the delivery of government services (Deloitte Consulting and Deloitte & Touche 2000; United Nations and American Society for Public Administration 2001; Fang 2002; O’Donnell, Boyle & Timonen 2003; Seifert 2003; Carter & Belanger 2004; Lutz & Moukabary 2004; Akman et al. 2005; Reddick 2006; Scholl 2006; Reddick & Frank 2007; Alonso 2008). For example:

- “E-government is defined as the use of technology, particularly the Internet, as a means to deliver services to citizens, businesses and other entities.” (Akman et al. 2005, p. 240);
- “E-government is any process that the citizenry, in pursuit of its governance, conduct over a computer-mediated network.” (Scholl 2006, p. 74);
- “E-government is the delivery of government information and services through the Internet 24 hours a day, seven days per week.” (Reddick & Frank 2007, p. 577); and
- “E-government refers to the use of the web or other information technologies (IT) by governing bodies to interact with their citizenry, between departments and divisions, and between governments themselves.” (Alonso 2008, p. 1)
Claver-Cortes, Juana-Espiona and Tari (2006, p. 2) seek to balance ICT usage with the citizens’ relationship with government in their definition: “the e-government concept refers to the relationships established between public organisations and their stakeholders through Internet technologies”.

Some researchers define e-government in terms of the interdependence between technology and society. Elmagarmid and McIver (2001, p. 32), for example, have defined e-government in terms of civil and political conduct: “e-government can be defined as the civil and political conduct of government, including service provision, and using ICT”. In similar vein, the Commonwealth Centre for Electronic Governance (2002c, p. 7) has defined e-government in terms of the use of IT for public administration: “e-government constitutes the way public sector institutions use technology to apply public administration principles and conduct the business of government. This is the government using new tools to enhance the delivery of existing services”. Schubert and Hausler (2001, p. 3) have defined e-government from a policies and legal framework point of view, such that “e-government includes the government task of setting a valid legal framework for the effective use of the electronic media in a society as well as the application of these media for public procurement, services to companies and citizens and the management of the internal organisation”.

Kaylor, Deshazo and Van Eck (2001, p. 297), on the other hand, have undertaken research on evaluation and measurement tools for municipal websites and defined e-government based the objective of the e-government undertaking: “e-government for the purpose of this study is taken to be the ability of anyone visiting the city website to communicate and/or interact with the city via the Internet in any way more sophisticated than a simple e-mail letter to the generic city (or webmaster) e-mail address provided at the website”.

Notwithstanding differences in objective and scope, most researchers variously understand e-government as being about developing strategies for information provision (United Nations and American Society for Public Administration 2001; Fang 2002; Schelin 2003; Turban, Rainer & Potter 2004; Kolsaker & Lee-Kelly 2006; Deng 2008), for knowledge acquisition (Kolsaker & Lee-Kelly 2006a), for multilateral communication (Claver-Cortes, Juana-Espiona & Tari 2006; Kolsaker & Lee-Kelly
Based on the discussion above, it emerges that most of the definitions use similar generic terms which can be grouped in four categories: (1) the benefits of e-government; (2) the services provided by e-government; (3) the objectives of an e-government undertaking; and (4) the relationship that e-government can develop with citizens.

For the purposes of this research, a definition of e-government inclusive of these four elements, but scoped to include only the use of the Internet, particularly via websites (as relevant to this research), has been adopted as follows:

*Electronic Government (e-government) addresses the means by which contemporary governments around the world provide information, knowledge resources and services to users, specifically citizens, businesses and other government agencies. Whilst such provision can proceed by various electronic channels, e-government is scoped for the purpose of this research as the utilisation of the Internet, particularly via websites, to improve and enhance government operations (Benefit view), to disseminate government information, knowledge resources and services (Service view), to acquire knowledge through the website (Objective view), and to establish relationships between governments and their stakeholders, particularly citizens, employees, business sectors and government agencies (Relational view) (Azizan, Smith, Cooper 2011).*

Note that in formulating this definition, the use of the terminology of “views” has been included, as used by Greunz, Schopp and Haes (2001, p. 2) in their definition: “e-government is (1) the communication between government, enterprises and citizens (Institutional view); (2) the products and services provided electronically due to mandatory government regulations (Product/service view); and (3) the electronic
communication in which a subordination relation between government and citizens or enterprises exists (Relational view).”

2.2.2: E-Government Services

E-government provides many services to users, particularly citizens, businesses and other government agencies. The services provided are not intended to replace over-the-counter services (Shackleton, Fisher & Dawson 2006) but to increase customer satisfaction with the service quality of government agencies (Stamoulis et al. 2001; Donovan, Brown & Bellulo 2002; Evangelidis 2004; Fu et al. 2006). Although Vassilakis, Lepouras and Halatsis (2007) argue that provision of government services through the web only is considered traditional and inadequate, the web has still become the preferred channel for users seeking to access government information and services, so providing a rationale for scoping the research herein to the Internet (see the working e-government definition in Section 2.2.1) (Cabinet Office 2000; Deloitte Consulting and Deloitte & Touche 2000; Wescott 2000; West 2000; Chen & Gant 2001; Cabinet Office 2002; Ho 2002; Kelly, Mulgan & Muers 2002; Moon 2002; Abie et al. 2004; Carbo & Williams 2004; Janssen & Wagenaar 2004; Smirnov et al. 2004; West 2004; Carter & Belanger 2005; Xiong 2006; Cabinet Office 2007; Halaris et al. 2007; HM Government 2007; Sarikas & Weerakkody 2007; Cabinet Office 2008; Wood et al. 2008), especially in the case of a knowledge-based website (Faro, Giordano & Zinna 2003; Anthopoulos, Siozos & Tsoukalas 2007; Varavithya & Esichaikul 2007; Ford & Murphy 2008).

Pardo (2000) has outlined the following categories of e-services available to users: users accessing government information; the public being informed of government rules and regulations; users accessing personal benefits such as worker’s compensation; procurement including bidding, purchasing and payment; government-to-government (G2G) information and service integration; and users’ participation in public decision-making processes.

To facilitate these service outcomes, many governments (including the Australian and Malaysian governments studied in the present research) have created one-stop government portals, some examples of which are provided in Table 2.1 as a door to all
government information and services. Note that this research will not evaluate the specific types or quality of e-services provided by the Malaysian and Australian governments. Rather, it aims to identify factors that are perceived as critical by relevant staff in ministries/departments of these two governments to achieve KT to website users via their websites.

Table 2.1: Examples of One-stop Government Portals (as of August 2010)

<table>
<thead>
<tr>
<th>Country</th>
<th>One-stop government portal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td><a href="http://australia.gov.au">http://australia.gov.au</a></td>
</tr>
<tr>
<td>Austria</td>
<td><a href="http://www.help.gv.at">http://www.help.gv.at</a></td>
</tr>
<tr>
<td>Canada</td>
<td><a href="http://www.canada.gc.ca">http://www.canada.gc.ca</a></td>
</tr>
<tr>
<td>Malaysia</td>
<td><a href="http://www.malaysia.gov.my">http://www.malaysia.gov.my</a></td>
</tr>
<tr>
<td>Singapore</td>
<td><a href="http://www.gov.sg">http://www.gov.sg</a></td>
</tr>
</tbody>
</table>

Source: Anthopoulos, Siozos and Tsoukalas (2007); Commonwealth of Australia (2008); and Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) (2008a)

2.2.3: Users of e-Government Services

E-government facilitates government agencies engaging with citizens, businesses and other public agencies in a virtual world, based on the needs of the customers (Schelin 2003). This constitutes a transformation of the way public services are delivered and managed (Deloitte Consulting and Deloitte & Touche 2000).

In the context of e-government, users are particularly diverse. According to Grimsley and Meehan (2007) users are more than customers. They are clients to the government agencies, where the relationship is governed by professional and ethical codes. One of the important aspects of e-government is how it brings users closer to their governments.

Some researchers identify the users of e-government in terms of the relationship between users and the government (iDA Singapore 2001; Turban & King 2003; Tan, Pan & Lim 2005; Evans & Yen 2006), namely Government-to-Citizens (G2C), Government-to-Business (G2B), Government-to-Employees (G2E), G2G and Citizen-to-Citizen (C2C).
Fang (2002), alternatively, has identified eight models (cast as relationship categories) to define an e-government system, namely: G2C, Citizen-to-Government (C2G), G2B, Business-to-Government (B2G), Government-to-Government (G2G), Government-to-Nonprofit (G2N), Nonprofit-to-Government (N2G) and G2E. Table 2.2 summarises these various descriptions of the users of e-government.

Table 2.2: Users of e-Government

<table>
<thead>
<tr>
<th>Users</th>
<th>Description</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>G2C Government-to-Citizen</td>
<td><strong>Activities:</strong> For information access such as benefits, policies, loans, educational materials and other government information. Allows government agencies to talk, listen, relate and continuously communicate with the citizens, supporting and improving public services. For individual business such as social services, loan, taxes and other services. Allows customers to access government by use of multiple channels such as PC, web TV, mobile phone or wireless device and to participate by sending an e-mail or contribute to an online discussion forum.</td>
<td>(iDA Singapore 2001; Zhou 2001; Fang 2002; Turban &amp; King 2003; Ndou 2004; Turban, Rainer &amp; Potter 2004; Davison, Wagner &amp; Ma 2005; Janssen &amp; Veenstra 2005; Siau &amp; Long 2005; Tan, Pan &amp; Lim 2005; Weerakkody &amp; Choudrie 2005; Evans &amp; Yen 2006; Al-Mashari 2007; Kolsaker &amp; Lee-Kelly 2007)</td>
</tr>
<tr>
<td>G2B</td>
<td><strong>Objective:</strong> To provide better services to businesses such as eliminating redundant collections of data and reducing transaction costs.</td>
<td>(iDA Singapore 2001; Fang 2002; Devadoss, Pan &amp; Huang 2003; Turban &amp; King 2003; Ndou 2004; Turban, Rainer &amp; Potter 2004; Davison, Wagner &amp; Ma 2005; Janssen &amp; Veenstra 2005; Siau &amp; Long 2005; Tan, Pan &amp; Lim 2005; Weerakkody &amp; Choudrie 2005; Evans &amp; Yen 2006; Al-Mashari 2007; Kolsaker &amp; Lee-Kelly 2007)</td>
</tr>
</tbody>
</table>

Table 2.2: Users of e-Government – (Continued)

<table>
<thead>
<tr>
<th>Users</th>
<th>Description</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>G2G Government-to-Government</td>
<td><strong>Objective:</strong> To enhance cooperation and collaboration between governments of different levels and various physical locations. <strong>Activities:</strong> Sharing or integrating federal and local government databases, as well as integrating separate systems. Enhancing collaboration or cooperation such as grants, law enforcement, public safety, emergency management, shared databases, resources, pool skills and capabilities, enhancing the efficiency and effectiveness of processes.</td>
<td>(Zhou 2001; Fang 2002; Turban &amp; King 2003; Ndou 2004; Janssen &amp; Veenstra 2005; Siau &amp; Long 2005; Tan, Pan &amp; Lim 2005; Weerakkody &amp; Choudrie 2005; Evans &amp; Yen 2006; Al-Mashari 2007)</td>
</tr>
<tr>
<td>G2E Government-to-Employee</td>
<td><strong>Objective:</strong> To improve internal efficiency and effectiveness of government administration. <strong>Activities:</strong> Reorganising internal operational processes to adopt the best commercial practices. Providing services to internal employees such as training, payroll, travel, reimbursement and other services.</td>
<td>(iDA Singapore 2001; Fang 2002; Turban &amp; King 2003; Ndou 2004; Siau &amp; Long 2005; Tan, Pan &amp; Lim 2005; Weerakkody &amp; Choudrie 2005; Evans &amp; Yen 2006)</td>
</tr>
</tbody>
</table>


Based on the definitions outlined in Table 2.2, *this research identifies users in terms of the relationship between users and government, and follows the majority of researchers who identify four major types of relationship, namely: G2C, G2B, G2G and G2E.* Note, that in these relationships this research embraces the notion that communication can be two-way. As stated by Fang (2002, p. 2), “one of the most important aspects of e-government is how it brings citizens and businesses closer to their governments.” Therefore, it is relevant to identify types of stakeholders so that the government can provide better services according to users (Tan, Pan & Lim 2005). The data on actual users in the present research will be drawn from the empirical work that is conducted.

### 2.2.4: Stages of e-Government Development and Maturity

The stages of e-government development reflect the evolution of e-government from the immature to the mature, where the latter offers full integration of public services (Irani, Al-Sebie & Elliman 2006). The stages are used to define explicit theories of e-government relative to its growth and development (Coursey & Norris 2008). Models
that utilise these stages predict that e-government evolves from the information provision website to a fully developed form of e-government that entails an interactive and transactional portal (Irani, Al-Sebie & Elliman 2006).

Different researchers have classified the stages of e-government according to four stages (Layne & Lee 2001; Papantoniou et al. 2001; Huang & Bwoma 2003), five stages (United Nations and American Society for Public Administration 2001; Janssen & Veenstra 2005; Siau & Long 2005; Belanger & Hiller 2006) or six stages (Deloitte Consulting and Deloitte & Touche 2000; Wescott 2000). An extensive review of these models is presented in Appendix A.

There is broad agreement across the various models of the major characteristics of Stages 1, 2 and 3. At various levels of granularity, however, the authors represent fully integrated services on government websites as either a single stage (Stage 4), or distributed across multiple stages (Stages 4, 5 and 6) (see Appendix A). In the present research such fine granularity turns out to not be relevant to the case study organisations investigated (they are not operating at Stages 4-6). As such, a choice has been made to group all fully integrated services on government websites as a single (Stage 4) level group, following the work of Layne & Lee 2001, Papantoniou et al. 2001, Huang and Bwoma 2003, and Claver-Cortes, Juana-Espinosa and Tari (2006). As such, this research adopts a four stages model of e-government development and maturity, based on the models presented in Appendix A, and expanded from the work of Claver-Cortes, Juana-Espinosa and Tari (2006).

An overview of the four e-government development and maturity stages (Stage 1: Informative; Stage 2: Interactive; Stage 3: Transactional; Stage 4: Integration) is presented in Table 2.3. Each is briefly discussed:

**Stage 1: Informative**  
This is the most basic form of e-government, where the government posts basic information on its website/s for citizens (Deloitte Consulting and Deloitte and Touche 2000; Wescott 2000; Layne & Lee 2001; Papantoniou et al. 2001; United Nations and American Society for Public Administration 2001; Huang & Bwoma 2003; Janssen & Veenstra 2005; Siau & Long 2005; Belanger & Hiller 2006). The biggest challenge for
the government at this stage is to ensure that the information is readily available, accurate and timely (Reddick 2004). This stage represents the simplest and least expensive entrance into e-government with the fewest options for users (Seifert 2003).

Table 2.3: Four Stages of E-Government Development and Maturity

<table>
<thead>
<tr>
<th>Stages</th>
<th>Features</th>
<th>Author</th>
</tr>
</thead>
</table>

Source: Expanded from Claver-Cortes, Juana-Espinosa and Tari (2006)
For example, the website will display information about a government office, such as the hours of operation, mailing address and phone numbers (Wescott 2000). Users can directly contact the appropriate government officer via phone or e-mail, determine who can fulfil their service requests and/or submit their personal information as needed.

Stage 2: Interactive
At this stage, websites offer a platform for users to join an electronic forum to obtain answers to their questions (Wescott 2000; Layne & Lee 2001; Papantoniou et al. 2001; United Nations and American Society for Public Administration 2001; Huang & Bwoma 2003; Janssen & Veenstra 2005; Siau & Long 2005; Belanger & Hiller 2006). Users can also make suggestions or submit complaints about government services (Papantoniou et al. 2001; Siau & Long 2005). The challenges faced during this stage are much greater, and include security, confidentiality and technical issues (Layne & Lee 2001).

Stage 3: Transactional
By this stage, websites become more personalised and customised according to users’ needs (Deloitte Consulting and Deloitte and Touche 2000; Wescott 2000; Layne & Lee 2001; Papantoniou et al. 2001; United Nations and American Society for Public Administration 2001; Huang & Bwoma 2003; Janssen & Veenstra 2005; Belanger & Hiller 2006). Users can pay for services, conduct financial transactions and transfer sensitive information online (United Nations and American Society for Public Administration 2001; Siau & Long 2005). Other typical services offered include the ability to renew a driver’s licence, pay a fine, or apply for financial aid or other government services (Huang & Bwoma 2003; Siau & Long 2005).

Stage 4: Integration
and most government services can be accessed through a single online government portal (Siau & Long 2005; Belanger & Hiller 2006).

2.2.4.1 Other Approaches to Website Classification

The e-Government Development and Maturity model is but one means of classifying e-government systems. According to Elmagarmid and McIver (2001), e-government systems can be characterised according to two dimensions: (1) the architectural relationship with users; and (2) the type of service provided. Quelch and Klein (1996), on the other hand, classify websites into four categories: (1) informational domestic, (2) informational global, (3) transactional domestic, and (4) transactional global. Although this classification is for commercial websites, the description of each quadrant reflects the services that websites can offer. It is observed that this has many similarities to the stages of e-government development and maturity model outlined above, whereby the categories are characterised by the services that government websites offer. Thelwall (2000) outlines five types of websites based on the services they provide: (1) websites that only contain company information; (2) websites that consist of both company and product information; (3) websites that provide company, product and pricing information; (4) websites that contain all of the above information, plus information necessary for customers to communicate with the company for the purpose of purchasing products via mail order; and (5) websites that have all of the above features, and also allow an online payment facility.

In summary, the brief review above confirms that the stages of e-government development and maturity are strongly aligned with the above classification schemes (Ramilo & Criado 2001; Sicherheit 2002) - each stage of government website development and maturity encompasses an expansion in the services provided by government through its website. As such, in carrying out the initial appreciation of the case study organisations, it has been decided that consideration of development and maturity level will be helpful, but extension to include the additional classification schema above is not required.
2.2.5: Expected and Achieved Benefits of E-Government

E-government has increasingly become integrated with traditional public administrative structures and processes. It is now one of the fastest growing activities online (Tolbert, Mossberger & McNeal 2008), and involves more than simply loading information and services onto the web (Montagna 2005). Montagna (2005) has identified three categories of e-government benefits: cheaper, faster and better. These three (3) categories not only bring benefits to government agencies but also to users: cheaper means decreased costs, faster means savings on time, and better refers to improved performance. Table 2.4 presents a summary of the key benefits of e-government, as reported in the extant literature, classified according to Montagna’s categories.

Table 2.4: Summary of the Key Benefits of E-Government

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cheaper</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Faster</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Better</strong></td>
<td></td>
</tr>
<tr>
<td>- Improve research capabilities, documentation and record-keeping.</td>
<td>(Kertesz 2003; UN 2008)</td>
</tr>
<tr>
<td>- Increase accessibility, accuracy and privacy of information exchanged among stakeholders of e-government processes.</td>
<td>(Kertesz 2003; Al-Mashari 2007)</td>
</tr>
<tr>
<td>- Facilitate fundamental changes in the interactions and relationships between citizens and governments.</td>
<td>(Wescott 2000; Huang &amp; Bwoma 2003; Kertesz 2003; Turban, Rainer &amp; Potter 2004; Montagna 2005)</td>
</tr>
</tbody>
</table>
As noted in Table 2.4, e-government can facilitate relationships between the government and users including the general public, businesses and other government agencies (Claver-Cortes, Juana-Espinosa & Tari 2006). Users can recognise which department is engaged in delivering a particular service (Montagna 2005), which can lead them to identify other services offered by that department.

E-government offers benefits to public agencies around the world, providing day-to-day government administration and facilitating improvements to the governing process (United Nations and American Society for Public Administration 2001; Schelin 2003). E-government enables new methods of production; increases the flow and accuracy of information (Abie et al. 2004); replaces traditional operating procedures (Schelin 2003); and improves research capabilities, documentation and record-keeping (UN 2008). In addition, e-government changes the environment within which public agencies must function (Schelin 2003), leading to a considerable reduction of service costs and increases in the levels of satisfaction of government customers (Al-Mashari 2007).

2.2.6: Challenges of e-Government

As discussed above, e-government delivery can add value for users by providing information and services online. Nevertheless, the process of providing such services is neither easy nor straightforward. There are many challenges involved.

An extensive literature review is presented in Appendix B, highlighting challenges including:

- The readiness of leadership to think strategically, developing clear strategies for e-government, especially by determining both the underlying vision and the mission of e-government (Heeks 2002; Jaeger & Thompson 2003; Ndou 2004). Objectives must be customer driven, service oriented, must meet customer needs and aim to improve the overall quality of life (Ndou 2004). The leaders should empower their team members to perform their tasks to achieve such goals (Traunmuller & Wimmer 2004).
• The readiness of human infrastructure (Heeks 2002; Edmiston 2003; Jaeger & Thompson 2003). An ICT division or unit needs to be established to manage, guide and drive e-governance (Heeks 2002), for which the government requires staff trained in IT to operate the tasks (Heeks 2002; Edmiston 2003; Jaeger & Thompson 2003).

• The capacity to deal with certain legal matters such as the laws and regulations to permit and to support e-government (Heeks 2002) and the interoperability and standards of e-government in areas such as data quality and security (Heeks 2002; Jaeger & Thompson 2003; Ndou 2004; Traunmuller & Wimmer 2004; Luna-Reyes, Gil-Garcia & Cruz 2007).

• The capacity of the institutional infrastructure to implement e-government. Governments need to improve processes by integrating the front and back ends of their offices (Jaeger & Thompson 2003; Traunmuller & Wimmer 2004; Davison, Wagner & Ma 2005; Luna-Reyes, Gil-Garcia & Cruz 2007). Further, the organisation will need to change its management processes (Ndou 2004; Traunmuller & Wimmer 2004).

• The readiness of technological infrastructure. Governments must develop portals for service provision (Jaeger & Thompson 2003; Traunmuller & Wimmer 2004). Since these portals can be accessed anywhere, they also need to address the issues of usability (Traunmuller & Wimmer 2004), language and communication (Jaeger & Thompson 2003), and government must ensure that users have access to Internet facilities (Heeks 2002; Jaeger & Thompson 2003; Ndou 2004).

• The need to address privacy issues, by maintaining electronic records properly to protect the privacy of users (Heeks 2002; Edmiston 2003; Jaeger & Thompson 2003; Bolivar, Perez & Hernandez 2007) and by dealing with identity management and security issues (Jaeger & Thompson 2003; Traunmuller & Wimmer 2004; Davison, Wagner & Ma 2005).

• The need to address the digital divide between internal and external users. Not all users possess the same level of ICT knowledge, which can be a significant obstacle to providing government services online (Jaeger & Thompson 2003; Ndou 2004; Traunmuller & Wimmer 2004; Davison, Wagner & Ma 2005). Governments must also ensure that the network is stable, has a broad coverage,
and should educate users about the value of e-government (Jaeger & Thompson 2003).

- Finally, the financial challenges in implementing e-government (Edminston 2003), which can inhibit innovation when seeking to improve e-government performance (Scherlis & Eisenberg 2003).

2.3: E-Government Delivery

This section discusses e-government delivery in terms of the technologies used and the primary features of websites, establishing the concepts and terminologies adopted in this research to classify and discuss the government operated websites at the case study organisations. A brief introduction to the primary technology used within e-government is supplied, followed by a discussion of government websites, specifically the features that are typical of e-government websites, including concepts and terminologies referred to in website evaluation schema. As such, this section establishes the vocabulary of e-government website features that will arise when respondents at the two case study organisations are interviewed and participate in the focus groups.

2.3.1: Technologies for e-Government: The Primacy of the World Wide Web

The processes and systems adopted by governments have evolved over time to become more user centric (Liao & Jeng 2005). Technological improvements have enabled governments around the world to use e-government to provide services to the public (Bretscheinder 2003).

While authors such as Choudrie, Ghinea and Weerakkody (2004, p. 105) deliberately do not constrain their notion of supporting technology to the World Wide Web (WWW) (as captured in their definition – “e-government includes the use of all information and communications technologies from fax machines to wireless palm pilots to facilitate the daily administration of government”), it is clear that governments are increasingly using the WWW as the platform to provide public service to users. For example, according to a survey conducted by the UN (2008), 189 countries had a website in 2008, compared with 179 in 2005. Although Vassilakis, Lepouras and Halatsis (2007) argue that provision of government services via the website alone is traditional and
inadequate, the website has become the preferred channel for users seeking to access government information and services, especially in the case of knowledge-based websites (Ford & Murphy 2008). Internet supported e-government around the world now enables citizens to renew their driver’s licence from a personal computer (Karim & Khalid 2003; Strejcek & Theil 2003) and government officers to use e-procurement to purchase items from an online catalogue and immediately submit a requisition online (Karim & Khalid 2003; Kraemer 2003; Strejcek & Theil 2003).

As such, in this research there is a deliberate focus on e-government as delivered by public websites.

2.3.2: Government Websites

Websites are increasingly being used by government agencies to provide information and deliver services to the public (Hernon 1998; Smith 2001). This creates both opportunities and challenges for public agencies, in having websites that not only deliver information resources and services online but also deliver these based on the needs of users (Bertot & Jaeger 2006). Websites have the potential to effectively disseminate information (Cato 2001), which evolves based on the functionality the website can deliver (Deloitte Consulting and Deloitte & Touche 2000; Turban & King 2003; Claver-Cortes, Juana-Espinosa & Tari 2006). The key elements of user-centred government websites are functionality, usability and accessibility (Bertot & Jaeger 2006).

Websites have become the supporting instruments for e-government strategies (Claver-Cortes, Juana-Espinosa & Tari 2006). According to Yen, Hu and Wang (2007), effective website design is critical to the success of e-government. Most government websites provide a portal or one-stop centre, an information gateway that provides a single access point through a web browser to search and access relevant information (Turban et al. 2008). Government websites offer the public vast arrays of facts regarding government structure, laws, initiatives, geography, information requests and links to related websites (Deloitte Consulting and Deloitte & Touche 2000).
There are many advantages to having a website. Organisations can expand their existing services to users through websites. By integrating a website with existing business processes, organisations can create a cost-effective channel to communicate with their customers (Parasuraman, Zeithaml & Malhotra 2005; Yang et al. 2005). Furthermore, organisations can satisfy their users by providing user-oriented high-quality services through websites. For users, websites can function as a platform that enables them to become familiar with an organisation, to explore its goods and services, and to make inquiries (Riel, Liljander & Jurriens 2001; Parasuraman, Zeithaml & Malhotra 2005; Yang et al. 2005). Yang et al. (2005) argue that websites generally consist of three types of interactions: (1) between customers and website employees via either Internet-based communication tools (e.g. e-mail and chat room) or traditional channels (e.g. mail and fax); (2) between customers and websites; and (3) among peer users of similar goods and services via e-mail, chat rooms, and the like. In this research, the identification of CSFs for KT based on the perspectives of providers of government websites will cover all of these types of interactions.

The following sub-section discusses the features that have been widely considered when evaluating websites. This is discussed in order to delineate the features and associated terminologies that it is anticipated will emerge when seeking responses from the developers at the two case study organisations investigated in this research. It is important to note, however, that none of the literature reported herein considers explicitly the website as a vehicle for KT – an observation to be revisited in Section 2.10.

2.3.2.1: Features considered when evaluating websites

Current research into website features, that may be applicable in the e-government context, takes a number of forms: literature related to website evaluation (e.g. design, accessibility, usability, ease of operations, content and information quality); website development guidance (e.g. design, methods and modelling tools); and classifying user needs (e.g. services, content and information quality).

To delineate the features and associated terminologies that it is anticipated will emerge when seeking responses from the developers at the two case study sites investigated in
this research, this review introduces a selection from the key literature drawn from the above areas. A referenced synthesis of this literature is presented in Appendix C, highlighting a set of ten key high level features.

A key literature in website evaluation research has focussed on the issue of service quality. Characteristic of this research is the work of Parasuraman, Zeithaml and Malhorta (2005) who assert the importance of web presence and service quality, defined broadly to encompass all phases of a customer’s interactions with a website, and the extent to which a website facilitates efficient and effective shopping, purchasing and delivery. Parasuraman et al. have developed E-S-Qual (electronic service quality) a multiple-item scale for measuring the service quality delivered by Web sites on which customers shop online, encompassing four dimensions: efficiency; fulfilment; system availability; and privacy. Wolfinbarger and Gilly (2002) propose a scale called .comQ (dotcom service quality) to measure service quality on websites that includes four factors: website design; fulfilment/reliability; privacy/security; and consumer service. Donthu (2001) has established an instrument called SITEQUAL (site quality) including four dimensions: ease of use; aesthetic design; processing speed; and security. Aladwani and Palvia (2002) apply four dimensions: specific content; content quality; appearance; and technical adequacy. The research of Yang et al. (2005) recognises five dimensions: usability; usefulness of content; adequacy of information; accessibility; and interaction to measure website design quality. Finally, Barnes and Vidgen (2006), have established eQual (previously WebQual) to explore users’ perceptions of government websites quality.

Moving to the literature related to website design, analytical approaches to website design have been investigated by numerous researchers, including:

- Yen, Hu and Wang (2007), who proposed a conceptual framework for classifying different design scenarios into generic categories.
- Hsiao and Chou (2006), who measured homepage designs using principles, drawn from psychology to identify essential visual patterns.
- Henzinger (2001) and Ricca (2005), who examined the hyperlinks on websites to compare different ranking strategies.
• Olsina, Lafuente and Rossi (2001) who developed an instrument called Quality Evaluation Methodology (QEM) to assess website design.

• Loiacono, Watson and Goodhue (2007), who created an twelve-dimensional instrument called WEBQUAL (Website quality) including: information fit to task; interaction; trust; response time; design; intuitiveness; visual appeal; innovativeness; flow; integrated communication; business process; and substitutability.

• Barnes and Vidgen (2001a) who used the WebQual method to evaluate Internet bookshop websites, with a focus on information-intensive domains. They also used the method to evaluate Internet news websites, focusing on customer perceptions of information, website and user-oriented qualities (Barnes & Vidgen 2001b).

Website capability to meet user needs has also been researched. Lee et al. (2002), who developed AIMQ (Aim quality), a methodology for evaluating information quality in an organisation, have highlighted security and operations as important aspects of accessibility. Yang et al. (2005) used content-related factors in their analysis of information quality, and emphasised ease of use and security as determinants of system quality.

The synthesis, presented in Appendix C, encapsulates the insights reported in the literature into ten high level features widely used to evaluate the effectiveness of websites. Also recorded in Appendix C are some key findings from previous evaluations of e-government websites using techniques that encompass the ten features. It is important to note, however, that in none of this research is there a focus on critical success factors for achieving knowledge transfer (see Section 2.10). The features identified include:

1) **System quality**
This criterion assesses websites in terms of their overall ease of use, and whether a website can assure features such as the safety of users’ personal and financial information.

2) **Trust**
This criterion assesses a website’s ability to offer accurate and reliable information and services to users in order to build users’ confidence in the organisation and its website.

3) *Information quality*
This criterion assesses the nature of the information and services provided by the website.

4) *Ease-of-use, interactivity, efficiency and reliability*
These criteria assess a website in terms of the effectiveness of the links, whether a website can respond quickly to users’ queries, and whether a website has good navigation facilities.

5) *Responsiveness*
This criterion assesses the ability of websites to present timely information, and to respond quickly to users.

6) *Design quality*
This criterion assesses a website in terms of design quality, including navigation structure, search function and protected content.

7) *Usability*
This criterion assesses the usability of a website in terms of features including site map, table of contents, alphabetical index, high quality labels, and availability of FAQ, help, customer online feedback, and questionnaire/guestbook/comments. The interface should also be consistent in terms of colour, design of links and should support foreign languages.

8) *Service quality*
This criterion assesses the services provided by a website, such as how quickly the users receive a response to their queries lodged through the website, and whether the website is reliable.

9) *Empathy*
This criterion assesses the care and individualised attention the system gives to users in terms of online help, notification, security, feedback mechanisms, communication with the organisation, authentication, and responsiveness.

10) Functionality
This criterion assesses the ability of a website to provide information search and retrieval facilities to users, such that users can easily navigate the website.

2.4: E-Government in Malaysia
As foreshadowed in Chapter 1, one of the two countries chosen for study in this thesis is Malaysia. In this section a short introduction to e-government in Malaysia is presented, in sufficient detail to establish a rationale for its choice.

Malaysia is working towards achieving “Vision 2020”, which outlines the government’s agenda and timeline for Malaysia to become a developed country by the year 2020. This vision was introduced by former Prime Minister, Tun Mahathir Mohamad, during the tabling of the Sixth Malaysia Plan in 1991. In relation to the objectives of this vision, he outlined nine challenges that Malaysia must overcome, which are presented in Table 2.5 below.

Table 2.5: The Challenges of achieving Malaysia’s “Vision 2020”

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenge 1:</td>
<td>To form a nation that stands as one;</td>
</tr>
<tr>
<td>Challenge 2:</td>
<td>To produce a Malaysian community that has freedom, strength, and is full of self-confidence;</td>
</tr>
<tr>
<td>Challenge 3:</td>
<td>To develop a mature, democratic community;</td>
</tr>
<tr>
<td>Challenge 4:</td>
<td>To form a community that has a high degree of moral, ethical and religious strength;</td>
</tr>
<tr>
<td>Challenge 5:</td>
<td>To cultivate a community that is mature and tolerant;</td>
</tr>
<tr>
<td>Challenge 6:</td>
<td>To form a progressive scientific community;</td>
</tr>
<tr>
<td>Challenge 7:</td>
<td>To cultivate a community rich in values and loving culture;</td>
</tr>
<tr>
<td>Challenge 8:</td>
<td>To ensure the formation of a community with a fair economy; and</td>
</tr>
<tr>
<td>Challenge 9:</td>
<td>To cultivate a prosperous community.</td>
</tr>
</tbody>
</table>


E-government in Malaysia is one of the flagship applications of the “Multimedia Super Corridor” (MSC). The Government of Malaysia has launched e-government in order to
lead the country into the information age. E-government in Malaysia is being implemented to achieve the objectives outlined in Table 2.6 below.

Table 2.6: Objectives of E-Government Implementation in Malaysia

<table>
<thead>
<tr>
<th>Objective</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve internal government operations, information flows, and processes</td>
<td>Improve internal government operations, information flows, and processes in</td>
</tr>
<tr>
<td>within the government in terms of speed and quality of policy development,</td>
<td>terms of speed and quality of policy development, coordination and enforcement;</td>
</tr>
<tr>
<td>coordination and enforcement;</td>
<td>Effectively and efficiently deliver services from the people of government to</td>
</tr>
<tr>
<td></td>
<td>the people of Malaysia, by improving and enhancing the convenience, accessibility and quality of interactions with citizens. This will enable the government to become more responsive to the needs of the citizens by employing multimedia technology;</td>
</tr>
<tr>
<td></td>
<td>Improve the convenience, accessibility and quality of interactions with businesses;</td>
</tr>
<tr>
<td></td>
<td>Play an essential role in catalysing the development of the MSC, as well as furthering the political and economic development goals of Vision 2020;</td>
</tr>
<tr>
<td></td>
<td>Improve productivity and create a collaborative environment that fosters the ongoing development of Malaysia’s multimedia industry that could attract world-class multimedia businesses to Malaysia;</td>
</tr>
<tr>
<td></td>
<td>Provide high-quality and low-cost administrative services to the public and businesses.</td>
</tr>
</tbody>
</table>

Source: MAMPU (1997)

Malaysia has adopted an integrated strategy to e-government implementation. This approach is aimed at increasing the exchange of common information systems among government agencies and enhancing daily operations and over-the-counter services, while also moving towards more modernised and efficient government processes using information technology and multimedia (Karim & Khalid 2003; Ahmad & Othman 2006). In order to achieve these ambitious goals, the government has issued a Concept Request for Proposals (CRFPs) based on the philosophy that “you tell us what we should have” rather than “we tell you what we want”, thus allowing bidders to suggest creative solutions (Karim & Khalid 2003). This more integrated approach addresses four components: (1) program management ensures that e-government is organised, timely and meets its objectives; (2) the need to identify the right technology to support the processes; (3) the need to identify opportunities to improve, re-engineer or redesign government processes as required; and (4) people will ensure the success of the system (Karim & Khalid 2003).

According to a study by Brown University in 2006, the global ranking of Malaysian e-government has improved immensely from a position of 157 in 2005 to 36 in 2006 and
25 in 2007 out of a total of 198 countries (MSC Malaysia 2007). Based on the findings of the “Accenture Leadership in Customer Service 2007: Delivering on the Promise” research conducted in 2007, Malaysia moved up from 19\textsuperscript{th} to 14\textsuperscript{th} place out of 22 countries (MSC Malaysia 2007). The Global Competitiveness Report 2007–2008 revealed that Malaysia had moved up from 26\textsuperscript{th} (2006–2007) to 21\textsuperscript{st} place (2007–2008) for its Global Competitive Index (MSC Malaysia 2007). Finally, UN (2010) has recognised Malaysia as now being in the top 20 for e-participation – indeed in position 12.

In view of all the above, and the drive of the Malaysian Government to actively implement an e-government strategy, Malaysia is deemed to be an appropriate country for the researcher to study to seek authoritative insights into the CSFs for KT via government websites based on providers’ perspectives.

2.4.1: Putrajaya, Malaysia

The e-government initiative in Malaysia began in 1997, with the launch of the MSC (Multimedia Development Corporation 1996). Since then, Malaysia has implemented several e-government projects, most of which are still in progress.

The MSC is an area that extends from the Kuala Lumpur City Centre in the north of Malaysia to the Kuala Lumpur International Airport in Sepang to the South (Masduki 1999) (see Figure 2.2). Putrajaya and Cyberjaya are two mega developments of MSC (Masduki 1999). Putrajaya is the federal government’s administrative capital and Cyberjaya is the ICT centre, with smart buildings and the latest ICT infrastructure to meet both the general living and business needs of the community (Masduki 1999). Since this research is focused on government websites, it was determined that Putrajaya was an appropriate location for this research to be conducted.
Figure 2.2: MSC Malaysia
Source: Masduki (1999)

2.4.2: Ministry of Education Malaysia

The Ministry of Education (MOE) Malaysia was chosen as one of the case study organisations for this research. A justification of this choice follows.

The MOE has been selected as a primary agency to implement one of the MSC major e-government projects in Malaysia (Karim & Khalid 2003). Specifically, the ministry is responsible for implementing the smart schools project in Malaysia, which utilises ICT to deliver teaching and learning in public schools (Karim & Khalid 2003) and as such is considered an ICT leader.

The ministry also has considerable experience in using its website as a means of providing government information and services to its users. According to MAMPU (2009), the ministry’s official website received a 4-star ranking in 2008.

In view of all the above, the MOE was deemed to be an appropriate case study organisation to be approached in this research.
2.5: E-Government in Australia

As also foreshadowed in Chapter 1, the second country chosen for study in this thesis is Australia. In this section a short introduction to e-government in Australia is presented, in sufficient detail to establish a rationale for its choice.


Given these aggressive e-government agenda items, Australia was chosen as an appropriate case study country. Furthermore, as revealed in the report “Interacting with Government: Australians’ use and satisfaction with e-government services-2009”, in 2009 Australians used the internet to interact with the government more than any other method (AGIMO 2008). This is borne out in UN (2010) which recognises Australia as being in the top 20 for e-participation – in fact Australia is rated at position two globally.

In view of all the above, Australia is deemed to be an appropriate country for the researcher to study to seek authoritative insights into the CSFs for KT via government websites based on providers’ perspectives.

2.5.1: Victorian State Government

The Australian Government has a strategy of supporting each state government to implement its own e-government agenda based on users’ needs. As all states are responding to the same national agenda, the choice of Australian state was based on alternate, pragmatic criteria. The researcher chose the Victorian State Government for
inclusion in this research because of ready access to this government agency – the researcher was based in Victoria.

In March 2002, the Victorian State Government launched “Putting People at the Centre”, outlining its vision to provide government services online (State Government of Victoria 2010). The vision has four pillars, as shown in Table 2.7.

Table 2.7: Four Pillars of the Victorian Government’s E-Government Vision

| • Substantially improving support and services to citizens; |
| • Providing better community engagement and more effective democracy; |
| • Using innovation in finding new opportunities; and |
| • Creating a framework for ongoing reform within government. |


E-government in Victoria has evolved through various stages according to the needs for the people. For example, quite recently the government has improved its Web Content Accessibility Guidelines in order to provide better services to those with disabilities (AGIMO 2008). The government also released a Data Centre Strategy to improve the data management system so that government agencies may more effectively provide information to users (AGIMO 2008). The government has also concentrated on employing or training staff with the right skills, especially ICT skills, to implement its e-government strategies (AGIMO 2008). With the release of Web 2.0, the Victorian Government is establishing a Government 2.0 Taskforce to investigate how it might best utilise web 2.0 technologies to enhance the effectiveness and efficiency of service delivery, public administration and community engagement (AGIMO 2008).

Given this drive to innovate in e-government, the education ministry in the State of Victoria is most suitable for study.

2.5.2: Department of Education and Early Childhood Development, Victorian State Government

The Victorian Department of Education and Early Childhood Development brings together a range of learning and development services for Victorian children, young people and adults. Specifically, it is responsible for the learning, health, development
and wellbeing of all young Victorians, from birth to adulthood (AUSED 2008). With the motto of “every child, every opportunity” and a vision that seeks a state in which “every young Victorian thrives, learns and grows to enjoy a productive, rewarding and fulfilling life, while contributing to the local and global communities” (AUSED 2006), the department seeks to ensure that every child in Victoria has access to education and development services that meet the needs of all families in Victoria (AUSED 2006).

In 2008, the Victorian Government launched the “Blueprint for Education and Early Childhood Development”, which contains a five-year agenda for education, learning and development from birth to adulthood in Victoria (AUSED 2009). The agenda includes the goal of enhancing the quality of school leadership, curriculum and facilities, as well as other areas related to education (AUSED 2009).

In view of all the above, the Ministry of Education and Childhood Development was deemed to be an appropriate case study organisation to be approached in this research.

To set the scene specifically for the study of CSFs for KT via e-government websites, this review now moves to a review of a number of relevant associated literatures, including: KM; CRM; and WSS. This underpins the development of some initial candidate CSFs, or at least concepts that may be relevant to the study of CSFs for KT via e-government education websites.

2.6: Associated Concept 1: Knowledge Management

The growing challenges created by the knowledge economy have increase government efforts in relation to KM (UN 2008). According to the Organisation for Economic Cooperation and Development (OECD), some governments have made KM a priority in their policy agendas (UN 2008). Governments are also investing heavily in e-government as a means of promoting the knowledge society (Kolsaker & Lee-Kelly 2007).
This section reviews current literature on KM. The section begins by explaining the definition of and key concepts underlying knowledge (Section 2.6.1). It follows with an analysis of KM processes (2.6.2) and KM systems (2.6.3). Finally, the section discusses KT models (2.6.4), the barriers to KT (2.6.5), and KT via government websites (2.6.6).

2.6.1: Knowledge: Definition and Key Concepts

Knowledge is fast becoming a key control mechanism within an organisation (Davenport & Prusak 2000; Groot 2003; Assudani 2005). An organisation that manages its knowledge effectively can improve the functioning of the organisation (Chin-Yen et al. 2007).

Dieng et al. (1999) conceptualise knowledge as a form of corporate memory. They classify corporate memory into eight typologies: (1) professional memory, comprised of references, documents, tools and methods used in a given profession; (2) company memory, related to an organisation and its activities, products and participants (e.g. customers, suppliers, sub-contractors); (3) individual memory, which consists of the competencies and know-how of a given member of the company; (4) project memory, comprising the project definition, activities, history and results; (5) company technical knowledge used every day within a company, including its business units, departments and subsidiaries, by its employees in performing their daily jobs; (6) strategic corporate knowledge, which is used by the company managers; (7) internal memory, which is the knowledge and information internal to the enterprise; and (8) external memory, which is knowledge and information that is useful to the company but which comes from outside the organisation.

Polanyi (1962) and Nonaka (1991) divide knowledge into tacit knowledge and explicit knowledge. Tacit knowledge is personal, hard to formalise and not easily expressible, and includes beliefs and perspectives; explicit knowledge is formal, systematic, easily communicated and shared, and includes product specifications, manuals or reports. Stenmark (2002), alternatively, argues that all knowledge is tacit, and that which can be made tangible should be understood as information. Hansen, Nohria and Tierney (1999) define knowledge as either a codification strategy or personalisation strategy. A codification strategy is the knowledge that is codified using a people-to-documents
approach, where it is extracted from the person who developed it, transferred into documents, stored in a database and reused for various purposes. A personalisation strategy is the knowledge that focuses on the dialogue between individuals, brainstorming sessions, one-to-one conversations and problems being solved independently.

Knowledge has also been modelled in terms of a hierarchical structure whereby data are seen as facts, which then become meaningful information, which in turn becomes knowledge when it is interpreted, applied to a given context and thereby made meaningful (Alavi & Leidner 2001; Sternmark 2002; Martin 2008). Misra, Hariharan and Khaneja (2003), on the other hand, modelled the hierarchical structure of knowledge from the perspective of data to truth: data, information, knowledge, intelligence, wisdom and truth.

This research adopts a view of knowledge as a combination of experience, values, contextual information and expert insight, which not only exists in documents and repositories, but also is contained within peoples’ minds and can be demonstrated through their actions and behaviours, and applied to meeting an organisation’s needs, and is a process, have a condition of access to information and that can generate new experiences and information (Gammelgaard & Ritter 2000; Alavi & Leidner 2001; Al-Alawi, Al-Marzoqi & Mohammed 2007). This research focuses on KT as a process of transferring government knowledge resources (information and services) to users who internalise it.

More specifically, and drawing upon the above, for the purposes of this research, knowledge is defined and scoped to include those government knowledge resources (information and services) made explicit and available for users via a government website, which become meaningful to website users when they interpret and apply them in context (see Santinha & de Castro 2010).
2.6.2: Knowledge Management Processes

Many KM process models have been proposed in the literature. The KM process models developed by Nonaka (1994) and Alavi and Leidner (2001) are arguably the most widely cited (Ford 2001) and are used to frame this research.

Nonaka (1994) describes KM processes in terms of four modes of knowledge creation: socialisation, externalisation, combination, and internalisation. Socialisation is the transfer of tacit knowledge from one entity to another (Holsapple & Joshi 2002). It is a process of creating tacit knowledge through shared experience (Nonaka 1994), transferring tacit knowledge between individuals through observations, working with a mentor or a more skilled and knowledgeable individual (Ford 2001) and on-the-job training (Nonaka 1994). Externalisation is the conversion of tacit knowledge to explicit knowledge (Holsapple & Joshi 2002). It is a process of converting knowledge into document form, such as a manual, handbook and other tangible form. Combination is the conversion of explicit knowledge into explicit knowledge (Holsapple & Joshi 2002). It is a process of creating new explicit knowledge out of current explicit knowledge, for example, by rearranging the information in a handbook based on a new category. Internalisation is the conversion of explicit knowledge into tacit knowledge (Holsapple & Joshi 2002). It is a process whereby an individual learns from the material they have read and can apply this new knowledge to a given situation. In the definition of knowledge adopted above, elements of this sequence are addressed, including the notion that knowledge is possessed by the website user once what they have extracted from the website “… becomes meaningful … when they interpret and apply it in context” (c.f. “Internalisation”).

Alavi and Leidner (2001) divide KM processes into four classifications: knowledge creation; knowledge storage and retrieval; KT; and knowledge application. Knowledge creation is the process of developing new content or replacing existing content (Pentland 1995). Knowledge storage and retrieval involves the organisational knowledge that is stored in databases, expert systems, documented organisational procedures, processes and other forms of storage for individual needs (Alavi & Leidner 2001). KT is the sharing of knowledge that occurs between individuals, from individuals to explicit sources, from individuals to groups, between groups, across
groups, and from a group to an organisation (Alavi & Leidner 2001). Finally, knowledge application is the use of knowledge to gain competitive advantage (Alavi & Leidner 2001).

This research focuses on a specific KM process, in a specific context - KT via government websites. What is transferred in this research context is government knowledge resources (information and services) transmitted to and absorbed by users via government websites, which becomes meaningful to website users only when they interpret and apply it in context.

Before proceeding, it is important to acknowledge literature related in particular to the “management” role in KM. Senior management must demonstrate leadership that can direct and facilitate KM efforts. This will include the provision of high quality supervision, work group support and incentives to encourage knowledge sharing and reuse (Markus 2001; Koskinen 2003; Kulkarni, Ravindran & Freeze 2006). Exercising such leadership, including providing top management support of KM system development, is essential if a culture of KT is to be promoted in an organisation (Markus 2001; Koskinen 2003; Kulkarni, Ravindran & Freeze 2006).

2.6.3: Knowledge Management Systems

Knowledge management systems (KMS) are enabling technologies for effective and efficient KM (Maier & Hadrich 2006). An effective KMS will result in the employees of an organisation being able to access and apply knowledge to improve their business operations (Chin-Yen et al. 2007). However, in the literature, KMS have been defined in various ways, such as in terms of their use via specific KM tools, as KM platforms or for tools that are applied with KM in mind (Maier & Hadrich 2006).

Ford (2001) defines KMS as the usage of information systems and technology such as intranets, Lotus Notes, document management systems, knowledge maps, executive support systems, artificial intelligence and other types of technology to support the codification and transfer of knowledge. Alavi and Leidner (2001) claim that although ICT does not apply to all KM issues it remains an important tool to support KM. They categorise the usage of ICT applications to support organisational KM into three areas:
(1) the coding and sharing of best practices; (2) the creation of corporate knowledge directories; and (3) the creation of knowledge networks.

It should be remembered that the aim of this research is not to discuss specific KM systems in detail, but rather it will focus on the use of government websites to transfer knowledge to users. The details of elements of government websites were discussed in Section 2.3.2. The following section discusses models of KT, including that adopted to underpin this research.

2.6.4: Knowledge Transfer Models

In this research a temporal processual view of KT is needed to decompose the KT process from e-government provider to website user. In this research, Szulanski’s (1996; 2000) intra-organisational KT model has been adopted to underpin the identification of CSFs for KT via government websites. This model has been chosen given that it is widely recognised and tested. Further, Szulanski’s model, as adapted by Cooper, Lichtenstein and Smith (2006), has been validated in the context of WSS, and so would be recommended as a candidate for investigation in the e-government context (see Section 2.8 for a discussion of WSS and e-government KT). Although Szulanski’s KT model is designed to address internal KT (i.e. within an organisation), Cooper, Lichtenstein and Smith (2006) have adapted it for the external KT in the B2B WSS context. As such, Szulanski’s KT model, adapted as described by Cooper, Lichtenstein and Smith (2006) can address both internal and external KT.

Szulanski’s (1996; 2000) intra-organisational KT model consists of four stages: namely, initiation, implementation, ramp-up and integration. The initiation stage consists of all events that lead to the decision to transfer knowledge. This stage begins when the user has recognised a need for knowledge and starts a search for knowledge to fulfil that need. Once the need for that information has been identified, the feasibility of transferring that knowledge is explored. The implementation stage begins with the decision to proceed. During this stage, knowledge resources flow between the source and the recipient. The implementation-related activities come to an end when the recipient begins to use the transferred knowledge, which is the start of the ramp-up stage. During this stage, the recipient is concerned with identifying and resolving
unexpected problems that arise from using the new knowledge. Finally, the integration stage begins once the recipient achieves satisfactory results with the transferred knowledge. The use of the transferred knowledge can then become routinised. Integration is complete when old knowledge is replaced by the new knowledge or practices.

It should be noted, for completeness, that recently other inter-organisational transfer models have appeared, including:

- Nieminen’s Inter-Organisational Learning Abilities: Nieminen (2005) discusses factors that can affect a company’s learning ability, through its organisational receptivity in inter-organisational KT, by defining a typology of the factors affecting the organisational receptivity of new knowledge. However, given that the research focus in this thesis is on the perspective of the source organisation (the e-government provider) this model was not pursued.

- Cranefield and Yoong’s Inter-organisational KT Model: Cranefield and Yoong (2005) have developed a staged model for inter-organisational KT, by investigating key factors that impact on inter-organisational KT in public sector organisations. This model comprises six stages: engaging, defining, seeking, articulating, integrating and disseminating. This model could have provided a basis for application in the present studies, however, a choice was made to apply Szulanski’s model, as adapted by Cooper, Lichtenstein and Smith (2006), given its CSF approach and validation in the world of WSS, and so its immediate connection to this research (see Section 2.8 for a discussion of WSS and e-government KT).

**2.6.5: Barriers to Knowledge Transfer**

Although ICT can support KT and, it has been argued, substantially enhance its performance (Alavi & Leidner 2001), there remains potential barriers to effective KT, however it is enacted.

Szulanski (2000) has examined how the characteristics of the source of knowledge, the recipient, the context and the knowledge itself can all affect its transfer. Szulanski (2000) found that in the initiation stage of KT the reliability of the knowledge source
can cause difficulties in transfer, whereas the recipient’s ability to absorb knowledge is affected by difficulties faced during the implementation stage. He further states that throughout all of the phases of the transfer process causal ambiguity or difficulty in understanding the knowledge can be a barrier to transfer. The findings of a study by Ko, Kirsch and King (2005) suggest that barriers to KT can be reduced when the sender and receiver have shared some common understanding, have an absorptive capacity and an arduous relationship, demonstrating the importance of a cooperative relationship between sender and receiver and the intrinsic motivational factors between sender and receiver. Alavi and Leidner (2001) recognise several important issues impacting on KT, such as: what knowledge is to be transferred; how to locate the knowledge that best leads to successful KT; organisational setting including social, cultural and technical attributes can increase flows of knowledge between provider and searcher; and searchers are encouraged to search for knowledge externally so that the knowledge transferred to the organisation has both internal and external origins. Cooper, Lichtenstein and Smith (2007) categorised the barriers to KT as knowledge-based barriers, receiver-based barriers, sharer-based barriers and context-based barriers. Knowledge-based barriers are dependent on the type of knowledge being transferred; receiver-based barriers relate to the receiver’s ability to understand the knowledge; sharer-based barriers involve the attitude of the people in terms of their willingness to share their knowledge; and context-based barriers relate to the organisational context, which includes culture, technical attributes, expertise and company regulations.

2.6.6: Knowledge Transfer via Government Websites

This research focuses on the CSFs for KT via government websites. As stated in Section 2.6.1, what appears on the government website are knowledge resources (information and services) provided to users (citizens, business entities, other government agencies and employees). Government uses information to support the management of its daily activities and long-term planning; to support public administration and services; and to make the information available to public (Gant & Gant 2001; Wimmer & Traunmuller 2007). Governments rely on a variety of IT to collect, store and distribute information to their users (Gant & Gant 2001; Wimmer & Traunmuller 2007). By using websites to transfer knowledge resources, governments can reduce service processing costs and improve e-service delivery, which will be
discussed further in Section 2.7. Moreover, as stated in Section 2.2.5, websites have become a key priority for e-government, facilitating the development of relationships from G2C, G2B, G2G and G2E, as well as promoting citizen-centric e-government (Gant & Gant 2001; Claver-Cortes, Juana-Espinosa & Tari 2006).

In this research, KT is defined as a process that includes “any exchange of knowledge between or among individuals, teams, groups or organisations” (King 2006, p.538). It is understood as a process by which knowledge is transmitted to and absorbed by users (Garavelli, Gorgoglione & Scozzi 2002). A government website is a channel through which users can access government information; knowledge resources and services; submit data; and interact with government agencies (Varavithya & Esichaikul 2007).

In situating the present research it is important to appreciate that much of the previous research on e-government has emphasised the importance of ICT, especially websites, for transforming relations between the government and its citizens, but does not focus on KM (Kolsaker & Lee-Kelly 2006a). The UN (2008) has identified a need for governments to concentrate on KM in order to face the challenges created by the knowledge economy. Garavelli, Gorgoglione and Scozzi (2002) also note that the need for research into KT is widely recognised. Kuhn and Abecker (1997) claim that the neglect of KT by organisations can increase the time spent searching for information, increase the costs associated with errors, and cause an inadequate flow of essential information, and thus can become the main KM deficit within organisations. Traunmuller and Orthofer (2007) assert that KT can support building better e-government solutions. In light of these findings, this research focuses on KT via government websites.

Many of the studies that have explored KM in relation to e-government have been focused on different perspectives. Past research has variously looked at the importance of KM in e-government (Harman & Brelade 2001; Zaharova & Zelmene 2004), KM strategies for the public sector (Misra, Harihara & Khaneja 2003; Reid, Bardzki & McNamee 2004), the technological infrastructure needed to support KM (Heck & Rogger 2004; Karacapilidis, Loukis & Dimopoulos 2005), the structure of e-government portals with a KM repository (Everisto & Kim 2005), and the effectiveness of service delivery through e-government portals with KM content (Fraser et al. 2003;
Daniel & Ward 2006). A study by Goh et al. (2008) outlined KT as part of the evaluation framework for KM implementation in government portals. The KT sub-dimensions in this context include online collaboration, information alerts, user support and resource sharing. Lockett, Kerr and Robinson (2008) have examined the key practices of KT and the factors that promote or hinder their development in higher education institutions. They identified four overarching themes: motivation and reward mechanisms; process management and evaluation; clustering and brokerage; and trust and bridge building.

The message in all this is that there are no studies that have explicitly focussed on CSFs for KT via an e-government website, in particular from the perspective of providers – as will be revisited in Section 2.10.

2.7: Associated Concept 2: Customer Service

As shown in Table 2.4, e-government offers many benefits to both governments and citizens, one such being improved customer service. As the researcher is interested in identifying how government providers use websites to provide government knowledge resources (information and services) to users, this section reviews literature in customer service. This section addresses the definition of and key concepts underlying customer service (Section 2.7.1), customer service quality (Section 2.7.2), CRM (Section 2.7.3) and e-CRM (Section 2.7.4). Finally, this section relates the concept of CRM to the context of government websites (Section 2.7.5).

2.7.1: Customer Service: Definition and Key Concepts

Customer service is defined differently in different disciplines. According to La Londe et al. (1988) (cited in Lim & Palvia 2001, p. 194), customer service can be defined in three ways. First, it can be defined as a set of functions performed within an organisational context. For example, the customer service department is responsible for all service operations. Second, customer service can be defined as performance expectations (Oliva & Bean 2008), which Tucker (1994) further describes as the provision of optimum levels of service (Oliva & Bean 2008). For example, the approval of a new company’s name can now be done in one day where previously it took five
days (MAMPU 2008b). Third, customer service can be defined as “a process for providing significant value-added benefits to the supply chain in a cost effective way”, meaning that customer service is evaluated based on the performance and outputs of different processes in the distribution of products and services. There are researchers who view customer service as being all of the activities that connect an organisation and its customers together to further a sales relationship (Tucker 1994; Oliva & Bean 2008). All of these views have one thing in common: that customer service is provided by a provider to its customers.

In relation to the public sector, governments are increasingly viewing their citizens as customers of the services they provide (UN 2008). They utilise ICT and develop their national websites to ensure they have the necessary tools to meet their citizens’ needs (UN 2008). In the present work customer service is taken as defined by Wagenheim and Reurink (1991, p. 264) who view customer service in the public sector as “an organisational perspective and process that focuses on meeting customer expectations by doing the right things right the first time”. Reddick (2009a, 2009b), on the other hand, relates customer service to the usage of ICT to make public sector organisations more citizen-centric. Fountain (2001) agrees that the public sector should be customer-focused, and has suggested that public managers should serve their customers using management concepts drawn from effective private sector service firms.

As stated previously, this research aims at understanding how government providers use websites to transfer knowledge to their users. As explained in Section 2.6.4, this study uses a KT process model to identify the CSFs for KT via government education websites. As such, this research views customer service as a process of providing government knowledge resources (information and services) to users via government websites, based on users’ needs.

Before proceeding to consider customer service quality, it is important to acknowledge two substantial themes in the customer service literature, with a focus on government: Management Responsibilities, and Understanding Customer Service Needs.

*Management Responsibilities*
One way in which a customer service program can be successful is to have the necessary resources to deliver the services (Wagenheim & Reurink 1991). Such resources include participatory management, empowerment, IS, communication systems, technology, senior management support, training and interpersonal skills (Wagenheim & Reurink 1991; Deloitte Consulting and Deloitte & Touche 2000; Kearns 2004; Schedler & Summermatter 2007; Castelnovo & Simonetta 2008; UN 2008). The participatory management approach helps to resolve customer service problems whereby, based on certain circumstances, employees are empowered to make decisions, while still required to follow organisational policies and procedures (Wagenheim & Reurink 1991). Information and communication systems and technology such as CRM applications can help to improve the delivery of services, and training can help public officers to improve their interpersonal skills (Wagenheim & Reurink 1991; UN 2008).

**Understanding Customer Service Needs**

In order to be customer oriented governments require knowledge and understanding of customer service needs (Kearns 2004; Schedler & Summermatter 2007), which can improve the usability features of government websites (Kolsaker & Lee-Kelly 2006b; Schedler & Summermatter 2007). Additionally, governments can develop means and mechanisms that benefit both public officers and customers (Wagenheim & Reurink 1991). One means of identifying customers’ needs is to determine what customers do not want, such as the desire to not have to wait in line, or that customers do not want useless information provided by discourteous or misinformed individuals (Wagenheim & Reurink 1991). The main things that customers want are to get their jobs done, have their promises kept and have their goals and needs met (Wagenheim & Reurink 1991). Moreover, customers expect the provider to respond promptly, to solve or assist in solving problems, to provide timely, reliable and consistent service and accurate information, and that staff be competent, courteous and friendly (Wagenheim & Reurink 1991). A potential measure of the performance of this indicator can be gleaned from customer feedback (Wagenheim & Reurink 1991; Deloitte Consulting and Deloitte & Touche 2000). An organisation must regularly gather information from customers to improve its services. Indeed, government agencies may provide personalised services whereby customers are treated as active partners who can
contribute to the improvement of government services in the future (Kolsaker & Lee-Kelly 2006b; Cabinet Office 2008).

2.7.2: Customer Service Quality
This section analyses the criteria used for service quality assessment of websites. Although this research is not intended to evaluate the service quality of government websites, the criteria discussed in this section may be useful, to seed ideas concerning CSFs for KT through government websites, as users will expect to receive a certain level of service quality from government through its website (Ho 2002).

Service quality can be defined as “the degree and direction of discrepancy between customers’ service perceptions and expectations” (Parasuraman & Zeithaml 2006, p. 340). By using ICT in delivering customer service, it is argued that the quality of services can be improved (UN 2008). However, Brady and Conin Jr. (2001) highlight that perceived quality is a difficult concept to grasp and quantify. They distinguish service quality in three dimensions (outcome, interaction and environmental quality) each of which has three subdimensions that define the basis of service quality perceptions. They further suggest that, in order to improve service quality perceptions, the quality received by customers must be perceived as reliable, responsive and empathetic. Zeithaml, Parasuraman and Malhorta (2002) assert that one important strategy for success is to deliver service quality through a website. They outline the criteria used by most researchers to evaluate service quality of websites: information availability and content; ease-of-use or usability; privacy or security; design style; and fulfilment or reliability. They further state that accessibility, responsiveness and personalisation are also important criteria in delivering service quality through websites.

Customer service has increasingly become an important issue for governments (Fountain 2001; Ho 2002). Governments are now replacing the term “citizen” with “customer” as a way of promoting enhanced levels of the services provided by ensuring they are more customer focused (Wagenheim & Reurink 1991; Fountain 2001; Alford 2002). Governments have taken advantage of the arrival of the Internet and the WWW to provide information and services effectively through e-government. E-government
has been shown to have the potential to shape public administration to become more customer oriented, especially with the creation of one-stop service centres (Schedler & Summermatter 2007). Ho (2002) states that with the creation of one-stop service centres or portals, governments have shifted the paradigm of public service delivery in designing websites away from the bureaucratic paradigm based on standardisation, impartiality and equity, towards an e-government paradigm focused on user customisation and personalisation. Furthermore, Wagenheim and Reurink (1991) contend that the identification of customer needs is paramount to delivering quality service. They list customer needs with regard to public services in order of importance: accurate and complete information and communication; prompt responses from government agencies; efficient resolution of problems; timely, reliable and consistent service delivery; competence of public officers; and courteous and friendly service from public officers. West (2000), on the other hand, argues that governments need to improve their website organisation and structure, improve their contact information and increase their website accessibility in order to enhance service delivery through their websites. Halaris et al. (2007) assert that although governments all around the world provide online services, users are frequently still unable to find a required service or information on the website.

The quality of e-services is defined as “the quality of the service delivered itself” (Halaris et al. 2007, p. 385). The focus here is on the services provided to users from the main organisation’s website. The services provided on the website enable users to perform self-service functions quickly and conveniently. The findings of research conducted by Hu et al. (2009) suggest that both service quality and technology characteristics become the main drivers of service quality and customers’ continuance intention of using government online services. They examined online government services within the context of electronic tax (e-tax) and found that security and convenience are the primary drivers of service quality, with security being the strongest predictor of service quality. Furthermore, they concluded that service quality is a stronger predictor of the intention to continue using e-tax, and that the determinants are assurance and reliability. In that study, the determinants of assurance were found to be perceived usefulness, convenience and security; and the determinants of reliability were identified as perceived usefulness and security. Prybutok, Zhang and Ryan (2008), on the other hand, studied the impact of leadership on IT quality, which increases the net
benefits for government. They argued that strong leadership and support, determined by strategic planning and customer or market focus, drive better utilisation of IT, which in turn determines information, system and service quality, and can thus create many benefits for government. Huang and Shyu (2008) promote a framework that denotes the government website as a medium for gaining knowledge. Their framework of 3 x 5 matrixes consists of learning dimensions (knowledge acquisition and integration, knowledge extension and refinement, and meaningful application of knowledge) and customer values (connectivity, information quality, interactivity, playfulness and learning).

In summary, some eight criteria can be recognised in the extant literature introduced above, to assess the service quality of websites, and which may have application to government websites. As presented and extensively referenced in Appendix D, these are:

1) Information and content availability, accuracy, delivery quality and connectivity
These criteria are concerned with the availability, depth, quality, reliability and accuracy of information on a website.

2) Privacy, security and policy
Privacy involves the protection of personal information, such that the personal information collected from users is not shared with other parties or misused.

3) Reliability
Reliability is based on the proper functioning and availability of the website. It is also includes the accuracy of the services claimed to be provided to users.

4) Accessibility
A website should provide a two-way interaction between the government and users by providing contact details such as mail and street addresses, e-mail addresses and telephone numbers for users to contact customer service agents, and knowledgeable online representatives should be available 24/7 or at least during a wide range of times. Websites should also be accessible to disabled users (and provide online foreign language translation services).
5) **Responsiveness and service recovery**
Responsiveness relates to the promptness of customer service agents in responding to customer e-mails. The government website must be effective at handling queries and problems. Service recovery relates to the capacity of the website to satisfy user requirements when a failure or problem occurs.

6) **Personalisation or customisation and customer service and support**
Personalisation and customisation involves the provision of services and information to users based on their individual needs and customer service/support relates to the website’s capacity to offer relevant information and suggestions to users who are not frequent visitors.

7) **Communication, announcement, marketing and users’ participation**
A website needs to provide prompt warning and notification to users of any new services or information available on the website. Government agencies need to market or publicise their information and services to the public through both print and electronic media, collaborate with the private sector to include links to government websites on their corporate websites, and adopt other marketing tools or strategies.

8) **Website features, organisation and structure**
The homepage must display a website map, topic menu and coverage. In addition, the website must be easy to use in terms of assisting users to accomplish their tasks.

2.7.3: **Customer Relationship Management**
This section discusses the concept of CRM in the context of the public sector. It does not examine the CRM concept in detail, but only in relation to providing quality services to users.

CRM is an overall management approach enabled by IT with a broad focus on maximising relationships with customers (Brown 2000; Cunningham 2002; Buttle 2004; Schellong 2005; Liu & Lee 2006; Silva & Batista 2007). CRM can be used to gather and analyse data in order to generate insights into customer behaviours and to
predict their future needs (King 2007; Silva & Batista 2007). Although CRM usage is primarily dominated by the private sector (Schellong 2005; King 2007), the concept and the applications of CRM in the public sector are important (Deloitte Consulting and Deloitte & Touche 2000).

Citizen relationship management (CiRM), the public sector version of CRM, draws from the concept of CRM as used in the private sector (Schellong & Langenberg 2007; Silva & Batista 2007; Vaxevanidou 2007) but focuses on “serving” rather than “selling” (Vaxevanidou 2007). Thus, CiRM is a managerial concept enabled through IT that focuses on citizens (Schellong 2005; Vaxevanidou 2007; Reddick 2009a, 2009b). The purpose of CiRM is to maintain and optimise relationships with citizens and to encourage citizenship (Schellong 2005). Among the goals of CiRM is: to improve citizen orientation; enhance accountability in government; change the citizen–government relationship; increase an organisation’s ability to acquire, assimilate, transform and exploit knowledge regarding citizens’ needs (Lee, Tan, & Trimi 2005; Schellong & Langenberg 2007); and to provide timely, consistent and responsive access to government information and services by whatever channels citizens prefer (Vaxevanidou 2007).

CiRM can be actioned through customer service channels such as face-to-face contact, mail, fax, phone, website, wireless applications, kiosk, e-mail and other service channels aimed at enhancing customer services (King 2007). The website, however, is one of the most common forms of public sector CiRM (Schellong & Langenberg 2007; Reddick 2009a, 2009b), to be discussed further in Section 2.7.5, which helps to improve resolution rate and customer satisfaction (King 2007). Electronic channels of CiRM, which will be explored further in the next section, are very attractive as their self-service potential offers the chance to reduce costs (Schellong 2005). Table 2.8 presents examples of countries that use CiRM, and examples of their approaches. Note: Both Australia and Malaysia are listed.
Table 2.8: Examples of Citizen Relationship Management (CiRM) Approaches

<table>
<thead>
<tr>
<th>Country</th>
<th>Approaches/Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>The government provides electronic information and services through a one-stop portal. Users are able to download forms, apply for jobs, read news, lodge complaints, give feedback, make online payments and engage in other e-government services.</td>
</tr>
<tr>
<td>Australia</td>
<td>The government’s service delivery system, Centrelink, delivers 140 products and services on behalf of 25 client agencies. Centrelink has more than 1000 services delivery points across Australia and initiates a Multi-Purpose Contact (MPC) approach that ensures high-quality service levels and minimises the possibility of unsatisfied customers by collecting information and making use of it for multiple purposes.</td>
</tr>
<tr>
<td>Singapore</td>
<td>The government has initiated different types of single-point access based on the services needed by stakeholders. The eCitizen portal provides a single access point to government information and services, which are organised and integrated into intuitive categories, and the G2B portal, the entry point for all local and international businesses to access a full suite of aggregated and integrated G2B information and services focused on “delighting customers”. The government also has developed the GeBIZ Enterprise, which coordinates the purchasing needs of the public sector procurement officers; the InfoComm Education Programme (IEP), which facilitates learning and enables public officers to appreciate and work towards the objectives of a “networked government”; and the Singapore Personal Access (SingPass) which is a nationwide personal authentication framework for e-services.</td>
</tr>
<tr>
<td>South Korea</td>
<td>The government provides Home Tax Service (HTS) through the Internet, providing 24/7 online services such as tax declaration and payments; the Integrated e-Procurement System, a single procurement window that allows all procurement-related processes to be electronic; the Integrated National Finance Management System, a system for information sharing and linkage for finance-related institutions; the Integrated Administration Information System in Local Government, which promotes the application of information systems for all administrative affairs; and the Government e-Signature and e-Seal System, securing reliability for information distribution and e-administration such as private information protection and security.</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>The government has produced a three-stage “CiRM Strategy Framework” to support CiRM projects, which involves: (1) improving the accessibility of services, (2) transforming a department-based organisation into a customer-centric one, and (3) delivering innovation in services.</td>
</tr>
<tr>
<td>United States</td>
<td>The government has established various types of single-point access based on the services needed by stakeholders. GovBenefits.gov allows citizens to locate and determine potential eligibility for government benefits and services; Federal Asset sales is for businesses to find and buy government assets; Federal Grant customers to access and apply for grants. The government also has a Government Human Resource Integration system that streamlines and automates the exchange of federal employee human resources information and e-Authentication, providing a secure infrastructure for online transactions.</td>
</tr>
</tbody>
</table>

Source: Lee, Tan and Trimi (2005); Vaxevanidou (2007) and MAMPU (2008a)

2.7.4: Electronic Customer Relationship Management

E-CRM is the use of web browsers, the Internet, and other electronic touch points such as e-mail, POS terminals, call centres and direct sales to manage customer relationships (Turban, Rainer & Potter 2004). The use of e-CRM technologies has driven customer service to become far more effective and efficient (Turban, Rainer & Potter 2004), and
to provide customers with a self-service mode to satisfy their needs (Brown 2000) and reduce costs (Brown 2000; Vaxevanidou 2007). Moreover, Internet and web technologies provide opportunities to support personal service based on an individual customer’s needs and enable interactions with organisations that meet a customer’s expectations (Pritchard & Cantor 2000).

Although many challenges are faced in delivering e-CRM, such as the need to integrate front and back offices across organisations and integrate multiple applications, and issues related to adopting the right technology, change management, meeting customer expectations and policy, e-CRM has the ability to transfer information quickly so the relationship between customer and organisation can improve (Pritchard & Cantor 2000). Indeed, e-CRM has become a requirement for any organisation to gain a competitive advantage and to survive (Turban, Rainer & Potter 2004).

E-CRM in the public sector allows governments to effectively share information across organisational boundaries and to ensure consistent and reliable customer service, regardless of the channel (whether field offices, call centres, regular mail or the Internet) (Deloitte Consulting and Deloitte & Touche 2000). In addition, e-CRM permits service staff members to access consistent and reliable records of customer data and avoid the time-consuming need to retrieve separate files (Deloitte Consulting and Deloitte & Touche 2000).

2.7.5: Customer Relationship Management via Government Websites

Reference to Table 2.3 outlining the stages of e-government development and maturity discussed in Section 2.2.4, confirms that in the e-government context CRM applications would appear at Stage 3 (Transactional). Jupp (2003) mentions that governments that are adopting CRM principles early in their e-government initiatives improve at a much faster pace. She states that websites are becoming far more common but that their true potential continues to be unrealised because of a lack of cross-agency cooperation. Instead of delivering more services online, the electronic channel is being used merely to receive information (Jupp 2003; Choudrie, Ghinea & Weerakkody 2004).
In order to overcome this problem, some governments have created a single government website that functions as a gateway, to integrate all government agency websites, organised around the agency rather than around the needs of the customer (Schubert & Hausler 2001; Jupp 2003).

With a CRM approach, government websites can become more accessible, secure, interactive and user oriented (Jupp 2003; Choudrie, Ghinea & Weerakkody 2004). Indeed, Davison, Wagner and Ma (2005) state that CRM in e-government encourages digital loyalty, refering to the preference of some citizens for using digital services over other forms. As mentioned previously in Section 2.7.3, among the goals of CRM is: to improve citizen orientation; enhance government accountability; transform the citizen–government relationship; and increase an organisation’s ability to acquire, assimilate, transform and exploit information and knowledge regarding its citizens’ needs (Lee, Tan & Trimi 2005; Schellong & Langenberg 2007) in order to satisfy customers. In the context of CRM, factors that might affect customer satisfaction include the quality of content and the quality of services (Joo & Sohn 2008). As such, improving the use of CRM through government websites may lead to enhanced KT to website users.

2.8: Associated Concept 3: Web-Based Self-Service

Web services are predicted by some to become the key technology delivered through the web (Yu et al. 2008). Different types of organisations have made use of ICT to move their operations to the web to provide services to their users. This section discusses the definition of and key concepts underlying WSS (Section 2.8.1), the value added by using WSS (Section 2.8.2), and the challenges and factors related to achieving WSS success (Section 2.8.3). The section concludes with a review of WSS via government websites (Section 2.8.4).

2.8.1: Web-based Self-Service: Definition and Key Concepts

A website is a powerful channel for the delivery of customer service (Piccoli et al. 2004). Quelch and Klein (1996), for example, state that an organisation’s website is a channel for bidirectional information transfer, transacting and customer service. Picolli et al. (2004, p. 424) argue that the website can be considered a network-based customer
service system (NCSS), specifically “a network-based computerised information system that delivers service to a customer either directly (e.g., via a browser, PDA, or cell phone) or indirectly (e.g., via a service representative or agent accessing the system)”. Cooper, Lichtenstein and Smith (2006) state that WSS is a key type of NCSS, and Negash, Ryan and Igbaria (2003) argue that WSS can provide customers with access to an organisation’s support knowledge directly through the Internet.

Drawing on the work of Cooper et al. (2006), for the purposes of this literature review, WSS is defined as a type of NCSS that focuses on enabling access to (government) services via a complex information system accessed through a Web interface, and complemented by a customer contact centre and integrated with a multi-channel service strategy.

2.8.2: Web-based Self-Service Value Added

WSS and other self-service technologies have been created to empower users to independently perform the service process (Heinonen 2004; Cooper, Lichtenstein & Smith 2006; Yu et al. 2008). They constitute a platform for users to communicate and access information and services using web interfaces and applications (Cooper, Lichtenstein & Smith 2006; Reddick 2009a, 2009b). Furthermore, WSS can increase the effectiveness of customer support provided by an organisation (Davenport & Klahr 1998; Reddick 2009a, 2009b). Yu et al. (2008) also assert that WSS can improve the quality of answers given to users and can achieve robust service composition in outsourcing services. For the public sector, WSS has the capacity to not only increase customer service (Kim & Lee 2004; Xing et al. 2008), but it can also establish external collaboration, civic engagement and networking (Kim & Lee 2004). Moreover, it can extend publicity and strengthen information resource sharing and collaboration (Xing et al. 2008).

2.8.3: Challenges and Factors Affecting Web-based Self-Service Success

Although WSS brings benefits to both providers and users, the provision of such facilities is no easy task. Garofalakis et al. (2004) have noted that although WSS can benefit users by providing services from a distance, the situation becomes complicated
when seeking to match users’ needs with the wealth of information in repositories. When using WSS, users expect websites to function properly and to provide them with the services they need (Tolbert & Mossberger 2006). Yu et al. (2008) claim that one major challenge of WSS is interoperability, that is the ability of various systems and organisations to work together to provide services. Taking the e-government perspective, interoperability can be a challenge in terms of the exchange of data due to different specifications of formats or types of categorisations. Yu et al. (2008) further state that interoperability impacts the quality of the website, website service management and security and privacy. Quality here relates to the quality standards that a provider must follow during service delivery; web service management entails a set of management mechanisms used to improve the service quality, such as control and monitoring management; and during service delivery the provider needs to consider security and privacy, especially when dealing with the exchange of personal information online. Similarly, Cullen (2008) states that the success in using web services requires an understanding of many issues, particularly internet security and privacy and the usage of online forms. Despite the challenges outlined above, WSS constitutes one of the key channels for users to access government information and services (Reddick 2009a, 2009b), as will be discussed further in the following section.

In a body of literature, Cooper, Lichtenstein & Smith (2005, 2006, 2007a, 2007b) have reported success factors for achieving KT in WSS websites for customers achieving pre- and post-sales support in the IT industry. Twenty-seven (27) factors have been identified, classified in a hierarchy built upon six overarching CSFs:

- **Organisational Commitment and Readiness** – “The organisation must manage the policies, processes and cultural issues which will affect its ability and willingness to embrace WSS”. In order to transfer knowledge successfully via its website, an organisation needs to educate and assist its users; market and promote the information and services available on its website; continually evaluate its service performance, especially with reference to users’ feedback; and integrate vertically and horizontally across the organisation to improve services (Deloitte Consulting and Deloitte & Touche 2000; Cooper, Lichtenstein & Smith 2006). Users also need to have the required knowledge or know-how to use the WSS (Cooper, Lichtenstein & Smith 2006). Moreover, users must have adequate IT infrastructure and access to the Internet (Cooper,

- **Management for Strategic and Operational Benefits** – “The WSS strategy must assist the organisation in attaining its strategic and operational objectives”. This high level success factor expresses an intention that a WSS strategy, in a commercial setting (such as the IT Industry studied by Cooper, Lichtenstein & Smith (2006)), must deliver benefits aligned to the organisation’s objectives. In literature related to the consideration of WSS success, this factor has not been explicitly highlighted by other authors. It is interesting to note that the finer grained CSFs identified in the work of Cooper, Lichtenstein & Smith (2005, 2006, 2007a, 2007b) grouped under this CSF, are almost all also associated with the Experience Management CSF (see below). The distinctive fine-grained factor, associated uniquely with Management for Strategic and Operational Benefits is Cost Effectiveness, defined in essentially accounting terms as – “The cost equation for providing/using WSS must be better, or at least not worse, than providing/using non-WSS”.

- **Knowledge Management Capabilities and Processes** – “The organisation must practice the principles of knowledge management and implement associated knowledge management processes, to maximise the benefits received from the WSS strategy”. KM is an important aspect of WSS to ensure that knowledge flows efficiently to users (Goh et al. 2008). WSS should be able to manage enquiries, problems, and validate, store and retrieve the requests of users (Cooper, Lichtenstein & Smith 2006).

- **IT Infrastructure Capability** – “The organisation must have an adequate IT infrastructure in place, to enable it to participate in WSS”. The organisation must have an ICT infrastructure that supports connectivity (a robust broadband network), appropriate policies, capacity development (especially human resources), relevant content (Castelnovo & Simonetta 2008; UN 2008) and senior management support, and must provide training for employees to increase their productivity, and encourage staff to share their knowledge and to use the new system (Cooper, Lichtenstein & Smith 2006).

- **Experience Management** – “The WSS should manage the stakeholder’s experience, both at the corporate and end-user level. The stakeholder experience
will directly affect satisfaction levels and therefore ongoing use of the WSS”. Organisations must provide quality online services that meet users’ requirements so that users have a positive experience when engaging with their websites (Cooper, Lichtenstein & Smith 2006). Online service quality includes the speed of the website, the effectiveness of the search engine and the ease-of-use of the website (Yen, Hu & Wang 2005, 2007; Cooper, Lichtenstein & Smith 2006). The organisation also needs to be concerned about the security and privacy of the users when using its website (Cooper, Lichtenstein & Smith 2006; Al-Mashari 2007).

- **Content** – “The WSS must contain useful, accurate and up-to-date content in order to resolve the end-user’s support issue or knowledge requirement”. Information on a website must continually be updated (Cheung 1998; Lee et al. 2002; Garofalakis et al. 2004). Guidelines and procedures are required to ensure consistent layout throughout the website for easy information retrieval (Garofalakis et al. 2004; Yen, Hu & Wang 2005). Both the technical and management teams in an organisation need to work together to formulate correct, easy, quality and understandable terms for easy and fast searching (Garofalakis et al. 2004; Yen, Hu & Wang 2005, 2007; Cooper, Lichtenstein & Smith 2006).

**2.8.4: Web-based Self-Service via Government Websites**

In the context of e-government, a one-stop government portal serves as a WSS system for users to access government information and services (Schellong & Langenberg 2007; Goh et al. 2008; Reddick 2009a, 2009b). By providing WSS to users, government is seeking to improve its relationship with users (Schellong 2005). It is also enhancing customer service while reducing costs and improving the effectiveness of government operations (Wagenheim & Reurink 1991; Brown 2007; Goh et al. 2008). Through WSS, users can request government services from a distance, such as property registrations; utility bill payments; fines and fees payment; and business licence applications (Brown 2007).
It should be noted in particular, however, that to date there are no studies reported that explicitly consider success factors for achieving successful WSS with a focus on KT, via Government websites (see Section 2.10).

2.9: Conceptual Framework – A Proposed Grouping of Concepts Relevant To Successful Knowledge Transfer via Websites

Across the areas covered in the literature review to this point, there has been a plethora of concepts, expressed as enablers, barriers, issues, features, evaluation criteria, etc, drawn from the discipline areas of e-government, KM, customer service and WSS. Indeed some of the literature cited actually reports CSFs in various contexts (e.g. Cooper, Lichtenstein and Smith (2006) report CSF for KT via WSS systems in the IT industry).

In order to provide a synthesis that might facilitate linking results obtained in the present research to this literature, this section proposes an initial consolidation of possible concepts relevant to successful KT via government websites into six groupings, supported by reference to a selection of the literature highlighted in the areas of e-government, KM, customer service and WSS that have been introduced above. This grouping is structured in part around various stakeholder groups, but the concepts highlighted reflect elements of the overarching CSFs proposed by Cooper, Lichtenstein & Smith (2005, 2006, 2007a, 2007b). Specifically, the first group “Management” echoes the themes presented in Management for Strategies and Operational Benefits; the second group “Website Users” is related to Experience Management; and the third “Developer Employees” is related to Organisational Commitment and Readiness. Of the remaining three, “Content/Presentation” reflects elements of Content; “Technology” is related to IT Infrastructure Capability; and “Organisational Culture” includes some of the elements of Knowledge Management Capabilities and Processes.

The proposed groupings are shown schematically in Figure 2.3. These groupings have been partially justified by reference to sections in this chapter, and keywords in those sections that are relevant to the definition of the proposed grouping (see Table 2.9). To build this synthesis, a manual scan of this chapter for related keyword as indicated in
literature review which are strongly linked to these groupings include:
2.2.4: Stages of e-Government Development and Maturity; 2.2.6: Challenges to e-Government; 2.3.2: Government Websites – Features; 2.6.2 Knowledge Management Processes; 2.6.5: Barriers to KT; 2.7.1: Customer Service: Definition and Key Concepts; 2.7.2: Customer Service Quality; and 2.8.3: Challenges and Factors Affecting WSS Success (see Table 2.9).

The first grouping recognises that in a research undertaking that seeks provider perspectives, a number of factors connected to the roles and responsibilities of management may be expected (summarised as management’s requirement to demonstrate leadership and top management support of development initiatives in Figure 2.3).

Two groupings are proposed that recognise that a number of factors concerning the two broad stakeholder groups (website users and website developers) may be expected (summarised in Figure 2.3 as: Site User: Understanding, about the user community, knowledge needs, level of ICT literacy, need for training and education, perceptions of usability, need to have website awareness and to receive update notifications, and need for reinforcing positive experiences – both initial and ongoing; and Development Employee: Understanding, and establishing the required employee roles and competencies).

Two groups are proposed to capture factors directly related to the objects involved in the transfer (the content and the technology). Regarding content, factors that might be expected relate to understanding and having the capability to deliver required knowledge content and appropriate knowledge presentation (see Figure 2.3). Regarding technology, factors that might be expected relate to issues such as understanding the required ICT Infrastructure, interactive platform functionality, search engine functionality, and security requirements (see Figure 2.3).

Finally, it has been observed in the literature review that there are a number of contributions related to what might be termed organisational culture issues (summarised in Figure 2.3 as establishing, at the organisational level (both developer
and website user), a positive user attitude to the technology and change management support processes).

It must be noted that this synthesis is not claimed to be complete – only that it might provide a starting point for the alignment of results obtained in the subsequent research to the wide range of literature reported in this literature review. In the light of the collected data it will be revisited as the results are reported and discussed.
Figure 2.3: Conceptual Framework - A Proposed Grouping of Factors Relevant to KT via Government Websites

Extant Literatures:
Knowledge Management; Customer Relationship Management; Web-based Self Service Systems

Potential Groupings and Associated Concepts

1: Management
Appreciating management’s requirement to demonstrate:
- Leadership
- Top management support of development initiatives

2: Site User
Understanding, for the user community:
- Users’ knowledge needs
- Users’ level of ICT literacy
- User’s need for training and education
- User’s perceptions of usability
- User’s need to have website awareness and to receive update notifications
- Users’ need for reinforcing positive experiences – both initial and ongoing

3: Development Employee
Understanding, and establishing as a developer,
- Required employee roles and competencies

4: Content/Presentation
Understanding and having the capability to deliver:
- Required knowledge content
- Appropriate knowledge presentation

5: Technology
Appreciating the required:
- ICT Infrastructure
- Interactive platform functionality
- Search engine functionality
- Security requirements

6: Organisational Culture
Establishing, at the organisational level (both developer and site user):
- Positive user attitude to the technology
- Change management support processes

Chapter 2
Table 2.9: Conceptual Framework – Mapping to Literature reviewed in Chapter 2 (this chapter)

<table>
<thead>
<tr>
<th>Conceptual Framework – Grouping: Concept</th>
<th>Literature Review</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1: Management:</strong> Appreciating management’s requirement to demonstrate:</td>
<td><strong>Relevant Chapter Sections: Keywords (Associated Discipline)</strong></td>
</tr>
<tr>
<td>• Leadership</td>
<td>2.2.6: Challenges – Readiness of Leadership (e-Govt)</td>
</tr>
<tr>
<td>• Top management support of development initiatives</td>
<td>2.6.2: KM Processes – Leadership, Top Management Support (KM)</td>
</tr>
<tr>
<td></td>
<td>2.7.1: Customer Service – Management Responsibilities</td>
</tr>
<tr>
<td></td>
<td>2.7.2: Customer Service Quality – Strong Leadership and Support (CS)</td>
</tr>
<tr>
<td></td>
<td>2.8.3: WSS Success – Management for Strategic and Operational Benefits (WSS)</td>
</tr>
<tr>
<td><strong>2: Site User:</strong> Understanding, for the user community:</td>
<td>2.2.6: Challenges – Customer Driven Objectives (e-Govt)</td>
</tr>
<tr>
<td>• Users’ knowledge needs</td>
<td>2.2.6: Challenges – User Levels of ICT Knowledge (e-Govt)</td>
</tr>
<tr>
<td>• Users’ level of ICT literacy</td>
<td>2.2.6: Challenges – Educate Users about e-Govt (e-Govt)</td>
</tr>
<tr>
<td>• User’s need for training and education</td>
<td>2.3.2: Features – System Quality, Ease of Use, Usability (e-Govt)</td>
</tr>
<tr>
<td>• User’s perceptions of usability</td>
<td>2.3.2: Features – Functionality, Responsiveness, Timely Information (e-Govt)</td>
</tr>
<tr>
<td>• User’s need to have website awareness and to receive update notifications</td>
<td>2.6.5: Barriers to KT – Ability of Recipient to absorb Knowledge/Receiver-based Barriers (KM)</td>
</tr>
<tr>
<td>• Users’ need for reinforcing positive experiences – both initial and ongoing</td>
<td>2.7.2: Customer Service Quality – Ease of Use (CS)</td>
</tr>
<tr>
<td></td>
<td>2.7.2: Customer Service Quality – Personalisation (CS)</td>
</tr>
<tr>
<td></td>
<td>2.7.2: Customer Service Quality – Accessibility (CS)</td>
</tr>
<tr>
<td></td>
<td>2.8.3: WSS Success - Experience Management (WSS)</td>
</tr>
<tr>
<td><strong>3: Development Employee:</strong> Understanding, and establishing as a developer,</td>
<td>2.2.6: Challenges – Readiness of Human Infrastructure (e-Govt)</td>
</tr>
<tr>
<td>• Required employee roles and competencies</td>
<td>2.8.3: WSS Success - Experience Management (WSS)</td>
</tr>
<tr>
<td><strong>4: Content/Presentation:</strong> Understanding and having the capability to deliver:</td>
<td>2.2.4: e-Govt Stages – Content Availability (e-Govt)</td>
</tr>
<tr>
<td>• Required knowledge content</td>
<td>2.2.6: Challenges – Data Quality (e-Govt)</td>
</tr>
<tr>
<td>• Appropriate knowledge presentation</td>
<td>2.3.2: Features – Information Quality (e-Govt)</td>
</tr>
<tr>
<td></td>
<td>2.3.2: Features – Usability – Consistency of presentation/colour/design (e-Govt)</td>
</tr>
<tr>
<td></td>
<td>2.6.5: Barriers to KT – Reliability of Knowledge Source/Knowledge-based Barriers (KM)</td>
</tr>
<tr>
<td></td>
<td>2.7.1: Customer Service – Understanding Customer Service Needs</td>
</tr>
<tr>
<td></td>
<td>2.7.2: Customer Service Quality – Information Availability and Content (CS)</td>
</tr>
<tr>
<td></td>
<td>2.8.3: WSS Success – Knowledge Management Capabilities and Processes (WSS)</td>
</tr>
<tr>
<td></td>
<td>2.8.3: WSS Success – Content (WSS)</td>
</tr>
<tr>
<td><strong>5: Technology:</strong> Appreciating the required:</td>
<td>2.2.4: e-Govt Stages – Security, Confidentiality and Associated Technical Issues (e-Govt)</td>
</tr>
<tr>
<td>• ICT Infrastructure</td>
<td></td>
</tr>
</tbody>
</table>
2.10: Key Gaps in the Literature Addressed By This Research

Before closing this review, time is taken to note the key literature gaps identified, which serve as part of the motivation for this thesis (see Section 1.4).

In summary, three gaps have been identified:

1. Whilst there have been many studies of CSFs in various contexts, no studies to date have focussed explicitly on CSFs for facilitating KT via government education websites. In this regard, some research has explored CSFs with a limited focus such as integration (Lam 2005) or change management (Papantoniou et al. 2001). Other studies have looked at CSFs for e-government implementation (Pardo & Scholl 2002; Traumuller & Wimmer 2003; Chircu & Lee 2005; Gil-Garcia & Pardo 2005; Ghapanchi, Albadvi & Zarei 2008),
citizens’ perspectives about e-government benefits and issues (Zhang & Hsieh 2010), citizens’ perspectives about CSFs for tax websites (Terzis & Economides 2007), CSFs for technology adoption in e-government (Irani et al. 2005; Kamal 2006; Helbig, Gil-Garcis & Ferro 2009), CSFs for implementation of e-participation for policy making (Macintosh 2004) and CSFs for e-procurement implementation in the public sector (Vaidya, Sajeev & Callender 2006). There is also a gap in research into KT as a lens for understanding websites. Some studies have investigated the importance of KT in the public sector (Berce 2006; Millard 2006; Scholl & Carlson 2006; Staniszkis & Staniszkis 2006; Traunmuller 2006; Traunmuller, Orthofer & Gieber 2006a, 2006b; Traunmuller & Orthofer 2007) and the role of websites in KT among government officers (Gant & Gant 2001). There also have been some studies of the technology used to transfer knowledge (Klingner & Sabet 2005).

2. Although many studies have explored the perspectives of government providers there has not been any such research related to CSFs for achieving KT in the public sector. Various provider perspectives that have been explored relate to e-government development and delivery issues (Wimmer & Krenner 2001; Fraser et al. 2003; Reddick 2005; Heeks & Bailur 2007; Yang & Rho 2007; Liou 2008; Joseph 2009; Yeloglu & Sagsan 2009; Gagnon et al. 2010), challenges and opportunities (Signore, Chesi & Pallotti 2005) and the provision of web-based services information and internet-based transactions (Layne & Lee 2001; West 2004; Norris & Moon 2005; Tolbert & Mossberger 2006). Some research has looked specifically at national and local government e-services and their developmental progress (Norris & Moon, 2005; Tolbert & Mossberger 2006). Other studies have developed e-government frameworks for successful implementation (Grimsley & Meehan 2007; Ghapanchi, Albadi & Zarei 2008); interactions among citizens through e-government (West 2004; Lee et al. 2008); interoperability, privacy and security (Abie et al. 2004; Pankowska 2008); e-participation with the citizens for policy making (Macintosh 2004); technology adoption (Kamal & Themistocleous 2006); implementation of e-procurement in the government (Devadoss, Pan & Huang 2003); government capacity to administer and procure services online; political visions and claims regarding e-government transformation and service delivery; and processes and phases of e-

3. There have been a number of studies of both Australian and Malaysian e-government; however, there are no comparative studies of CSFs for KT via Malaysian and Australian government websites. Malaysian e-government studies have looked at issues such as e-government implementation (Karim & Khalid 2003; Akman et al. 2005; Abdullah et al. 2006; Grant & Chau 2006; Ismail 2006; Kaliannan et al. 2006; Othman 2006; Shah Abdullah et al. 2006; Hashim 2007; Shafie 2008), e-government benefits (Wescott 2000), evaluating progress and updates on e-government projects (Holliday 2002; West 2005; 2006), legal and infrastructure issues related to e-governance (Basu 2004), Malaysia’s experience with e-government innovations in service delivery (Siddiquee 2008) and citizens’ expectations for e-government services (Kaliannan, Abdullah & Awang 2006; Siddiquee 2008). Australian research has focused on concerns such as the supply-side issues of e-government (Geiselhart, Griffiths & FitzGerald 2003; Riquelme & Buranasantikul 2004; Gauld, Goldfinch & Horsburgh 2010), the public’s uses of and satisfaction with e-government services (Field 2002; Australian 2005; Australian Government Information Management Office (AGIMO) 2006b; Hodgkinson 2006; Shackleton, Fisher & Dawson 2006; AGIMO 2007a, 2007b; Browne 2008) and e-government strategies and achievements (Silcock 2001; Moon 2002; Teicher, Hughes & Dow 2002; Burn & Robins 2003; Clark 2003; Reffat 2003; Shackleton, Fisher & Dawson 2004; Meredyth et al. 2005; Andersen & Henriksen 2006; Australian Government 2006a, 2006b; AGIMO 2006; Imran & Gregor 2006).

As foreshadowed in Section 1.4, this research will seek to address these gaps.

2.11: Chapter Summary

The objectives that have been addressed in this chapter include:
to review and synthesise relevant existing literature related to e-government, KM, customer service, and WSS, so generating an initial understanding of some potential CSFs, or at least concepts relevant to successful KT via government websites; and in so doing

- to identify key gaps in the current literature to be addressed in this research.

In completing this review the following has been reported:

- The research has presented a review of research in the area of e-government services and e-government delivery in terms of the technologies used and the primary features of websites (Sections 2.2 and 2.3), establishing the concepts and terminologies adopted in this research to discuss the activities of providers of government operated websites at the case study organisations.

- A review has been conducted of the directions and approaches adopted by the governments of Malaysia and Australia (Sections 2.4 and 2.5) to the emergence of e-government in their countries. In so doing, a case has been made for the relevance of case studies in these two countries to building an understanding of KT via government websites.

- A review has been conducted of three associated concepts relevant to KT via e-government websites - KM, customer service and WSS (Sections 2.6, 2.7 and 2.8).

- Building upon that review, a conceptual framework has been generated of six potential groupings (management, site user, development employee, content/presentation, technology and organisational culture) and associated concepts that may be relevant to the study of CSFs for KT via e-government websites, both in this research, and possibly as a basis for the work of future researchers in this area (Section 2.9).

- In the course of this review it has been identified that, although there have been many studies of CSFs in related areas (including for example those for IT-related WSS (Cooper, Lichtenstein & Smith 2006), which took a KT focus, CSFs for e-government implementation (Gil-Garcia & Pardo 2005) and CSFs for technology adoption for e-government (Kamal 2006), none, have focussed explicitly on CSFs for facilitating KT via government websites (see Section 2.10). This research seeks to fill this literature/research gap.
The next chapter explores the selection of an appropriate methodology to support these investigations and reports key elements of the research design.
Chapter 3: Research Methodology

3.1: Introduction

In this chapter a discussion and justification of the adopted research methodology is presented. The structure of the chapter is shown in Figure 3.1.

The chapter commences with an examination of the characteristics of the research question (Section 3.2) providing a foundation for the selection of a methodology that might be deemed appropriate. At the conclusion of Section 3.2 a declaration of the adopted research methodology is presented, which is then unpacked, justified and fleshed out in the remainder of the chapter. Section 3.3 focusses on issues surrounding the selection of an appropriate underpinning research philosophy and paradigm in detail. Drawing upon these foundations, Section 3.4 examines the major candidate research approaches and associated design methods, with a rationale being presented for the chosen overarching qualitative research approach. Section 3.5 then turns to a discussion of the ethical considerations related to this research and describes the processes entailed in obtaining approval to conduct the research. Section 3.6 continues with an exposition of candidate qualitative research methods, with detailed discussion of the adopted multiple case study research method and an introduction to the case study locations chosen for study. Section 3.7 details the data collection methods utilised. The detailed research design is then discussed in Section 3.8, drawing upon Rockart’s (1979) critical success factor (CSF) method (see also Cooper 2009). Section 3.9 addresses specifically the data analysis techniques adopted followed finally by a discussion of research quality issues in Section 3.10. The chapter concludes with a brief summary in Section 3.11.
3.2: The Research Question Revisited

This section revisits and discusses the nature of the research question (and subsidiary questions) in order to provide a context for the selection of an appropriate research approach.

The primary research question, as introduced in Section 1.6, is:
How do Malaysian and Australian government providers use government education websites to transfer knowledge successfully to the users of those sites?

In order to answer the principal research question, the following four subsidiary questions are addressed:

i) Who are the key stakeholders for government education websites in Australia and Malaysia?

ii) What are the critical success factors for knowledge transfer for government education websites in Australia and Malaysia, as perceived by the website providers?

iii) How might achievement of these critical success factors be measured? (i.e. What are the feedback mechanisms for the identified critical success factors?)

iv) How might one understand the source of differences, if any are observed, between the identified critical success factors identified by the providers in both countries?

As expressed above, the primary research question is posed as a “How” question, while the subsidiary research questions are posed as “Who”, “What” and “How” questions. Questions framed in terms of “How” and “What” typically involve an exploratory study of social reality (Neuman 2006) and seek to generate descriptions of a phenomenon under study (Blaikie 2000). Questions framed in terms of “Who” do not seek quantitative answers but seek instead answers related to the roles adopted by those involved.

Holstein and Gubrium (2005) state that “How” and “What” questions in particular are usually associated with qualitative inquiry (as discussed in the following Section 3.3). Consistent with this, and as is clear from the research question (and subsidiary
questions) above, the intent of this research is not to establish a causal relationship between variables, as would be the case in explanatory research. Neither is it to produce narrative description of a situation, as entailed in descriptive research. The purpose of this research is to seek new insights into a phenomenon under study. In this regard, this research might be cast as exploratory.

Saunders, Lewis and Thornhill (2007, p. 133) advocate three major means to conduct exploratory research into social phenomena: “(1) a search of the literature, (2) interviewing experts in the subject and (3) conducting focus group interviews.” In the research undertaken all three of these data collection approaches have been applied, and the data collected has been analysed from an interpretive perspective (see the following Section 3.3). Such an approach facilitates capture of an in-depth and holistic understanding of the phenomena.

As a point of reference, Table 3.1 summarises the essential features of the research methodology. As introduced above, based upon consideration of the research question and subsidiary questions, the research type is exploratory, the paradigm is interpretive and the approach qualitative. These, and additional specific features of the methodology, as declared in Table 3.1, will now be discussed and justified in detail in the following sections of this chapter.

---

1 Note: It can be argued that all research is at its heart “exploratory”, but in this thesis the term is used to capture explicitly that the research to be undertaken seeks to collect new insights into a phenomena - insights that might inform and seed further investigation.
Table 3.1: Summary of the Research Methodology

<table>
<thead>
<tr>
<th>Research type</th>
<th>Exploratory study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research paradigm</td>
<td>Interpretive</td>
</tr>
<tr>
<td>Research approach</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Research method</td>
<td>Case study research</td>
</tr>
<tr>
<td>Case studies</td>
<td>Multiple-case studies, one in Australia and one in Malaysia. The cases explore the providers’ perspectives on CSFs for knowledge transfer (KT) via Australian and Malaysian government education websites.</td>
</tr>
<tr>
<td>Case study organisations</td>
<td>Two government agencies, one in Melbourne, Australia (referred to in this research as AUSED), and one in Putrajaya, Malaysia (referred to in this research as MASED).</td>
</tr>
<tr>
<td>Case study respondents</td>
<td>Twenty-four staff were involved in the development and management of government websites, including directors, executives and non-executives. Nine respondents are from Australia and 15 respondents are from Malaysia.</td>
</tr>
<tr>
<td>Data collection methods</td>
<td>Data is obtained by introductory workshops, interviews and focus groups, supplemented by document analysis. Introductory workshop, interview and focus group design is supported by insights gathered by extensive literature review. The specific research design is adapted from Rockart’s (1979) CSF method (see also Cooper (2009)) including introductory workshops, interviews and focus groups.</td>
</tr>
<tr>
<td>Data analysis method</td>
<td>Qualitative content analysis, employing an inductive approach.</td>
</tr>
<tr>
<td>Research quality methods</td>
<td>The criteria used to assure the quality of research outcomes include: triangulation (data source and methodological triangulation); authenticity (quotations and detailed descriptions of the case studies); reliability (use of the same procedures and questions in both case studies and rechecking of the analysis throughout the process); and replication (internal validity-recording each procedure, member checking, and rich and thick descriptions; external validity – although generalisability of the outcomes cannot be assured, cross-case analysis provides tentative support that the CSFs common to both sites might have more general applicability).</td>
</tr>
</tbody>
</table>

3.3: Research Philosophy

A research work includes a set of ideas or framework (ontology) that specifies a set of questions (epistemology) (Denzin & Lincoln 2005a). The questions are examined in specific ways (methodology) (Denzin & Lincoln 2005a) which must be conducted in an ethical way (axiology) (Saunders, Lewis & Thornhill 2007). This is termed the research philosophy (Denzin & Lincoln 2005a; Neuman 2006; Saunders, Lewis & Thornhill 2007; Creswell 2009). This research philosophy guides the design of research (Myers & Avison 2002; Neuman 2006; Creswell 2009), which includes how to collect empirical
materials bearing on the question and then how to analyse and write about those materials in an ethical way (Denzin & Lincoln 2005a; Neuman 2006; Saunders, Lewis & Thornhill 2007). An exploration of research philosophy as relevant to this research follows.

Ontology is a belief system about physical and social reality, which relates to phenomena under study (Guba & Lincoln 1994; Mason 2002; Orlikowski & Baroudi 2002). Ontological beliefs about the social and physical worlds are either objective, existing independently of humans, or subjective, existing only through human action (Orlikowski & Baroudi 2002; Saunders, Lewis & Thornhill 2007). For the present research, the phenomena under study, the transfer of knowledge via Australian and Malaysian government education websites, exist through human action. Providers offer knowledge resources based on perceived user needs and users search for such knowledge on the website when needed. As such, the approach taken in researching this phenomena is subjective, based specifically upon what might be termed a nominalist ontology – the researcher’s position is that the truth about the phenomena or reality is based on who establishes it (the researcher) with the “facts” being human created (Easterby-Smith, Thorpe & Lowe 2002).

Epistemology refers to assumptions about understanding and how it can be obtained (Guba & Lincoln 1994; Mason 2002; Myers & Avison 2002; Orlikowski & Baroudi 2002). Three distinct epistemological categories are cited for the conduct of research – positivist, critical realist and interpretive (Carroll & Swatman 2000; Easterby-Smith, Thorpe & Lowe 2002; Myers & Avison 2002). These three categories will be discussed further in Section 3.3.1. The underlying epistemology is the one that guides the research (Orlikowski & Baroudi 2002) and in this research an interpretive point of view epistemology has been adopted (see Section 3.3.1).

Methodology is the combination of techniques deemed to be appropriate for generating valid evidence (Guba & Lincoln 1994; Easterby-Smith, Thorpe & Lowe 2002; Orlikowski & Baroudi 2002), whereas methods are the individual techniques of data collection and analysis (Easterby-Smith, Thorpe & Lowe 2002; Richards & Morse 2007). This research has involved qualitative case study at two organisations, one in Australia and one in Malaysia, followed by a comparative case study analysis (see
Sections 3.4 and 3.6). The data was collected from introductory workshops, interviews and focus groups, supplemented by analysis of documents collected during the research project (see Section 3.7). The design of the process of data collection was based upon Rockart’s CSF method (Rockart 1979), including introductory workshops, interviews and focus groups (see Section 3.8). In analysing the data, qualitative content analysis was employed (see Section 3.9).

**Axiology** concerns the ethical values exercised when conducting research (Saunders, Lewis & Thornhill 2007). Abiding by certain ethical values is important throughout all stages of the research process in order to ensure the credibility of the research results (Saunders, Lewis & Thornhill 2007). This research was undertaken in accord with the RMIT guidelines for ethical research practice and was approved by the Chair of RMIT Business Human Research Ethics Sub-Committee (HREC) as Risk Category Level 2 minimal risk research. A detailed explanation of the ethical values adopted in the conduct of this research will be discussed in Section 3.5.

**3.3.1: Epistemology**

As introduced above, epistemology refers to assumptions about understanding and how it can be obtained. Three distinct epistemological categories are cited for the conduct of research - positivist, critical realist and interpretive (Carrol & Swatman 2000; Easterby-Smith, Thorpe & Lowe 2002; Myers, Avison & Myers 2002).

Positivists contend that there is a reality “out there” to be studied, captured and understood (Myers, Avison & Myers 2002; Denzin & Lincoln 2005a; Neuman 2006). They place great value on the principle of replication, whereby positivists believe that different observers looking at the same phenomena will get the same results provided they carefully specify their ideas, precisely measure the facts and follow the standards of objective research (Myers & Avison 2002; Neuman 2006). They empirically test outcomes predicted by the principles adopted, in concrete settings using very precise measures, in an attempt to increase predictive understanding of the phenomena (Myers & Avison 2002; Orlikowski & Baroudi 2002; Neuman 2006). The vast majority of positivist studies are quantitative (Neuman 2006). Positivist researchers use quantitative research techniques such as experiments and surveys, which typically adopt statistical
tools to analyse data (Neuman 2006). In the case of the present research there was no attempt to focus on hard (numeric) data. The research was not seeking to identify regularities, undertake measurement or make prediction, or to test against the data obtained. Nor was this study aimed at attempting to verify or falsify, demonstrate causality or produce propositions from which to generalise from the specific to the general (in this case a broader population of organisations). As such, a positivist perspective was not suited to this research.

Critical realism is logically opposed to positivism and relativism, yet does share the view of positivists that there is a world of events “out there” that is observable and independent of human consciousness (Denzin & Lincoln 2005a; Neuman 2006). Critical realists believe that reality is arranged in levels and that scientific work must go beyond statements of regularity to analysis of the mechanisms, processes and structures that account for the patterns that are observed (Denzin & Lincoln 2005a; Neuman 2006). There is no intent in this research to seek such deeper mechanistic understandings of observed patterns and as such, a critical realist perspective is not deemed suited to this research.

Interpretivists are concerned with answering questions that engage both the “How” and the “What” of social reality (Holstein & Gubrium 2005). They believe that human social life is qualitatively different from other things studied by science (Neuman 2006). In other words, people socially interact and respond based on what they believe to be real rather than on what is objectively real (Neuman 2006). Thus, interpretivists attempt to understand phenomena by assessing the meanings that respondents assign to them (Mason 2002; Orlikowski & Baroudi 2002; Kamal 2006; Grimsley, Meehan & Tan 2007). As stated by Neuman (2006), interpretivists tend to trust and favour qualitative data which they believe can more accurately capture the process of social reality (Neuman 2006). Furthermore, they favour a form of explanation of aspects of the social world that offers a highly detailed picture or description of a specific social setting, process or type of relationship. Interpretivists do not see replication as the ultimate test of knowledge. They emphasise a need to gain an insight into the worldview of respondents to accurately represent how the people being studied see and experience the world, and act accordingly (Myers & Avison 2002; Neuman 2006).
As introduced in Section 3.2, this research is seeking to answer “How”, “Who” and “What” questions. This research explores the transfer of knowledge via Australian and Malaysian government education websites. The researcher has attempted therefore to understand phenomena by assessing the meanings that respondents (website providers) assign to those phenomena, expressed as CSFs. As such, the epistemological position taken is characterised as interpretivist.

### 3.4: Research Approach

The approach taken to the conduct of research can be usefully characterised as quantitative, qualitative or mixed methods (Johnson, Onwuegbuzie & Turner 2007). The research approach adopted guides the research design, in planning the research, and influences the way in which data are collected. This research has used qualitative methods to explore the CSFs for KT via Australian and Malaysian government education websites from the providers’ perspectives. The reasons for choosing qualitative methods are outlined in the following.

#### 3.4.1: Qualitative, Quantitative and Mixed Method Approaches

A qualitative research approach seeks to explore and understand the meaning individuals or groups ascribe to social or human problems, and the cultural and political contexts within which they occur (Stake 1995; Gillham 2000; Ezzy 2002; Myers & Avison 2002; Neuman 2006; Richards & Morse 2007; Trauth & Jessup 2007; Creswell 2009; Salkind 2009). A quantitative research approach, on the other hand, seeks to test objective theories, emphasising measurement and an examination of causal relationships that may exist among variables (Denzin & Lincoln 2005a; Neuman 2006; Creswell 2009). Mixed methods research is a combination of both qualitative and quantitative methods (Denzin & Lincoln 2005a; Johnson, Onwuegbuzie & Turner 2007; Saunders, Lewis & Thornhill 2007; Creswell 2009).

Qualitative research study typically draws upon data sources obtained by observation, interview, analysis of documents and field notes (Tesch 1990; Myers & Avison 2002; Denzin & Lincoln 2005a; Neuman 2006; Richards & Morse 2007; Creswell 2009), recorded in many forms including text, photograph, audio, video tape and film.
(Richards & Morse 2007), so building a rich expression of the phenomenon under investigation. Further, qualitative research uses inductive approaches to analyse data, being less concerned with a need to generalise than is typically the case with quantitative methods (Saunders, Lewis & Thornhill 2007). Further, data analysis in qualitative research concentrates on direct interpretation of the individual instance, to generate new meanings about the phenomenon under study (Stake 1995).

In contrast, quantitative research involves the collection of data sources such as surveys or laboratory-based experimental research data (Myers & Avison 2002; Creswell 2009), analysed and represented in forms such as mathematical models, statistical tables and graphs (Myers & Avison 2002; Denzin & Lincoln 2005a; Neuman 2006). Quantitative research tests theories deductively, builds in protections against bias, controls for alternative explanations and enables generalisation and replication of the findings (Neuman 2006; Creswell 2009).

In justifying the present research approach it is helpful to note the observations of authors such as Kenyon (2006) and Saunders, Lewis and Thornhill (2007) who assert that qualitative research, such as that involving in-depth interviews including interviewing experts in the field and conducting focus groups can yield a rich understanding of a phenomenon under study.

In summary then, with its focus on understanding the meaning individuals and groups of website developers ascribe to their undertakings as developers of websites that seek to facilitate KT, within their work context, expressed as CSFs, the approach adopted by the present researcher is best characterised as qualitative research.

3.5: Ethical Considerations

In the context of research, the term “ethics” refers to the appropriateness of the behaviour and practices surrounding making the right decisions while engaging in research, in relation to relevant ethical issues (Saunders, Lewis & Thornhill 2007). According to Fontana and Frey (2005), the ethical issues to be considered in every research study include respondents’ informed consent, right to privacy and protection from harm. Christians (2005) states that in conducting qualitative research, four ethical
guidelines should be emphasised: informed consent; deception; privacy and confidentiality; and accuracy. To assure “accuracy” the present research employed validity and reliability procedures, as will be discussed in Section 3.10. Further, in order to accommodate the above ethical issues, this research was undertaken in accord with the RMIT guidelines for ethical research practice, with the research approach being approved by the Chair of the RMIT Business HREC as Risk Category Level 2 minimal risk research. The process of obtaining such approval is outlined below.

Permission to conduct research at a government agency in Melbourne, Australia, (referred to in this research as AUSED), was sought with assistance provided by the researcher’s senior supervisor. The senior supervisor contacted the appropriate personnel at AUSED and received permission via e-mail (see Appendix E for the e-mail). On the other hand, as the researcher is a Malaysian government officer, seeking permission to conduct research in Malaysia was undertaken by the researcher herself. In Malaysia, the researcher requested permission to conduct research at a government agency in Putrajaya, (referred to in this research as MASED), by contacting online the Economic Planning Unit, Prime Minister’s Department in Putrajaya. The researcher registered through an online system (the Online Researcher Information Database (oriDB)) and subsequently received permission via e-mail (see Appendix F for a copy of the relevant documentation).

After obtaining approval to conduct research at AUSED and MASED, the researcher completed the “Application for Ethics Approval of Research Involving Human Respondents” and received such approval from the RMIT Business HREC (see Appendix G for a copy of this approval documentation). The researcher prepared a Plain Language Statement (PLS), which also served as an invitation letter for potential respondents and provided a clear description of the research, including: the title of the research; background information on the researcher and supervisors; background to the research; the reasons why the respondents were being approached; an outline of the rights of the respondents; guarantees of privacy, protection of anonymity and data security; an outline of possible risks (if any) and benefits for respondents; the voluntary nature of participation; and the necessary contact information to make further inquiries or complaints (see Appendix H for a copy of the PLS used for this research). The researcher also obtained consent in writing from potential respondents, as required by
RMIT University for a project classified at minimal risk level 2 (see Appendix I for a copy of the consent form).

3.6: Research Method

A research method is a strategy used to answer research questions (Saunders, Lewis & Thornhill 2007; Myers 2009). Research methods widely used in information systems (IS) research include: action research; ethnographic research; grounded theory; and case study research (see for example Carroll and Swatman (2000) and Myers and Avison (2002)). The present research used case study method to study CSFs for KT via Australian and Malaysian government education websites, from the providers’ perspectives. The reasons for choosing the case study method are outlined in the following.

3.6.1: Case Study Method

It is beyond the scope of this thesis to provide a detailed treatise on each of the above listed research approaches. Instead, only sufficient detail to provide a basis for the decision taken to adopt a (multiple) case study approach, follows. Specifically:

- Action research is a method that involves collaboration between practitioners and investigators to resolve organisational issues (Saunders, Lewis & Thornhill 2007; Myers 2009). Its strengths lie in the benefits, both practical and theoretical, that can accrue from an experienced researcher working with a participating organisation. In the present case it is not clear that an organisational issue or issues exist that might be addressed by an intervention appropriate to an action research approach. It is also unclear that the organisations concerned would be amenable to the type of association with the researcher that an action research approach would require.

- Ethnographic research requires the ethnographer to spend extended periods of time conducting fieldwork and collecting data through participant observation (Myers 2009). Whilst such an approach in the present situation may have yielded a deep understanding of the context in which website development takes place, it would not facilitate specifically the explicit extraction of CSFs. Further, it is highly unlikely that the required extended periods of time coexisting in the
workplace with e-government development staff would have been acceptable to the senior government staff involved.

- Grounded theory “seeks to build systematic theoretical statements inductively from coding and analysing observational data, by developing and refining conceptual categories which are then tested and re-tested in further data collection” (Payne & Payne 2004, p. 98). Whilst some aspects of coding data inductively are employed in the present research (see Section 3.9), repeated cycles of data collection are not envisaged.

- Case study research is a method used to study a contemporary phenomenon associated with an individual or an institution in a unique and natural setting or situation in as much detail as possible (Tesch 1990; Stake 1995; Klein & Myers 1999; Gilham 2000; Irani et al. 2005; Lockett, Kerr & Robinson 2008; Iivari 2009; Salkind 2009). Such approaches are preferred when “how” or “why” questions are posed. When following a case study approach, the investigator has little (or at best very limited) control over events, and the research focuses on contemporary phenomenon within a real-life context (Yin 2009). A case study approach was recommended for this research, as now discussed.

According to Yin (2009, p. 2), there are three criteria to consider when determining whether to use the case study as a research method: “(1) “How” or “Why” questions are being posed; (2) the investigator has little control over events; and (3) the focus is on a contemporary phenomenon within a real-life context.” Action research and ethnography require investigators to participate in the event (Saunders, Lewis & Thornhill 2007; Myers 2009), whereas grounded theory is a method used specifically to develop a theory that is grounded in data and is systematically gathered and analysed (Myers 2009). Moreover, ethnography and grounded theory deliberately avoid specifying any theoretical propositions prior to data collection (Yin 2009). The case study research method, in contrast, enables a very close examination and scrutiny of the actual situation and encourages the use of several techniques to obtain the necessary information related to what is occurring (Stake 1995; Taylor et al. 2002; Salkind 2009). The present study seeks to use the KT process model developed by Szulanski (1996; 2000) as an initial guide to design the data collection and analysis processes. Since the aim of this research is to explore providers’ perspectives on CSFs for KT via
government education websites, and hence does not require the researcher to participate, the case study research method was deemed to be appropriate. As stated by Stake (1995, p. 16), “in a qualitative case study, the investigators seek greater understanding of the case. The investigators want to appreciate the uniqueness and complexity of the case, its embeddedness and interaction with its contexts.”

In view of all the above, this research adopted a case study approach.

3.6.2: Case Sites Selection

Prior to the selection of case sites, decisions regarding whether to choose a single-case or a multiple-case study, the unit of analysis, and the sampling method must be made.

A strength of the single case approach is that it allows the researcher to deal with an extensive range of evidence, captured in great detail, so providing context-rich insights. A weakness, however, is that it provides little basis for generalisation (Yin 2009). A multiple case study approach, on the other hand, is often adopted when two or more cases are sufficiently different in ways that are key to the study and therefore comparison is anticipated to support the development of deeper understandings, and possibly some degree of generalisation. A multiple-case study approach should also provide a better demonstration of a theory or set of concepts insofar as it permits replication and extension among individual cases (Eisenhardt 1989). In the present study, the research question, as posed, required investigation at multiple sites to explore the phenomena: one in Australia, and one in Malaysia. In this situation the rationale for choosing a multiple case-study method is that the results so collected will produce a stronger effect compared to a single case study (Yin 2009), and that the results will lead to better understanding and potentially better theorising about the phenomena (Stake 2005). Furthermore, multiple-case study will allow in this situation for cross-case analysis and the extension of theory (Benbasat, Goldstein & Mead 1987) (see Section 3.6.3). As such, a multi-case study was undertaken.

It is noted that Eisenhardt (1989, p.545) suggests that the ideal number of case studies lies between four and ten, however other authors (eg, Benbasat, Goldstein and Mead (1987)) have highlighted the work of IS researchers who have instead included only
two case studies in their investigations (as in the present research), including notable authors such as Markus (1981), Olson (1981), and White (1984). In such studies, as in the present investigation, a decision is taken to choose a pair of sites where it is anticipated insightful points of comparison might emerge, rather than chose to study substantially larger numbers of sites with a view to attempting to build an exhaustive case for generalisation of results. In the present studies such a two case approach has been adopted, choosing two government education websites that reside in substantially different political, technical and social contexts (Australia and Malaysia).

The unit of analysis refers to the type of unit used for measurement (Neuman 2006), and can be individuals, groups, organisations, or a specific project or decision (Benbasat, Goldstein & Mead 1987). The unit of analysis, which is closely related to the case, can be identified from the research questions (Benbasat, Goldstein & Mead 1987; Yin 2009). Since the case for this research is the providers’ perspectives on the CSFs for KT via Australian and Malaysian government education websites, the organisation (specifically, the government agency) was the appropriate unit of analysis.

Sampling involves the identification of whom to interview (Richards & Morse 2007; Saunders, Lewis & Thornhill 2007). Myers (2009) asserts that it is extremely important to interview the key informants who know the most about the topic under study. For this reason, this research used purposeful sampling to select respondents. Purposeful sampling is based on selecting those respondents who know the information required for the research (Robson 2002). Furthermore, the respondents were chosen from different levels of the organisation, that is top, middle and operational management levels, in order to gather a range of viewpoints on the research topic (Cunningham 1997). As such, directors, executives and non-executive staff who are responsible for the organisation’s website constitute the appropriate respondents for this research.

Stake (1995) states that the time and access required for fieldwork are almost always limited, and therefore recommends that researchers choose a case site that is easy to access, that is applicable to the research inquiry, and in which the potential respondents are easily identified and willing to participate. He further states that the process of selection needs to include careful consideration of the uniqueness and the context of other case sites. Stake suggests that one way to approach a case site is to approach the
organisation and discuss the research topic first. Similarly, Yin (2009) argues that the case site should be chosen based on the researcher gaining sufficient access to potential data that will most likely illuminate the research questions. In the present study, drawing on the above advice concerning case selection, the researcher conducted introductory workshops, interviews and focus groups in Melbourne, Australia (AUSED), and in Putrajaya, Malaysia (MASED). Consistent with an intent to choose a pair of sites where it is anticipated insightful points of comparison might emerge, it is important to note that the structures responsible for directing and controlling education delivery differ in Australia and Malaysia. In Australia, the Australian Government federally has a strategy of supporting each state government to implement its own e-government agenda based on users’ needs. All states respond, however, to the same national agenda. In Malaysia, the Ministry of Education (MOE) serves as a primary agency to implement key initiatives, including the smart schools project which utilises ICT to deliver teaching and learning in public schools (Karim & Khalid 2003). As such, whilst these two organisations exercise similar degrees of practical direction and control, and both represent best practice in their respective countries, their organisational structures are differently situated (Australia – at State-level, and Malaysia – at federal level). This point of comparison will be considered further in the cross-case analysis, to be reported in Chapter 6 (see in particular Section 6.6). The reasons for choosing both organisations are discussed further below.

Australia and Malaysia were chosen as the case sites because both countries have highlighted e-government as a key policy focus within government. Moreover, based on an e-government survey carried out by the United Nations (2008), in the year 2008 Australia and Malaysia utilised 67% and 60% of their government websites to deliver services to users, respectively. These figures reveal that the Australian and Malaysian governments are both actively using their websites as tools to transfer knowledge to users, so recommending both countries when seeking e-government case study sites.

AUSED and MASED are education based organisations, chosen recognising that education is a government service sector in high citizen demand (UN 2008). Further, the educational sector is particularly appropriate given its knowledge-intensive context. In addition, both the Australian and Malaysian governments have explicitly included the education sector in their e-government agenda (i.e. the Multimedia Super Corridor
(MSC) Malaysia 2007; State Government of Victoria 2010). Moreover, the researcher had ready access to education sites in both countries. As stated earlier, in Melbourne, the researcher had access to AUSED through her senior supervisor who had previously conducted research with one of the officers in the organisation. In Malaysia, as the researcher is a Malaysian government officer, the request to conduct research in Malaysia was initiated by herself. The researcher was able to access MASED via submission of an application to conduct research through the Prime Minister’s Department of Malaysia.

In summary then, this research explored the CSFs for KT via the public education websites of AUSED (http://www.education.vic.gov.au) and MASED (http://www.moe.gov.my) from the providers’ perspectives. The public education websites of these organisations were chosen because they serve as a gateway or starting point for users to obtain services from these organisations. According to the UN (2008, p. 221), public websites are important in that they serve as a gateway and starting point “toward providing government information and services to the public in an integrated, usable and easy to find manner”.

3.6.3: Comparative Case Studies

The notion of comparison in qualitative research is built upon developing understanding rather than measuring difference (Ritchie & Lewis 2003). The focus of comparative study is on identifying similarities and differences between units, in order to broaden understanding of the phenomena, as opposed to research in a single setting which focuses on a restricted range of possible social activity (Neuman 2006). Furthermore, a comparative case study approach allows an explanation to be developed for one case which can then be tested in a second case (Cunningham 1997). Comparative study findings also usually add accuracy to the conclusions, as they are being analysed and checked in the context of different social settings (Neuman 2006). Moreover, comparative research can raise new questions and stimulate theory building (Neuman 2006).

Recognising the above, in this research a comparative case study phase was included in the research design. Specifically, the identified CSFs for AUSED and MASED were
compared in order to identify similarities and differences and to explore the possible reasons for any identified differences.

Figure 3.2 represents diagramatically the resulting research method adopted for this study.

**Figure 3.2: Research Method for this Study**

### 3.7: Data Collection Methods

This section discusses the methods used to collect data at the case study sites. Yin (2009) asserts that the data from a case study may come from six sources: interviews, documents, archival records, direct observation, participant observation and physical artefacts. IS research studies over the last decade support the assertion that interviews are the most widely used means of collecting data in IS case study research.

In the present research, introductory workshops, interviews, focus groups and document analysis data collection methods were employed. Initially introductory workshops were conducted with the contact personnel from both countries. Then in-depth interviews were conducted with a range of organisational respondents, followed by focus groups to
validate and further explore candidate CSFs extracted from analysis of interview transcripts. Additional document analysis was then employed to validate insights gathered from the introductory workshop, interviews and focus groups.

The interviews and focus groups were conducted following protocols recommended by Rockart’s CSF method (1979), including the conduct of introductory workshops prior to the interviews and focus groups. Sections 3.7.1, 2 and 3 below discuss in detail the interviews, focus groups and document analysis approaches adopted for data collection.

3.7.1: Interviews

An interview can generate valuable information about someone’s lived experience and its meanings (Cunningham-Burley 1985; Gillham 2000; Denzin & Lincoln 2005; Fontana & Frey 2005; Neuman 2006). An interview can provide the best access to the interpretations that respondents have regarding actions and events (Walsham 1995; Gillham 2000), and can reach realms of reality that would otherwise remain inaccessible, such as people’s subjective experiences and attitudes (Cunningham-Burley 1985; Gillham 2000; Perakyla 2005; Neuman 2006).

The most common form of interviewing involves individual, face-to-face verbal interchange, but can also take the form of face-to-face group interchange, online methods and telephone surveys (Fontana & Frey 2005). The present research used a face-to-face interview method, as by using this method the researcher can build a close relationship with the respondents, and as a result the respondents can be more willing to share their thought freely and deeply (Myers 2009). The limitations of this method are the sometimes substantial amount of time spent on interviewing and the time involved in undertaking transcriptions and analyses (Gillham 2000). Nonetheless, a deep understanding of a phenomenon can be gained based on the overwhelming strength of the face-to-face interview and the richness of the communication that is possible with the key respondents, in various roles and situations of an organisation (Gillham 2000; Myers 2009).

Interviews can use structured, semi-structured or unstructured questions, which can be modified or replaced at any stage of the interview process (Gillham 2000; Denzin &
Lincoln 2005; Fontana & Frey 2005; Neuman 2006; Myers 2009). The present research used semi-structured questions. While questions were pre-formulated there was not blind adherence to them – as it was envisaged that new questions might emerge during the interviews (Myers 2009). A degree of consistency was maintained, however, across the interviews as the interviewer always began with a specified set of questions (Myers 2009). This method allows the respondent to build insight into any issue that arises during the interviews, as needed (Myers 2009).

The types of questions used for this research were “issue questions” and “topical questions” (Stake 1995). Issue questions are questions regarding the case (which in this study is the CSFs) while topical questions are questions aimed at gathering the information needed to describe the case, which includes the profile of the respondent, the organisation’s background and details of the website. The questions are directed towards answering the research questions posed in Section 3.2 (see Appendix J for a list of the interview questions used in this research).

As stated previously, this research used purposeful sampling to select the respondents. Prior to inviting the respondents, the researcher discussed the study with the contact officials from each organisation during introductory workshops, outlining Rockart’s CSF method, and asked these contact people to introduce the researcher to respondents. The contact officials from AUSED and MASED recommended nine and 15 respondents, respectively. The researcher then e-mailed the respondents and followed up with phone calls to arrange the interview times, after which all 24 respondents agreed to participate. The job descriptions of the respondents from AUSED and MASED will be discussed in Sections 5.3.1 and 4.3.1, respectively. The researcher then sent the invitation letter to the respondents, including the PLS (Appendix H), the interview questions (Appendix J), the research proposal (Appendix K), and a pre-interview preparation schedule designed to brief respondents on the underlying KT model and so facilitate them preparing for the interview (Appendix L).

Before the interviews commenced, the researcher requested permission from the respondents to audio-record interviews, which they gave by signing a consent form (Appendix I). All of the nine respondents from AUSED agreed to have the interviews audio-recorded; however, from MASED only two respondents gave their permission.
For the remaining 13 respondents from MASED, the researcher took detailed notes during the interview, rewrote and translated the notes into English, and sent the notes to the respondents to confirm their accuracy (see Appendix M for a sample copy of the notes taken during the interviews, and Appendix N for a sample copy of the notes sent to the respondents for clarification.)

Interviews typically lasted 45–60 minutes. At AUSED, all of the nine interviews were conducted in English, while at MASED the interviews were conducted in Malay. This was to allow the respondents to freely express their opinions (Thanasankit & Corbitt 2002). (Note: The official national language in Malaysia is Malay.) To address the possibility that interviewer/researcher bias might adversely affect both data collection and analysis, research quality protocols, specifically protocols related to triangulation, authenticity, reliability and replication (Trauth & Jessup 2007) were applied (see Section 2.10). Of particular note, the schedule of interview questions was carefully prepared, and checked prior to the commencement of interviews by the researcher’s senior supervisor, to assure that questions were not biased by the inclusion of leading expressions.

The nine audio-recorded interviews from AUSED were transcribed and the transcripts sent to the respondents for confirmation. The two audio-recorded interviews from MASED were transcribed into Malay. The Malay transcripts were then translated into English by the researcher and sent to the respondents to confirm their accuracy. In order to ensure no meaning was lost in the translation, a second Malay researcher was employed to assist with the translation (Thanasankit & Corbitt 2002). This second researcher was a Malay lecturer at one of the public universities in Malaysia for more than 13 years, where she taught English. She has a bachelor’s degree from the US, a master’s degree from Malaysia in English, and she is currently pursuing her doctoral degree in Australia. As such, she speaks and writes both Malay and English to professional standard. She listened to the recordings and transcribed the interviews into Malay. Then she translated the Malay transcripts into English. The two sets of translations were compared and the researchers jointly negotiated the most accurate translation from Malay into English. One example each of transcription and translation is included as Appendix O and Appendix P, respectively.
Finally, the researcher analysed all 24 transcripts using qualitative content analysis (as will be discussed in detail in Section 3.9). The results from the interviews at MASED and AUSED will be presented in detail in Chapters 4 and 5, respectively.

The results from the interviews were validated in the subsequent focus group, as explained in Section 3.7.2 below.

3.7.2: Focus Groups

A focus group is a collective conversation or group interview (Gilham 2000; Kamberlis & Dimitriadis 2005; Neuman 2006; Salkind 2009) and is promoted as a method of collecting data which can strengthen both the evidence and the interpretation of findings (Trauth & Jessup 2007).

A focus group is a qualitative data-gathering technique that relies on the systematic questioning of several individuals simultaneously in a formal or informal setting (Fontana & Frey 2005). The group can be small or large, directed or non-directed (Kamberlis & Dimitriadis 2005). A focus group will normally be led by a moderator, who directs the inquiry and the interaction among respondents in a more or less structured manner, depending on the research purposes (Fontana & Frey 2005; Neuman 2006; Salkind 2009).

The purpose of a focus group may be exploratory, or an extension of an exploratory method; to encourage respondents to offer descriptions of specific events or experiences shared by members of the group; for triangulation purposes in conjunction with other data-gathering techniques; in combination with other methods for the purposes of ensuring data completeness and/or confirmation; for the sole basis of gathering data; or used in association with other techniques (Fontana & Frey 2005; Al-Qirim 2006; Mutula & Brakel 2007; Lambert & Loiselle 2008). In this research, the focus group method served in part as a triangulation strategy, with the objective of confirming the interpretations arising from analysis of data collected via the interviews. It served in particular as a means for participants to see CSFs they had not personally identified, and so to discuss and either endorse or challenge them. Further, during each focus group, cross-organisational comparisons were explored. Specifically, each
organisational focus group discussed points of similarity and difference between the CSFs identified at the two sites, so generating opinions and insights concerning possible sources of similarity and difference (Malaysia cf. Australia).

Conducting focus group research does pose problems not found in interviews: for example, the moderator must keep one person or small coalition of persons from dominating the group; the moderator must encourage all respondents to participate, especially inactive respondents; the moderator must obtain responses from the entire group to ensure the fullest coverage of the topic; and the moderator must ensure that the discussion remains within the script of questions and must be sensitive to the evolving patterns of group interaction (Fontana & Frey 2005; Al-Qirim 2006; Richards & Morse 2007). Furthermore, respondents may or may not disclose certain information (Lambert & Loiselle 2008). It should also be recognised that the amount of direction provided by the moderator may influence the type and quality of the data obtained from the group (Al-Qirim 2006). Therefore, a moderator must possess the necessary skills and experience to conduct the focus group (Richards & Morse 2007). In this regard, for this study the researcher’s senior supervisor was the moderator for the focus group at AUSED, while a senior manager from a Malaysian government agency was employed as the moderator for the focus group at MASED.

Nevertheless, the focus group has some advantages over individual interviews, namely: they are relatively inexpensive to conduct; they often produce rich data that are cumulative and elaborative; they can be stimulating for respondents and aid in recall; and the format is flexible (Fontana & Frey 2005; Al-Qirim 2006; Salkind 2009). Furthermore, a focus group enables the investigator to elicit opinions and beliefs held by members of a group (Myers 2009).

The settings for a focus group can vary, ranging from brainstorming sessions with little or no structure or direction that are usually conducted in more relaxed settings, to more formal and directive interactions in controlled settings (Fontana & Frey 2005). For this research, since the focus group method was used to validate the results drawn from the interviews, the researcher prepared an agenda for the moderator to follow in order to conduct the focus group. (See Appendix Q and Appendix R for the focus groups’ agendas at AUSED and MASED, respectively.)
Richards and Morse (2007) suggest that a focus group should normally consist of about 6–10 respondents and the session should last from 1½ to 2 hours. Following Rockart’s CSF approach, the respondents of the focus group for this research were the same individuals who participated in the interviews. The researcher contacted the relevant departmental officials to arrange a time for each focus group. Six respondents at AUSED and four respondents at MASED participated in the sessions. Due to work commitments the remainder of the respondents were unable to join the sessions. (See Section 6.5.3 and Section 6.5.1 for the respondents at the focus group at AUSED and MASED, respectively.) The duration of both focus groups was approximately 60-90 minutes and both sessions were audio-recorded. The focus group at AUSED was conducted in English while the session at MASED was conducted in Malay. The audio-recorded focus group at AUSED was then transcribed and the transcript was sent to the respondents for confirmation. The audio-recorded focus group at MASED was transcribed into Malay, and the Malay transcript was translated into English by the researcher and sent to the respondents to confirm its accuracy. In order to ensure the accuracy of meaning in the translation, a second Malay researcher was employed to assist with translation (Thanasankit & Corbitt 2002) - the same person employed during the translation stage for the interviews. The validation process as took place for the interviews was also applied to the focus group transcription and translation, with the most accurate translation from Malay into English being negotiated. (See Appendix S and Appendix T for an excerpt of the Malay transcription and the English translation, respectively, for the focus group at MASED.)

The researcher then analysed both of the focus group transcripts using qualitative content analysis, as will be described in detail in Section 3.9. The results from the focus groups at AUSED and MASED will be presented in detail in Chapter 6.

3.7.3: Document Analysis

In addition to the interviews and focus groups, this research also involved the collection of data from documents (hard and soft). As Mason (2002) states, data accessed from a range of different sources can enhance understanding of the case organisation in terms of its structure and policies. Yin (2009) also asserts that for case study research the
most significant contribution of documents is to support and supplement evidence drawn from other sources. Documents can include written materials, pictures, diagrams, photographs, videos, television programs, interactive websites and software (Myers 2009). This research accessed primarily policy documents, circulars and articles in newspapers, to assist the researcher to better understand and interpret results gathered from interviews and focus groups. In large part, the researcher was able to access these document types through the public websites of the case study organisations. Also, in order for the researcher to build understanding of the organisation, the researcher retrieved information regarding the organisation’s objectives, missions, visions, organisational chart, knowledge resources (information and services) available from the organisation’s public website.

3.8: Rockart’s Critical Success Factor Method

In the management literature, the concept of “success factor” was first proposed by Daniel (1961). It was Rockart (1979), however, who first developed a methodology to elicit CSFs. Rockart (1979 p.85) defines CSFs as “the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation”.

In early studies that adopted the CSF method, the approach was typically used to identify factors important to defining managerial information needs, and ultimately to designing IS to meet these needs (Daniel 1961; Rockart 1979). The right information can help an organisation to set objectives, shape alternative strategies, make decisions, and measure results against planned goals (Daniel 1961; Rockart 1979; Lee et al. 2002; Salmeron & Herrero 2005; Eschenfelder & Miller 2007). This can be achieved by identifying the information needs, the form (either hard or soft) in which the information is being delivered, and to whom the information is being sent at every level of the organisation.

Rockart’s original CSF method involves various forms of data collection, including three main steps: an introductory workshop, one-on-one interviews, and a focus group. In an introductory workshop the respondents of the research are briefed on the purpose of the study. The session continues with a discussion of the objectives, mission and
vision of the selected organisation, in order to better understand the organisation’s nature and structure.

Following the workshop, interviews with the respondents are conducted. The respondents are asked to list what they see as the critical success factors from their perspective and to rank them in priority order. Finally, a focus group is conducted, involving the same respondents as engaged in the interviews. In this session, the list of the CSFs drawn from the interviews is tabled. Respondents then share each other’s experiences. Figure 3.3 outlines the steps involved in the original CSF method.

The rationale for having various forms of interaction with the respondents is to help the manager to identify the factors on which management should focus attention. It is also to ensure that those factors will receive careful and continuous managerial scrutiny. Furthermore, the CSF method can be used to help managers develop performance measures for the CSFs and to seek reports on each of the measures. Table 3.2 summarises the benefits of the CSF method.
Table 3.2: Summary of Benefits of the CSF Method

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Example Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focuses management attention on the critical areas of business.</td>
<td>Rockart (1979)</td>
</tr>
<tr>
<td>Requires management to articulate CSFs, thereby honing their understanding of a business’s priority areas.</td>
<td>Boynton &amp; Zmud (1984)</td>
</tr>
<tr>
<td>The method is understandable, relevant and useful to managers thus increasing their commitment to and active involvement in CSF research.</td>
<td>Boynton &amp; Zmud (1984)</td>
</tr>
<tr>
<td>CSFs are derived from the goals of management and are thus linked to business strategy, facilitating alignment between IS and these objectives.</td>
<td>Henderson, Rockart &amp; Sifonis (1987)</td>
</tr>
<tr>
<td>CSFs provide a method for establishing guidelines for monitoring and controlling organisational activities.</td>
<td>Ferguson &amp; Dickinson (1982)</td>
</tr>
<tr>
<td>Provides a linkage with other methods used to develop corporate strategy, whereby stakeholders establish priorities or focus on critical opportunities to achieve strategic advantage.</td>
<td>Munro &amp; Wheeler (1980)</td>
</tr>
<tr>
<td>Independent studies have yielded comparable results, indicating that potential interviewer/manager biases can be overcome.</td>
<td>Boynton &amp; Zmud (1984)</td>
</tr>
<tr>
<td>There are numerous adaptations of the method to suit the requirements of independent studies.</td>
<td>Premkumar &amp; King (1994)</td>
</tr>
<tr>
<td></td>
<td>Peffers, Gengler &amp; Tuunanen (2003)</td>
</tr>
</tbody>
</table>

Source: Cooper (2009)

The CSF method has certain limitations, as summarised in Table 3.3. One criticism of the CSF method concerns the limited capacity for information processing of respondents - they can typically only retain between five and nine “chunks” of information in their short-term memory. Managers therefore tend to reduce the set of CSFs to a manageable number, however there may be more than (the typically identified) four to eight CSFs. The validity of the CSF method has also been criticised for possibly not reflecting the current situation of an organisation. It is argued that the CSF method requires regular review and reapplication in order to reflect the actual evolving situation of an organisation.
Table 3.3: Summary of Limitations of the CSF Method

<table>
<thead>
<tr>
<th>Limitation</th>
<th>Example Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>People have a limited capacity for information processing and can typically only retain between five and nine “chunks” of information in their short-term memory. Managers reduce the set of CSFs to a manageable number, so there may be more than (the typically identified) four to eight CSFs.</td>
<td>Davis (1979)</td>
</tr>
<tr>
<td>People have a limited capacity for rational thinking, which results in the need to construct simplified models of real situations, or bounded rationality. These models may not correctly reflect the real situations, being bounded by experience, training, prejudice, custom and attitude.</td>
<td>Davis (1979)</td>
</tr>
<tr>
<td>People are limited in their ability to act as intuitive statisticians and by their inability to evaluate probabilities of uncertain events and to identify correlation and causality.</td>
<td>Davis (1979)</td>
</tr>
<tr>
<td>Judgment of importance may be influenced by biasing factors, such as availability of data. Most recent events or those easily remembered assume greater importance than those less recent or which are not easily remembered. People tend to use data in the form presented rather than transforming it, or seeking new data.</td>
<td>Davis (1979)</td>
</tr>
<tr>
<td>CSFs require frequent review: for example, as a result of changing business objectives or environmental factors.</td>
<td>Walters (2006)</td>
</tr>
<tr>
<td>A focus on measurement can result in forgetting or undervaluing “soft” elements, which are more difficult to measure.</td>
<td>Walters (2006)</td>
</tr>
<tr>
<td>It is difficult to establish the right number and type of CSFs.</td>
<td>Boynton &amp; Zmud (1984)</td>
</tr>
<tr>
<td>The further participants are away from senior management, the more difficult it may be for them to develop CSFs.</td>
<td>Peffers, Gengler &amp; Tuunanen (2003)</td>
</tr>
<tr>
<td>The validity of the method has been questioned because of the threat of interviewer and manager bias during the interview process.</td>
<td>Boynton &amp; Zmud (1984)</td>
</tr>
<tr>
<td>The technique needs a number of cycles and requires considerable organisational effort.</td>
<td>Boynton &amp; Zmud (1984)</td>
</tr>
<tr>
<td></td>
<td>Walters (2006)</td>
</tr>
</tbody>
</table>

Source: Cooper (2009)

Despite its limitations, many studies have used the CSF method. These have included research conducted in hospitality (Brotherton 2004a, 2004b), project management (Zwikael & Globerson 2006), WSS (Cooper, Lichtenstein & Smith 2006), IS (Peffers, Gengler & Tuunanen 2003) and manufacturing (Tibar 2002). This study adds to the exemplars of usage of the CSF method by identifying CSFs for KT via Australian and Malaysian government education websites from the providers’ perspective.

Many adaptations of the CSF method have been developed in order to meet the needs of specific research contexts. In terms of data collection, the original CSF method used interviews with organisational managers (Rockart 1979). Subsequently, researchers have adapted the method to use alternative techniques, such as mail and web surveys (Brotherton 2004a, 2004b); and cross-organisational focus groups (Cooper 2009).
In the present study, the target sample accessed during data collection has been extended, to include not only chief executive officers and managers but also executive officers with specific responsibilities, so drawing respondents from top, middle and operational management levels across the organisation (Teo & Ang 1999; Tibar 2002; Ward & Mitchell 2004; Salmeron & Herrero 2005). This approach, to include respondents from various levels of the organisation, was also adopted by Cooper (2009).

Further, rather than simply asking the respondents during the focus groups to refine and confirm the CSFs identified by analysis of interview notes and transcripts, the respondents were also asked to express their opinions of the CSFs that had been identified at the alternate site. In particular, respondents were encouraged to advance their views concerning factors in their own context that may explain points of difference.

The following section details the adapted CSF method as utilised in the present research.

3.8.1: Adapted CSF Method Used In This Research

This research has employed an adapted CSF method including introductory workshops, one-on-one interviews and focus groups. Figure 3.4 illustrates the research design, built upon Rockart’s (1979) CSF method as used in this research, and described below as a three step process.
**Step 1: CSF Introductory Workshops**

Two CSF introductory workshops, one at AUSED and one at MASED, were held with the aim of confirming the relevance of the research to the case study organisations, explaining the research method and obtaining respondents’ consent for this research. Not only did these meetings allow the researcher to request that the contact officials suggest study respondents, but they also allowed the researcher to seek advice from
these contact people regarding any relevant documents to which the researcher could refer in support of this research.

The CSF introductory workshops were held at AUSED in early 2008 and at MASED in mid 2008. At AUSED, the meeting was attended by the researcher; the researcher’s senior and second supervisors, and AUSED’s contact official, the organisation’s Manager of Print and Online Communication. At MASED, the meeting was held between the researcher and MASED’s contact official, the Chief Assistant Director ICT of Information Management. Prior to the meetings, the researcher e-mailed the meeting agenda to the contact officials (see Appendix U for a copy of the agenda for the CSF introductory workshops). The meetings lasted approximately 45–60 minutes during which the researcher took notes. Nine respondents from AUSED and 15 respondents from MASED were suggested by the contact officials to participate in the CSF interviews.

**Step 2: CSF Interviews**

The CSF interviews were held with the aim of identifying the CSFs for KT via Australian and Malaysian government education websites. These interviews allowed the researcher to gather detailed information about the case study organisations, in particular about their public websites.

The researcher took one month to complete the 15 interviews at MASED and two weeks to complete the 9 interviews at AUSED. The researcher e-mailed the respondents and followed up with phone calls to arrange the interview times. Prior to the interviews, the researcher e-mailed the invitation letter, the PLS to respondents (Appendix H), together with the consent form (Appendix I), the interview questions (Appendix J), the research proposal (Appendix K) and a pre-interview preparation schedule designed to brief respondents on the underlying model of KT and so facilitate them preparing for the interview in advance (Appendix L).

Before the interviews commenced, the researcher requested permission from the respondents to audio-record the interviews, by signing a consent form. The researcher began the interviews by providing an overview of the research to ensure that the
respondents understood the research aims and methods, and to allow the respondents to seek any clarification. This was followed by the researcher asking the respondents to provide information in relation to their jobs, such as their job title, their length of service and their job tasks. This helped respondents to feel more comfortable and so to talk freely (Myers 2009). The aim was not only for the researcher to get to know the respondents but also to understand the ways in which they are involved with the website. As this research is focused on government education websites, the researcher asked the respondents to discuss their organisation’s public website in terms of its objectives, current performance and maturity level. In order to answer the subsidiary research question regarding users, the researcher asked the respondents to describe who the users of the website are and their purpose(s) for using the website. While following the prepared interview question schedule, the researcher also allowed the respondents to add insights as they arose during the interviews.

The researcher then prompted discussion of the CSFs for KT via the government education website. As highlighted in Chapters 1 and 2, this research adopted as an underlying KT process model, the four stage model of Szulanski (1996; 2000): initiation, implementation, ramp-up and integration. For each stage, the researcher asked respondents to share their perceptions of the CSFs for KT via government education websites in whatever order they came to mind. The researcher then prompted for explanation of each named CSF, with illustrations of their application where possible, and the respondent’s rationale for considering these critical to each stage. The researcher also questioned the respondents about mechanisms used to ensure achievement of each identified CSF. Before the interview sessions ended, the researcher requested permission from the respondents to send them interview transcripts, for them to check and provide further clarification as needed. At this stage, the researcher reminded the respondents that they would be invited to participate in focus groups to finalise identification of the CSFs.

The next step involved the researcher analysing the interviews and preparing an initial set of identified CSFs (see Section 3.9 for details of this initial analysis process) to be presented to respondents at the CSF focus groups.
Step 3: CSF Focus Groups

Two CSF focus groups, one each at AUSED and MASED, were held subsequently with respondents who participated in the interviews. The objectives of the CSF focus groups were both to validate the CSFs that were identified during analysis of the interviews, and to seek opinions of the CSFs that had been identified at the alternate site. In particular, respondents were encouraged to advance their views concerning factors in their own context that may explain points of difference.

The CSF focus group at AUSED was held in early December 2009, while the CSF focus group at MASED was held in late December 2009. The researcher contacted the departmental contact officials to set a date for the sessions, after which contact officials informed the respondents of the scheduled session times. Six respondents at AUSED and four respondents at MASED took part in the CSF focus groups. The remainder of the respondents were unable to participate due to work commitments. Prior to the scheduled sessions, the researcher sent an agenda to the contact officials to be distributed to the respondents (see Appendix Q and Appendix R for the CSF focus groups’ agendas at AUSED and MASED, respectively).

The CSF focus groups’ agendas were not only used by the respondents to finalise the CSFs but were also used by the moderators to guide the sessions. As discussed in Section 3.7.2, an independent moderator is used to conduct focus groups in order to minimise the bias of the researcher. For this research, the researcher’s senior supervisor was the moderator at AUSED and a senior manager of a Malaysian government agency was engaged as the moderator at MASED. The moderators ensured that all respondents in the focus groups were given opportunities to express their opinions. The sessions each lasted approximately 60–90 minutes and were audio-recorded.

The CSF focus group sessions commenced with an introduction of the moderator and the researcher to the respondents. The respondents then introduced themselves, explaining to which organisational division they belonged. This information enabled the researcher to identify voices on the audio recordings of the sessions. The moderator then briefly reviewed the research aims and methods, updating the respondents on the
current status of the research study, and explained the purpose of the focus groups and the format of the sessions.

The sessions continued with confirmation of the CSFs list drawn from analysis of the interviews. The respondents were asked to express their views on whether the factors’ names, definitions and themes might be combined, eliminated or restated. The sessions concluded with the respondents being shown the CSF list that resulted from the interview analysis at the alternate site and being asked to express their opinions regarding shared or similar CSFs and points of difference, including reflections on possible reasons for differences.

3.9: Data Analysis

Two forms of data analysis were employed in the course of the present research: within-case analysis and cross-case analysis. Within-case analysis includes the analysis of transcripts/notes from the introductory workshops, interviews, focus groups and documents, while cross-case analysis includes analysis reflecting upon the final lists of CSFs from both organisations.

For within-case analysis, qualitative content analysis was employed. The key idea underpinning content analysis is that statements within captured/transcribed text can be classified against content categories (Tesch 1990; Weber 1990; Hsieh & Shannon 2005; Neuman 2006; Elo & Kyngas 2008). The basic procedure in content analysis is to design categories relevant to the research purpose, sort all occurrences of relevant words or other recording units into these categories (Tesch 1990; Ezzy 2002; Neuman 2006) and then interpret the categories that describe the phenomenon (Hsieh & Shannon 2005; Elo & Kyngas 2008). Although Tesch (1990) states that the lack of a firm definition and procedures potentially limits the application of content analysis, Mayring (2000) asserts that qualitative content analysis can enhance qualitative text interpretation. In the present research, the unit of analysis for the qualitative content analysis is the CSF for achieving KT.

Content analysis can be used to analyse qualitative or quantitative data by an inductive or deductive method (Elo & Kyngas 2008). An inductive method moves from the
specific to the general - particular instances are observed in the content and then combined into a larger whole or general statement. A deductive approach is based on an earlier theory or model and therefore it moves from the general to the specific. The choice of method is based on the purpose of the study (Elo & Kyngas 2008).

This research explores the CSF for KT via government education websites and has used introductory workshops, interviews and focus groups as data collection methods. Analysis of content has followed a primarily inductive approach. Given the limited former knowledge of the phenomenon under study (Mayring 2000; Hsieh & Shannon 2005), scope has been allowed for the researcher to code category names that emerged from the data (Hsieh & Shannon 2005), with the emerging category names being compared with insights and relevant concepts drawn from the extant literature in e-government, KM, customer service, and WSS (see Section 2.9).

The present research has followed the guidelines provided by Creswell (2009) to analyse the data. First, the researcher read through the interview transcripts. Second, the researcher identified transcript statements. The researcher then assigned a category name that emerged from that transcript statement. In assigning the category name, the researcher provided descriptions for the category. Categories with similar names were then grouped to form a main category. Detailed descriptions were written for each main category. The categories so created were compared, as deemed relevant, to concepts drawn from the extant literature (see Section 2.9) to either support or challenge the categorisation. Finally, the categories were grouped to form CSF themes similar to the notion of themes identified in the literature review (see Section 2.9). (See Appendix V and Appendix W for examples of the qualitative data analysis process used in this research.) Some samples of the application of this process were subsequently examined and confirmed by the researcher's senior supervisor in order to assure the validity and rigour of the applied analysis process.

It should be noted that the analysis process above was also applied when analysing the transcripts of the focus groups, including the identification of missing CSFs and changes to the definition of CSFs. Of particular note, the focus group conducted at AUSED, when analysed using the steps depicted in Figure 3.5, yielded an additional
Research Methodology

CSF (increasing the number of CSFs identified at AUSED from 10 to 11, as indicated previously in Figure 3.4)

Figure 3.5 summarises the steps involved in qualitative data analysis as applied in the present research.

![Diagram](image-url)

Figure 3.5: Steps involved in the Qualitative Data Analysis Approach used in this Research
Source: Creswell (2009)

Cross-case analysis in this research has been used to identify and investigate similarities and differences of the identified CSFs at the two organisations. Specifically cross-case analysis considered: the definitions of CSFs at AUSED and MASED; the number of times respondents raised specific CSFs in their responses; and CSFs identified associated with specific KT stages. In addition, consideration was given to instances where a CSF was the first mentioned by a respondent when considering each KT stage. This subset of the results may provide some insight into which CSFs were at
the front of each respondent’s mind, and will be discussed further in Chapter 6 as a means of appreciating the priority placed by respondents on each identified CSF. The use of the first-mentioned response in this way has been previously used by researchers to capture what is seen as most important to study respondents (eg, Sudman & Bradburn 1983; Krause & Jay 1994). It should be noted, however, that some authors (eg, Davis 1979) indicate the need to exercise some caution with such an approach. Specifically, the judgment of importance may be influenced by biasing factors, such as availability of data. Most recent events or those easily remembered may assume greater importance than those less recent or which are not easily remembered (see discussion related to Table 3.3).

3.10: Research Quality Issues

This section discusses issues related to research quality, as relevant to interpretive qualitative research, specifically, triangulation, authenticity, reliability and replication (Trauth & Jessup 2007). This section also details the application of these criteria in the present study.

**Triangulation** in qualitative research is used for confirmation, to increase the credibility of the interpretation and to demonstrate the consistency of an assertion (Miles & Huberman 1994; Stake 1995). Triangulation facilitates validation of data through cross verification from two or more sources (eg, multiple respondents) or as accessed by multiple techniques. In the present study two forms of triangulation have been applied: data source triangulation and methodological triangulation (Stake 1995). Data source triangulation determines whether the interpretation of data is the same when found under different circumstances. Methodological triangulation entails data being collected using multiple approaches (Stake 1995). Data source triangulation in this research entailed the collection of data from multiple respondents at different levels of the organisations under study. Data were then analysed and further cross-compared between organisations at two different organisations (in two countries). Such data source triangulation highlighted a substantial degree of agreement between the various respondents, at different management levels, as to the critical factors (see discussion in Chapters 4-6). Methodological triangulation was exercised by accessing data by three different means: interview, focus group and document analysis.
Authenticity refers to assuring the believability/credibility of the presented results – in particular whether the interpretation of results as presented makes sense to the reader (Miles & Huberman 1994; Golden-Biddle & Locke 2006). Authenticity can be achieved by the use of detailed descriptions of the case studies and quotations (Trauth & Jessup 2007). In this study, the researcher has provided rich detail of the case study organisations and the respondents in both local and broader contexts. Further, throughout the presentation of results, pertinent excerpts from the transcripts have been provided to inform and illustrate the emerging interpretations that are reported.

Research reliability, in the widest sense, refers to the repeatability of a particular set of research findings (i.e. how accurately might the research findings be replicated in a second identical piece of research). This concept originates in a positivist scientific tradition and is arguably of limited relevance to qualitative research, since the experience of the researcher, and subjective interpretation of the research materials, is an essential part of the qualitative method. Nevertheless, reliability in qualitative research has come to refer to the maintenance of consistency of the approach used (Neuman 2006; Creswell 2009). This can be achieved by maintaining detailed documentation of procedures (Yin 2003) and employing methods that can demonstrate how the interpretations drawn are consistent with data (Trauth & Jessup 2007). Such methods can ensure the reader will see the process undertaken in developing the interpretations. In this research, the researcher has documented extensively the procedures followed during the interviews and focus groups, and ensured that these documented procedures were rigorously followed in both case studies. For example, all respondents were asked the same questions in the same order to ensure consistency (Richards & Morse 2007). Both focus groups followed pre-defined agenda designed to explore the same set of issues. The researcher also rigorously applied reliability checking protocols during data analysis, as advocated by Gibbs (2007) in Creswell (2009), including: (1) rechecking of all transcripts to assure that they do not contain obvious mistakes made during transcription – note also the procedures to assure the accuracy of translations from Malay to English for data collected at MASED (see Section 3.7.1); (2) regularly and rigorously comparing the data with the emerging categories, by documenting the categories and their definitions (see the discussion in Section 3.9); and (3) the researcher met with her senior supervisor every fortnight to
discuss and check the analysis. Furthermore, the researcher’s senior supervisor independently checked some samples of the analysis and compared the results to ensure accuracy.

Finally, replication involves the process of repeating a study using the same methods, different subjects, and different experimenters. In case study research, replication is linked to methods designed to assure validity (Trauth & Jessup 2007). Qualitative validity means that the researcher checks for the accuracy of the findings by employing procedures, which can include checks for internal and external validity (Neuman 2006; Creswell 2009).

**Internal validity** requires that there are no errors internal to the design of the research project (Neuman 2006). Employing consistent documented protocols in the collection and analysis of data is one way to assure the internal validity of research (Creswell 2009). Throughout each activity in the present study, the researcher followed detailed documented procedures (Gillham 2000; Trauth & Jessup 2007; Creswell 2009) in order to minimise potential risk associated with the possible biases of a single interviewer (Richards 2005; Trauth & Jessup 2007; Creswell 2009). In addition, the researcher used member checking to determine the accuracy of the qualitative findings (Richards 2005; Trauth & Jessup 2007; Creswell 2009), entailing e-mailing the interview transcripts and interpretations to respondents for them to check. The researcher also prepared rich and thick descriptions to convey the findings (Ezzy 2002). These descriptions sought to convey a sense of the setting to readers, and give the discussion an element of shared experience (Trauth & Jessup 2007; Creswell 2009).

**External validity**, on the other hand, is the ability to generalise findings from a specific setting and small group to a broad range of settings and people (Neuman 2006). Generalisability of the outcomes of the present research cannot be assured, however extension of the focus groups to include opportunities for respondents at each case organisation to reflect on the CSFs at the alternate organisation provides opportunity to explore the wider applicability of the identified CSFs. Further, the cross-case analysis designed into the research undertaken provides at least tentative support that the CSFs common to both sites might have more general applicability. Nevertheless, the
researcher acknowledges that this is a limitation of the methods adopted in this research.

3.11: Summary

This chapter has explored, discussed and justified the research methodology adopted in this study.

It has been argued that the present research, aimed at seeking an understanding of the CSFs for KT via Australian and Malaysian government education websites from the providers’ perspectives, should be considered exploratory in the sense that that the research undertaken seeks to collect new insights into a phenomena - insights that might inform and seed further investigation. The underlying research paradigm is interpretive, to be conducted following a qualitative research design. Multiple case studies, one in Australia and one in Malaysia, have been chosen - specifically education based-government agencies, one in Melbourne, Australia (referred to in this research as AUSED) and one in Putrajaya, Malaysia (referred to in this research as MASED). The selection of 24 staff respondents has been discussed - nine respondents from Australia and 15 respondents from Malaysia. They included staff involved in the development and management of government websites from top, middle and operational level management across these organisations, including directors, executives and non-executives. Ethical issues surrounding the research have been discussed. Data collection approaches and protocols for conducting introductory workshops, interviews and focus groups, and for organisational documents analysis have been specified and discussed. The detailed research design presented has drawn upon Rockart’s (1979) CSF method, with adaptations drawn from Cooper (2009). The data analysis approach has been presented, using inductive qualitative content analysis with categories checked against concepts as reported in the extant literature (see Section 2.9). Finally research quality criteria have been considered, and the application of these criteria in the present study has been reported.

The results collected, and the analysis conducted applying the methodology thus selected, justified and designed, will be reported in the following three chapters. Specifically, the next two chapters (Chapters 4 and 5) present, in turn, results drawn from conduct and analysis of the interview phase of the research study in Malaysia.
MASED) and Australia (AUSED). Chapter 6 then addresses outcomes of the focus group phase, and discusses the findings in the context of the extant literature.
Chapter 4: Case Study 1 - Malaysian Federal Government Education Website

4.1: Introduction

In this chapter, an analysis of critical success factors (CSFs) for knowledge transfer (KT) from government sources to stakeholders (citizens, business entities, other government agencies and employees), via a government education website operated by the Malaysian government, is reported. The analysis draws upon interviews with key Malaysian government respondents. The research approach adopted follows the adapted CSF approach described in Chapter 3 (Section 3.8). The analysis is compared against various concepts established in the literature analysis of candidate domains as reported in Chapter 2 (Section 2.9). Some connections to the literature are noted in this chapter, although detailed discussion of the CSFs related to the extant literature will be presented in Chapter 6. The structure of this chapter is represented schematically in Figure 4.1.

The chapter commences with discussion of the process and criteria applied when selecting the case study organisation, to be referred to throughout this thesis as MASED (Section 4.2). The results are then reported in Section 4.3. Initially the MASED context and KT processes are described and modelled (Section 4.3.1). The initial determination of the CSFs is then reported (i.e. the determination based upon the initial round of interviews) in Section 4.3.2. Note that validation of these CSFs, drawing on data collected at a subsequent focus group, will be reported in Chapter 6. Feedback mechanisms for determining website performance as highlighted by the respondents, that may be used to evaluate the performance of the websites as vehicles for KT, are then reported in Section 4.3.3. Also reported are the associations of CSFs with the various KT stages as identified by the respondents (Section 4.3.4). It should be noted that commentary on the identified CSFs and their alignment to the set of concepts previously identified in Chapter 2 (Section 2.9) is postponed to Chapter 6, after the CSFs determined at the Australian organisation have been reported in Chapter 5. Finally, a chapter summary is provided (Section 4.4).
4.2: Selection of the Case Study Organisation (MASED)

As discussed in Chapter 2, the present research seeks to understand KT via government education websites in particular the CSFs as perceived by the knowledge providers – the government departmental staff with responsibilities for website content and delivery. In undertaking this study, a conscious decision has been taken to focus on the insights of website providers. Government website providers have substantial established processes and infrastructure in place to assess user responses to the websites that they provide, and the researcher has been able to tap into these insights by focusing data collection upon the more readily accessible groups of government
website providers. This offsets the need to also access a wide range of government website user stakeholders. That said, future studies could seek additional validation of the CSFs determined in this study, and possibly the discovery of additional CSFs, by seeking direct recourse to government website users (see further discussion in Chapter 7).

As also discussed in Chapter 2, the research seeks to compare the perceived CSFs at two organisations, in different countries, with a view to highlighting shared CSFs, and points of difference. Such a study will provide insight into both core CSFs (those common to both organisations) and into context-sensitive factors that can shape CSFs that are specific to the two individual organisations in different countries.

Finally, as discussed in Chapter 2, government websites operated by Ministry/Department of Education, provide a suitable target for this study. Specifically, such ministries/departments operate established websites, developed over a number of years, and which it can be argued represent examples of best practice within the country contexts in which they operate. Further, two such candidate organisations were available for study – those in Putrajaya, Malaysia and in Victoria, Australia, and as such these were adopted for study.

In this chapter the researcher focuses on a section of the Malaysian Ministry of Education, referred to in this research as “MASED”. This organisation consists of many independent agencies, and there are many connections and interdependencies that are managed using established enterprise architecture. Moreover, these agencies are sources of a wide range of skills, knowledge and interests. As such, the organisation offers an opportunity to study a rich set of CSFs for KT via government education websites, situated in the context of the established Malaysian government structures and processes.

The next section discusses the MASED case study organisation. Subsequently the CSF results, extracted from an initial round of interviews with MASED respondents, are reported.
4.3: MASED Case Study and Results

This section reports findings from the initial study of the MASED case study organisation based upon the initial round of interviews. These results will be subsequently subjected to a validation process in a focus group setting, as will be reported in Chapter 6.

4.3.1: MASED – Context and Knowledge Transfer Processes

MASED is one of a number of departments operating within the Malaysian Ministry of Education (MOE). MASED has a clearly expressed mission - “to develop a world-class quality education system” (Samah, Azizan and Razak 2006; MASED 2010) – and is responsible for the provision of educational opportunities for all Malaysians. This department is responsible specifically for the provision of “… education programs for pre-school education, which cater for pupils of four to six years of age, primary education, which is planned for a duration of six years but may be completed in five to seven years, secondary education, which consists of lower and upper secondary education, and post-secondary education, which meets the needs of individuals who have completed lower and upper secondary education but excludes higher education” (Samah, Azizan and Razak 2006; MASED 2010).

At the heart of MASED’s mission is a priority to always put its clients at the centre of its provision of public services. This is clear in Table 4.1 which presents the Client’s Charter that MASED seeks to meet.

Table 4.1: Client’s Charter of MASED  Source: MASED (2010)

<table>
<thead>
<tr>
<th>We, the staff of the Ministry of Education, pledge and promise to concentrate our fullest energy and efforts towards:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Delivering the best education system that satisfies the needs of the individuals, society and nation which fulfils the objective of national unity;</td>
</tr>
<tr>
<td>• Ensuring that the product of the education system projects fundamental values and characteristics as outlined in the National Education Philosophy;</td>
</tr>
<tr>
<td>• Giving all children, regardless of their backgrounds, religious convictions or descent, an equal opportunity to receive the best education;</td>
</tr>
<tr>
<td>• Establishing an efficient, effective, sophisticated, dynamic and change-sensitive education management system and mechanisms;</td>
</tr>
<tr>
<td>• Managing work efficiently, speedily and wisely;</td>
</tr>
<tr>
<td>• Producing a dedicated, committed, well-trained, disciplined, responsible and productive team of staff;</td>
</tr>
<tr>
<td>• Providing standardised, comfortable, fully-equipped and adequate educational facilities which mirror the practice of a caring society;</td>
</tr>
<tr>
<td>• Ensuring that the Ministry is sensitive and responsive towards the needs and wants of its clients namely, students, teachers, society and the nation; and</td>
</tr>
<tr>
<td>• Enhancing the glory and prestige of the teaching profession in order to attract the best individuals into the service.</td>
</tr>
</tbody>
</table>
4.3.1.1: MASED Organisational Structure

Figure 4.2 summarises the organisational structure of MASED. Note that, given the breadth of the organisational structure at MASED, the divisions shown in Figure 4.2 involve only those in which the respondents in this research are located.
Figure 4.2: The MASED Organisation Structure pertinent to the Present Study (shaded areas highlight divisions from which respondents in the present study have been sourced)
Source: MASED (2010)
MASED is comprised of departments, agencies, state education departments and district education offices. The departments are sub-divided into five groups: General Development; General Management; General Policy and Educational Development; General Education Operations; and General Professional Development. Each group is led by a Deputy Secretary and Deputy Director, who report to a Director General and a Secretary General. The Secretary General reports directly to a Deputy Minister and the MOE.

Each group has several divisions. Each division manages their own website, serviced by the Information Management (IM) Division. Each division has a representative with responsibility for the content of their website. These representatives are the “content managers” on the MASED website development team. Each of the content managers has their own authentication and authorisation that allows them to add/modify/delete information on the website. These staff act as the key contacts for the maintenance of the organisational website, and liaise between MASED staff and the IM Division.

The 15 respondents accessed in the course of the interviews at MASED are listed in Table 4.2, together with their Division (as highlighted by the shaded areas in Figure 4.2) and their job descriptions. Also listed are the codes assigned to each respondent when reporting the results that follow.
Table 4.2: Respondents involved in the one-to-one Interviews at MASED

<table>
<thead>
<tr>
<th>Job title</th>
<th>Division</th>
<th>Job description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM10: Director ICT</td>
<td>General Management Information Management Division</td>
<td>Responsible for the management, installation, maintenance, availability and security of the schools’ network, hardware and software. Heads the Information Communication Technology (ICT) specialist area for all public schools in Malaysia and MASED.</td>
</tr>
<tr>
<td>Top Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM15: Director</td>
<td>General Education Operations Public School Management</td>
<td>Organises, administers, coordinates and leads programs in the public schools system in Malaysia. Formulates public schools’ policies and procedures. Plans and conducts training programs for teachers and staff at Public School Management Division. Plans and supervises the testing programs in school systems and devises and directs the use of records, reports and other material essential to programs. Supervises the public schools teachers’ placement service. Coordinates activities with community agencies and other areas of the public schools’ system. Conducts or supervises research studies at public schools in Malaysia.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM12: Chief Assistant Director ICT</td>
<td>General Management Information Management Division</td>
<td>Assists the Director ICT with the implementation of ICT projects in MASED. Acts as a content manager for the IM Division.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM13: Chief Assistant Director ICT</td>
<td>Matriculation Division</td>
<td>Assists the Director to plan and implement ICT projects for the matriculation centres in Malaysia.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM5: Assistant Director ICT</td>
<td>General Policy &amp; Educational Development Educational Planning &amp; Research</td>
<td>In charge of education data related to Malaysian primary schools, and other related data about education. Provides services to users including the delivery of data and information related to education systems in Malaysia. Develops and manages a system called the Educational Management Information System (EMIS). Every six months collects data related to education systems in Malaysia and updates the information on the EMIS. Acts as a content manager for Educational Planning and Research Division.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM4: Chief Assistant Director ICT</td>
<td>General Education Operations Public School Management</td>
<td>In charge of ICT management in all public schools in Malaysia. Represents MASED on the ICT Council of Malaysia.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM7: Assistant Director ICT</td>
<td>General Education Operations Public School Management</td>
<td>In charge of the internationalisation of ICT projects in term of networking with public schools in other countries. Manages training for teachers, to upgrade their skills.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM8: Assistant Director ICT</td>
<td>General Education Operations Public School Management</td>
<td>Manages ICT infrastructure requirements for public schools in Malaysia. Acts as a content manager for the Public School Management Division.</td>
</tr>
</tbody>
</table>

Source: MASED (2010)
### Table 4.2: Respondents involved in the one-to-one interviews at MASED - (Continued)

<table>
<thead>
<tr>
<th>Job title</th>
<th>Division</th>
<th>Job description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM1: Assistant Director ICT</td>
<td>General Education Operations</td>
<td>In charge of all matters involving computers including technical, system development, website management and teaching and learning. The technical aspect includes procurement, disposal, replacement and maintenance. System development includes the development of in-house systems and management of the systems that have been developed by other government agencies for division usage. Responsible for ICT management for Schools of Sports and Arts in Malaysia. Manages websites for sports and arts in Malaysia. Acts as a content manager for Sports, Arts and Co-curriculum Division in MASED.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM6: Chief Assistant Director ICT</td>
<td>General Professional Development Teacher</td>
<td>Manages ICT requirements for all teachers in public schools in Malaysia.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM11: ICT Officer</td>
<td>General Management Information Management</td>
<td>Plays a key role in providing detailed ICT technical support to staff, systems, infrastructure and MASED’s website. Plays a central role in the successful delivery of ICT projects.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM14: Assistant ICT Officer</td>
<td>Matriculation Division</td>
<td>Assists the Assistant Director ICT to manage the ICT infrastructure in the division. Responsible for programming of existing and new systems for the division. Manages ICT procurement, distribution and disposal. Develops, maintains and tests the systems in the division. Acts as a content manager for the Matriculation Division.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM9: Senior Coordinator ICT</td>
<td>General Education Operations Public School</td>
<td>Assists the Assistant Director ICT to manage ICT infrastructure requirements for public schools in Malaysia.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM2: Assistant ICT Officer</td>
<td>General Education Operations Sports, Arts</td>
<td>Assists the Assistant Director ICT in the management of ICT in the division. Responsible for programming of existing and new systems for the division. Manages ICT procurement, distribution and disposal. Develops, maintains and tests systems in the division.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM3: ICT Officer</td>
<td>General Education Operations Special Education</td>
<td>Plans, coordinates, manages and distributes ICT equipment to 32 special schools in Malaysia. Acts as a content manager for the Special Education Division in MASED.</td>
</tr>
</tbody>
</table>

Source: MASED (2010)
4.3.1.2: MASED Culture

Organisational culture encompasses the beliefs and value systems, often unstated, held by the staff of an organisation, that can shape the way organisational staff take decisions and approach their allotted tasks (Hofstede and Hofstede 2005). These are considered briefly herein for MASED (and subsequently in Chapter 5 for AUSED) to provide background to the consideration of the responses of staff collected during interviews and focus groups. Consideration of culture herein includes expectations and attitudes that pervade the working environment, and the environment the government seeks to establish to encourage in staff a commitment to the organisation and its objectives.

As a Malaysian government organisation, MASED’s working environment can be characterised as formal. Relevant to this study, information is formally managed, following standard procedures based on “service circulars”, formulated by the Public Service Department (PSD) of Malaysia. In Malaysia, the PSD is the government agency that structures and plans the roles of public sector staff, manages human resources and develops organisational policies (Public Service Department of Malaysia 2011). Organisational policy is promulgated as service circulars, sent to all government agencies in Malaysia, to be followed.

The processes that underpin any initiatives or events are formally specified, following stages of proposal, review and eventually formal approval. As an example, even for an event as apparently straightforward as the conduct of a staff service performance award ceremony in a department, the department must prepare a proposal, set up an internal event committee, discuss the proposal, get internal committee approval and request formal approval from the higher levels. Following the event, the internal committee must prepare a report which details the budget spent. This process applies, of course, to website development. For any suggested substantial upgrades or new initiatives, the content manager prepares a proposal justifying the need. As the Assistant Director of ICT, Sports, Arts and Co-Curriculum stated, “I have just finished preparing a proposal to upgrade our website.” This allows IM division to track website activities and to maintain standardisation of the website format and style. Although there are standards to follow, officers are encouraged to exercise a degree of creativity when suggesting
improvements. Notwithstanding the above, minor changes such as simple updates or corrections to a paragraph on the website, do not have to go through the above process.

Customer service is at the heart of MASED organisational culture. Continual improvement in customer service is a stated priority at MASED, as captured in the motto: “Pioneering change is a national mission”. MASED serves their clients based on their client’s charter (see Table 4.1) (an analysis of MASED’s key client groupings follows later in this section). As a consequence, MASED sees its website as a vehicle to interface to its clients. This is a key means for them to inform, and to identify the knowledge needs of clients. For example, MASED, as an education focussed department, organises study carnivals for secondary students and job carnivals for university students, seeing this as a means of getting close to clients.

To supplement online services, and consistent with a customer-service culture, MASED also operates a service centre, to support clients who prefer to walk-in or phone. The service centre serves as a central hub, connected to all MASED offices as well as to other ministries. Clients can also meet with any public officers in person at their office. Clients can walk in to meet officers, or meet them by appointment. In particular, clients can by such means highlight any information that they believe is incorrect on the website, via e-mail or by phone.

In Malaysia, the government sector seeks to provide an attractive, secure working environment and conditions for employees. For example, employees are encouraged to undertake further study in order to enhance their own skills. As the Assistant Director of ICT, Sports, Arts and Co-Curriculum mentioned, “I am studying for a Masters Degree in Law. I leave the office every day after 5 pm and go straight to class”. Further, government sends employees who are about to retire to undertake courses relevant to their interests, in order that they might pursue those interests during retirement. Government also provides training for those who have been accepted for the Voluntary Retirement Scheme (VRS), to facilitate them upgrading their skills. Training enables them to work in the public sector or form their own businesses. The government also recognises employees who have performed outstanding service through excellence awards. This recognition is given annually throughout Malaysia.
Recognising a need for work-home balance for staff, MASED also supports a degree of flexibility in working hours. Specifically, employees can choose from two forms of working hours - either 7 am to 4 pm, or 8 am to 5 pm.

4.3.1.3: MASED Website Key Stakeholders

In the section above, reference was made to MASED’s client focus. In this section an analysis is provided of the clients as website stakeholders, and the knowledge provided to service the needs of these stakeholders via the website.

At MASED four groups of website stakeholders are recognised: parents and students; employees; other government agencies; and business entities. MASED provides information and services to these groups based on the needs of each. As indicated in the interviews with respondents, most of the knowledge provided for each of the stakeholder groups, can be accessed via the MASED website. MASED continually upgrades the website in response to user needs. Table 4.3 reports an analysis of the information, knowledge resources and services available to each stakeholder group via MASED’s website.

MASED, as an education-focussed organisation, sees parents and students as their primary clients. For most information related to schools, such as list of primary and secondary schools available in Malaysia, parents and students can refer to the website. In addition, parents and students can access e-learning through collaboration with the Institute of Language and Literature, Malaysian National Institute of Translation and the Malaysian Examination Council. This can provide materials for parents to assist their children undertake revision of their studies at home (e.g., learning English language with multimedia support).

Teachers and non-academics are the “internal” users of the MASED website. Teachers are located throughout Malaysia, providing challenges for MASED to provide all materials, such as speeches delivered by the Education Minister, online. MASED seeks to meet this challenge, and encourages teachers throughout the country to use the website to meet their knowledge needs.
Table 4.3: Knowledge Resources (Information and Services) available to Stakeholder Groups via the MASED Public Website

<table>
<thead>
<tr>
<th>MASED Stakeholder</th>
<th>Knowledge resources available via MASED public website</th>
</tr>
</thead>
</table>
| Government to Citizen (G2C) | - Lists of primary and secondary schools and institutions in Malaysia  
                                 - Application forms for financial assistance for lower income families  
                                 - Payment notifications, news, service procedures, speech texts, media statements, newspaper archives and video clips  
                                 - FAQs, programme, school and examination calendars  
                                 - Research, publication, education links and e-learning  |
| Parents                 | - Registration forms for examinations (Primary School Examination, Lower Secondary Assessment, Malaysian Certificate of Education, Malaysian Advanced Religious Examination Certificate, and Malaysian Universities English Test)  
                                 - Examination results online and application forms for examination result slip loss  
                                 - Online applications for residential schools, matriculation colleges, sport and art schools and financial assistance for study  
                                 - Disciplinary Complaint System (SAD)  
                                 - Malaysian Schools Sports Council Championship notices  
                                 - Payment notifications, news, service procedures, speech texts, media statements, newspaper archives and video clips  
                                 - Frequently Asked Questions (FAQs), programme, school and examination calendars  
                                 - Research, publication, education links and e-learning  |
| Students                | - Information and services related to ICT aspects of the SchoolNet project  
                                 - Information about promotion and forms and notification letters for annual performance appraisal reports  
                                 - Forms for incentive pay for sports trainers and coaches  
                                 - Retirement age extension option offers for public officers on study leave  
                                 - Online applications for training, job application as educators, interstate teacher transfer online system, online applications for study leave, online nominations for National Best Educator, online payment notifications, news, service procedures, speech texts, media statements, newspaper archives and video clips  
                                 - Circulars about the public service, FAQs, programme, school and examination calendars  
                                 - Research, publication, education links, ICT contracts, procurement and e-learning  
                                 - Online applications for training, job applications within the department, ministry and other ministries, applications for study leave, payment notifications, news, service procedures, ICT contracts and procurement, FAQs, programme, school, examination calendars, online speech texts, media statements, newspaper archives, video clips, research, publication and education links  
                                 - Circulars about the public service  |
| Non-academics           | - Programme, school and examination calendars  
                                 - Online job applications, payment notifications, news, service procedures, FAQs, research, publications, education links, speech texts, media statements, newspaper archives, video clips, ICT contracts and procurement  
                                 - Circulars about the public service  |
| Government to Government (G2G) | - Online applications for tender, payment notifications, news, service procedures, FAQs, programme, school, examination calendars, research, publications, education links, speech texts, media statements, newspaper archives, video clips, ICT contracts and procurement  
                                 - Circulars about the public service  |
| Government to Business (G2B) | - Online applications for tender, payment notifications, news, service procedures, FAQs, programme, school, examination calendars, research, publications, education links, speech texts, media statements, newspaper archives, video clips, ICT contracts and procurement  
                                 - Circulars about the public service  |

Source: MASED (2010) as of February 2011

MASED also interacts with other ministries to provide knowledge resources online. For example, MASED is linking with the Ministry of Finance to offer online, outgoing
payment services, such as payment of education loans. MASED is also working with the Ministry of Finance to offer online calls for tenders.

4.3.1.4: MASED Government Website Maturity Level

According to interview respondents, the MASED government website maturity level (see Section 2.2) should be classified as Stage 2 (Interactive). The website has FAQs, forms for download etc. The forms available are attuned to stakeholder group needs. For example, teachers can download PSD annual assessment forms to document their case for receiving an annual salary increment. The website, however, does not have established online payment facilities, although, as noted above, MASED is linking with the Ministry of Finance to offer online, outgoing payment services, such as payment of education loans. According to the Assistant Director of ICT Sports, Arts and Co-Curriculum, at this time the MASED website is not considering any concerted move to Stage 3 (Transactional).

“We are in Stage 2: Interactive. This is because we do not have any online payment ... We have FAQs, forms to download and a search engine. Stage 3 - up to this point there is still no need for that.” (PM1: Assistant Director ICT).

According to the Chief Assistant Director ICT of Public School Management, although the MASED website is at the interactive stage, MASED is driven to improve in a number of areas, including some of those at the higher maturity levels. Of note, support for those with disabilities is on the agenda. The current website provides features for the disabled, especially for those with sight disabilities. Users can choose to set the website to display large font size and various colour displays. MASED is also trying to upgrade these features to address the needs of those with other disabilities:

“Current situation - our website has features for the blind, for example the font is big. We would like to enhance the features for other disabled users” (PM3: ICT Officer).

4.3.1.5: Knowledge Management at MASED

Knowledge and knowledge management (KM) have been defined in Chapter 2 (Section 2.6.1). In this section the discussion is limited to KM as facilitated using the MASED website.
In MASED, KM staff (content managers) must follow a guideline provided by the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) to prepare for upload, information, knowledge resources and services on the website. This guideline ensures standardisation of the style and content of government websites throughout Malaysia. The guideline also specifies requirements that direct regular website update and maintenance. Specifically, the guideline addresses management of MASED’s websites, global best practices in the development of websites, practices for the development and coordination of websites including the principles of website development, website characteristics, website security issues, checklists for development, and principles governing the coordination of websites.

An overview of the KM process is shown schematically in Figure 4.3, involving activity within each MASED Division, and within the IM Division. Specifically, each division in the ministry must have a Website Coordination Committee, led by the IM Division. This committee includes a representative from each of the divisions in the department. Staff in the IM Division serve as the technical officers for the websites and the staff from other divisions serve as content managers.

Activities that involve the updating, supervising and coordinating of all websites at MASED are undertaken by the IM Division. Other divisions are responsible for updating and managing the design and content of their division’s website.

MASED has categorised the knowledge resources on websites according to its relevance to three stakeholder groups: students; educators; and employees. For students, MASED offers knowledge resources about pre-schools, primary schools, secondary schools, special education, pre-universities, universities, private education and examinations. For educators, MASED provides knowledge resources about the teachers’ profession and guidelines for training. For employees, MASED gives knowledge resources concerning the corporate activities of all agencies attached to MASED (see Table 4.3).

All divisions under MASED are responsible for the preparation of content to be uploaded to MASED’s websites. This includes online services that are being offered by the divisions (for example, online admission to the matriculation centre, examination...
results and results for application to residential schools). In addition, information about job vacancies available in the divisions, tenders and information about services is available. The websites also allow divisions to announce their program calendars, news and other divisional activities.

**Knowledge Processes within each Division**

![Diagram of Knowledge Processes within each Division]

**Knowledge Processes within IM Division**

![Diagram of Knowledge Processes within IM Division]

Figure 3.3: Overview of KM Processes in MASED
Source: MASED (2010)

*4.3.1.6: Knowledge Transfer Process at MASED*

The researcher turns now to a conceptualisation of the KT process at MASED, structured according to the four stages (Initiation; Implementation; Ramp-up; and Integration) discussed in Chapter 2 (Section 2.6.5). The descriptive model, built upon
descriptions of MASED practice and the inputs of respondents, is depicted schematically in Figures 4.4 – 4.7, employing a standard flowchart notation. It should be noted that the flowchart models that are provided are at a high level of abstraction, and have been designed to provide an overview of the processes carried out that can be mapped to the four stages model only. That is, they are macro rather than micro models.

**Stage 1: Initiation (see Figure 4.4)**

This stage involves the knowledge provider preparing knowledge content for the website. The knowledge content is prepared in recognition of the need for knowledge by users. As discussed above (Section 4.3.1.5 and Figure 4.3) the KM approaches adopted at MASED follow formal processes of development and checking including:

- KM staff (content managers) follow guidelines provided by the MAMPU to prepare for upload, information, knowledge resources and services on the website, insuring standardisation of the style and content of government websites throughout Malaysia (see Figure 4.4 – “Prepare knowledge content based on audience”)

- The proposed knowledge content is subjected to internal validation within the content manager’s division. The knowledge is then sent to IM Division for upload (see Figure 4.4 – “Validate the knowledge content (internal)” and “Send the knowledge content to IM Division”).

- IM Division rechecks the knowledge content before uploading. If the knowledge content is believed to be in error, the knowledge content is referred to the internal team for further review and action (see Figure 4.4 – “IM Division approves the knowledge content”).

At Stage 1, the potential user of the knowledge has recognised a need to fulfil their need for knowledge and commences a search for knowledge, accessing the website (see Figure 4.4 – “User searches for knowledge”). During the knowledge search, if any problem arises, the user can contact MASED for assistance (the means of seeking assistance are discussed in Section 4.3.3, and include email and telephone feedback). During this stage, MASED has to ensure that the website is functioning properly. The technical officers ensure that the system is stable, that all links are functioning and that
the information, knowledge resources and services are easy to search. If they receive a call from the website user regarding a problem encountered during a knowledge search, they will assist the user. MASED will check the website and rectify the problem if any exists (see Figure 4.4 – “Troubleshoot”).

**Stage 2: Implementation (see Figure 4.5)**

This stage begins with the decision of the knowledge recipient to proceed to acquire the knowledge. After the knowledge recipient has found the knowledge that they need from the website, they will acquire it (read from the screen or print). If the knowledge is in video format, the knowledge recipient can choose to play the video.

During the downloading of the knowledge, if the knowledge recipient faces a problem, they can contact MASED for assistance (i.e. they can directly call or e-mail MASED). Whenever the knowledge recipient calls for assistance, MASED staff will assist the knowledge recipient and correct the website if required.

During this stage, MASED must continue to ensure that the website is functioning properly. Specifically, technical officers ensure that the system is stable, that all links are functioning and that the knowledge is easy to download. Specific activities undertaken include “self-checking” (see discussion in Section 4.3.3).
Figure 4.4: Flowchart for the Initiation Stage at MASED (Note: CMS = Content Management System)
Stage 3: Ramp-up (see Figure 4.6)

The ramp-up stage begins when the knowledge recipient starts applying the received knowledge. During application, the knowledge recipient may identify unexpected problems when attempting to align the website advice to the realities of their local context. When this happens, the knowledge recipient can contact MASED for assistance. They can directly call or e-mail MASED (as discussed also at Stage 2 above). Staff responses at this stage, however, may require high levels of technical expertise, together with empathy to understand users who may encounter significant problems in applying the advice to their local context. Whenever the knowledge recipient contacts MASED for assistance, MASED will address their problem, involving either technical support from IM Division and/or reference back to the content manager in the relevant division for advice, and, if necessary, correction of the website for errors that are identified.
During this stage, MASED staff continue to ensure that the website is functioning properly drawing upon feedback mechanisms discussed in Section 4.3.3).

**Stage 3: Ramp-up**

*From Implementation Stage*

- Knowledge recipient
- Apply knowledge
  - MASED
    - Troubleshoot
      - CMS

*Stage 3: Ramp-up*

- Ramp-up Stage complete. Continue to Integration Stage (Figure 4.7)
- Yes
  - Continue to Integration Stage (Figure 4.7)

**Stage 4: Integration (see Figure 4.7)**

At this stage (see Figure 4.7) the knowledge recipient will have received the transferred knowledge, and integrated its use with their needs. Given success, they will refer to the website again in future to meet further knowledge needs, or to reinforce their recollections of already acquired knowledge.

At this stage, the knowledge provider continues to maintain the website and responds to on-going emerging knowledge needs. At MASED, IM Division takes responsibility for
ensuring that the website is functioning properly and that the system is stable. Feedback mechanisms exercised to assess the ongoing status of the site include (see Section 4.3.3) self checks, content download hits, and visit counters. Even though at this stage users have received the knowledge resources and may not necessarily be accessing the website regularly, users may choose to refer to the website to reconfirm their understandings. As such, it is essential that the website continues to function well at all times. Also crucial at this stage, is a requirement for MASED to remain alert to the need to update the website to reflect urgent updates and timely news, in response to governmental decisions or emerging issues. All content authors remain alert to these possibilities.

**Stage 4: Integration**

Consistent with the approach taken to identifying possible CSFs for KT via the website (by studying associated disciplines) (see Sections 2.6 – 2.8), additional aspects of MASED’s wider approaches to customer service and web-based self-service (WSS) are now briefly examined.

### 4.3.1.7: Customer service at MASED

As previously highlighted MASED places a priority on its clients. Consistent with a motto of “Excellent schools, a glorious generation”, MASED serves its clients based on
the Client Charter (Table 4.1). As an example of this commitment, most content managers provide their mobile numbers for clients to use to call concerning any needs related to the website:

“We also give to users our mobile number for them to contact us if they are having problems while using the material” (PM1: Assistant Director ICT).

Although website management at MASED is centralised under IM division, it should be noted that some MASED divisions also create websites using their own domain name. For example, MASED creates a specific website for the schools’ football tournament. As stated by the Assistant Director of ICT Sports, Arts and Co-Curriculum:

“The reason why we request to have our own domain name is so the users can see us, if we put content on the MOE website. Users like websites that are more focused. For example, the PC Fair by PIKOM. For me - I would prefer to go to a website that is directly about the PC Fair rather than having to go to another website and find the link to PC Fair. It is much easier for users to locate the information.” (PM1: Assistant Director ICT)

MASED also creates specialist applications based on specific customer needs, such as EduWeb TV. This application is suitable for teachers to use for teaching and learning in the classroom, for students to use for classroom activities, and as a reference to support students with their school homework, and for parents to use to assist their children to do homework and revision at home.

MASED also regularly visits schools around Malaysia to identify ICT needs. In addition, occasionally MASED will run a program live on television called “With the Ministry”. This program is one of the ways for MASED to interact with its public. MASED will inform the public during this program of information and services that they are providing, including that available on the website. At the same time, the public can call and ask directly on air about any issues pertaining to education. MASED also organises an education carnival throughout Malaysia, in order to provide information to clients concerning study options that are available post secondary school.

4.3.1.8: Web-based Self-Service at MASED

MASED has sought many means for increasing systems’ efficiency and effectiveness, as a source of knowledge to users. In this regard, MASED’s websites can be viewed as
involving five components, as depicted in Figure 4.8: application centre; information centre; administration centre; dissemination information centre; and promotion centre.

The application centre provides online services. The information centre provides online information, including notifications, news, tenders, procedures, and FAQs. The promotion centre provides graphics and multimedia announcements such as an advertisement banner concerning services and education. The information dissemination centre offers users the capability of providing feedback, and a means of communicating with the department. Finally, the administration centre allows content managers to manage website content.
This website architecture is similar to that described earlier (see Section 2.8) as characteristic of WSS – as will be revisited later when aligning the CSF’s identified at MASED with those highlighted in the extant literature. In particular, MASED assesses websites based on four criteria, widely used in the e-government context around the world: interaction with customers; user friendliness; services provided to customers; and other forms of assistance to customers. As such, the approach adopted at MASED is consistent with global best practice (MASED 2010).

**4.3.2: Results: Initial Identification of CSFs**

This section addresses the CSFs for KT via a government education website identified using the techniques described in Chapter 3, from respondent interviews conducted in Malaysia. Note that the grouping/ordering of CSFs is tentative at present - that is it is based only on initial consideration of concepts identified in the literature (Section 2.9). Groupings of CSFs will be taken to focus group meetings (see Chapter 6) for validation. Reported initially are CSFs related directly to the site user, including establishing awareness, ensuring site usability, and understanding stakeholder perspectives, presentation requirements and content requirements. Speed and efficiency of access has been recognised in the next group of CSFs. A CSF related to understanding the available user infrastructure has also been reported. CSFs related to the role of senior management, and to being aware of user ICT literacy and instituting ICT education are reported. Finally a number of practical issues have been highlighted, captured in CSFs related to developer staffing, ensuring interactivity, change management and security. Refinement and grouping of these CSFs will be revisited in Chapter 6 which reports results from the focus groups.

In each case the CSF extracted is defined and sample respondent quotes are included, to highlight the emphasis given to this CSF by respondents. Some initial connections to the literature are noted, although this will be revisited in Chapter 6, once a consolidated set of CSFs from both sites has been prepared.

**MAS_CSF 1 – Awareness and Notification**

**Definition:** Promotion of the website and proactive communication should be undertaken to raise awareness and to inform users of the website, of its content,
functionality, and modifications and/or new developments affecting website operation
and/or content.

MASED staff must highlight knowledge resources available on the website, so raising
users’ awareness. Users on the other hand must make themselves aware of the
knowledge resources available and must be willing to institutionalise the acquired
knowledge.

MASED promote their website to the public by advertising the Uniform Resource
Locator (URL) on television and in local newspapers. MASED also organises an
education carnival during school holidays to inform users of the website. For teachers,
MASED sends e-mail to inform them of extensions to website content, with a link to
that information.

In addition, as noted in Section 4.3.3, MASED also visits schools to identify their ICT
needs and to receive feedback on the websites. In the course of such visits, awareness
of website features is raised.

“We need to inform our clients what they should know. We have to take the initiative to inform them.
Next is users’ awareness. Sometimes users are not aware that most of the materials that they need can be
downloaded from the website.” (PM8: Assistant Director ICT).

“Announce to users that new information is available on the website. We are cooperating with our local
newspaper to announce this matter.” (PM14: Assistant ICT Officer).

Echoing this CSF, as discussed in Section 2.7.2, key service quality assessment criteria
for websites include communication, announcements and marketing. Government must
promote available knowledge services to the public through multiple marketing
tools/strategies, including print, electronic media, and collaboration with the private
sector. For the latter strategy, MASED collaborates with non-government agencies in
Malaysia, to include links to MASED’s website on their corporate websites. In
exchange, MASED includes links to the corporate websites on MASED’s site.

Also relevant is the research of Cooper, Lichtenstein and Smith (2006) who report the
need to market and promote information, knowledge resources and services available
on WSS sites. In similar vein, Deloitte Consulting and Deloitte and Touche (2000)
advise that promotion of an organisation’s website can increase user awareness, ability
and willingness to use a corporate website.
MAS_CSF 2 – Usability: Functionality and Navigation

**Definition:** The website should contain hypertext links that connect users to the intended knowledge efficiently and effectively. The links should be meaningful and easy for users to operate to access knowledge resources.

MASED pays strict attention to usability, in particular the functionality and navigation of the website. The cycles of review of design (see discussion in Section 4.3.1 – KM at MASED), provide means of reviewing and refining functionality/navigation. MASED also runs self checks (see Section 4.3.3), where content managers regularly check websites to ensure that they are performing, including checking all navigation functionality. At the heart of this CSF is an expectation that knowledge resources have to be easy to access, with minimal clicks.

This CSF has some links to aspects of MAS_CSF 3 - User Focus: Understand Needs of the Recipient and MAS_CSF 4 – Presentation of Knowledge Resources. This CSF (MAS_CSF 2 – Usability: Functionality and navigation) demands an understanding of the user, with a focus on delivery of relevant functionality/navigation. MAS_CSF 3 – User Focus: Understand Needs of the Recipient also requires content to be prepared with the recipient in mind, but focuses instead on the choice of meaningful and simple language. MAS_CSF 4 – Presentation of Knowledge Resources requires the appropriate selection of presentation options, predicated again on an understanding of the user. Together, these are the core of an emerging strong user focus theme in the identified CSFs.

“*The interface has to be friendly. The links should be directed according to the title*” (PM3: ICT Officer).

“*We have to make sure that the materials on the website can be downloaded. This requires that the links are directed accordingly and the materials are not too big, and they are compatible with all specifications*” (PM8 Assistant Director ICT).

“*The link also has to work properly and should not have too many clicks*” (PM13: Chief Assistant Director ICT).

This CSF echoes concepts reported in Appendix C related to the features used to evaluate government websites. Usability, as discussed therein, encompasses website navigation, search facilities and the capacity to locate information, knowledge resources and services (Misic & Johnson 1999; Bauer & Scharl 2000; Huizingh 2000;
MAS_CSF 3 - User Focus: Understand Needs of the Recipient

**Definition:** The website content should be prepared with the recipient in mind, including the choice of meaningful and simple language. The user perspective must be understood.

MASED holds service to the user as a priority. Consistent with this, knowledge resources on the website must, above all, be relevant to the needs of the relevant stakeholder groups. Further, they must be expressed in clear, simple and easy to understand terms, chosen with the user in mind. The knowledge resources prepared must be written using language directed to specific stakeholder user groups.

In order to prepare knowledge resources according to user needs, MASED employs a number of means for obtaining feedback regarding required needs. Some means of achieving this are detailed in Section 4.3.3 and include e-mail and telephone feedback, training feedback, visits and surveys.

This CSF has some links to aspects of *MAS_CSF 2 - Usability: Functionality and Navigation* and *MAS_CSF 4 – Presentation of Knowledge Resources*, as discussed as part of the consideration of *MAS_CSF 2* above.

“Basic information such as information about the organisation, online services, staff information for contact purposes should be there. This information can assist the user to call specific officers for assistance” (PM4: Chief Assistant Director ICT).

“The content has to be easy to understand and easy to access. The explanation has to be straight to the point” (PM10: Director ICT).

“The manual needs to be prepared using layman terms” (PM14: Assistant ICT Officer).

“We need to introduce more online services in order to encourage users to use the website” (PM15: Director).

This CSF echoes elements of the research of Kearns (2004) and Schedler and Summermatter (2007) who stress that in order to be customer oriented, governments must appreciate customer service needs. As reported in the customer-service literature, Liu and Lee (2006) note that the customer value-adding processes of a business should
be aligned to delivery on customer-centric promises, such as guaranteed service levels, creativity and convenience. Drawing upon the WSS literature, Piccoli et al. (2004) propose a taxonomy of customer needs amenable to online fulfilment, including: knowledge of the company’s services offered; articles; company background; stock information and other information about the company; knowledge of products and services offered; catalogues; membership services; new products; and FAQs – all of which are predicated on a deep appreciation of user needs.

MAS_CSF 4 – Presentation of Knowledge Resources

**Definition:** The website content should be presented in a format that takes advantage of the variety of available presentation options including colour, font and the opportunity to include multimedia.

Presentation addresses the interface to the website. This includes the design of the website, colour and font size. This CSF emphasises that the presentation should keep the user in mind. As an example, MASED staff pay particular attention to the selection of font size, which should take into consideration possible user disabilities. Further, MASED design expectations ensure that website presentation is engaging, and tuned to the intended audience (e.g., if the intended audience is primary students, the website will be designed with colourful, age-appropriate images).

This CSF has some links to aspects of **MAS_CSF 2 - Usability: Functionality and Navigation** and **MAS_CSF 3 – User Focus: Understand Needs of the Recipient**, as discussed as part of the consideration of MAS_CSF 2 above.

“The website needs to be interesting. No broken links and the items that can be downloaded must not be too big ... the appearance of the website is not too crowded with unnecessary animations” (PM8: Assistant Director ICT).

“We have to design the layout so that the users can find and be aware of new information” (PM12: Chief Assistant Director ICT).

“We design the website so that it can provide services according to users’ needs. Then users will keep on referring to our website” (PM14: Assistant ICT Officer).

As reported in the extant literature on e-government website evaluation (Appendix C Table C.2), designers should be clear about their intended audience in order to adopt appropriate website presentation strategies (Bauer & Scharl 2000; Olsina, Lafuente & Rossi 2001; Smith 2001; Wolfinbarger & Gilly 2002; Parasuraman, Zeithaml & Malhorta 2005; Yang et al. 2005; Yen, Hu & Wang 2005; 2007; Loiacono, Watson &
Goodhue 2007). Designers also should ensure that website presentation ensures that web pages are accessible to users with disabilities (Smith 2001; Huang & Shyu 2008).

**MAS_CSF 5 – Content**

**Definition:** The website should contain content that is accurate, relevant, regularly updated and which meets user requirements. The content should include the name of the content author and their division. It should also contain advice on update schedules so that users can organise their revisit times.

MASED’s disciplined approach to the preparation of website materials supports meeting this CSF. As discussed in Section 4.3.1 (KT Stage 1 – Initiation), MASED has a defined process involving content authors, internal checking and checking by the IM Division in place to assure the accuracy of content. Procedures listed in Section 4.3.1 (KT Stage 4 – Integration) are designed to ensure that content on the website remains current and relevant. In the course of content preparation, MASED includes advice on planned updates so that users can know when to schedule revisits to the website.

Feedback mechanisms reported in Section 4.3.3, including e-mail and telephone feedback, self-checks, training feedback, site visits, and surveys, serve to highlight content inadequacies.

This CSF has some connections to **MAS_CSF 2 – Usability: Functionality and Navigation; MAS_CSF 3 – User Focus: Understand Needs of the Recipient; and MAS_CSF 4 – Presentation of Knowledge Resources** above, in that all are predicated on understanding aspects of the needs of the user community. There is a strong sense in this CSF, however, of the importance of the accuracy/authority associated with the content.

“We have to make sure that the information is always ready and up-to-date” (PM2: Assistant ICT Officer).

“Make sure that the information on the website is not redundant. It has to be updated on a regular basis” (PM8: Assistant Director ICT).

“The management of content is important. The officer in charge from each division has to make sure that the content that they provide is correct and updated on a regular basis. The information also has to be relevant” (PM12: Chief Assistant Director ICT).

This CSF reflects extensive advice in the extant literature on website service quality (Appendix D) which highlights content accuracy, depth, quality, and reliability.
MAS_CSF 6 – Accessibility

**Definition:** The website should be developed and designed to provide users with easy and fast access to downloadable knowledge resources.

MASED ensures that knowledge is easy and fast to download from the website. Downloadable items must not be excessively large and must adopt formats that facilitate download.

While at first sight this CSF may appear closely linked to MAS_CSF 2 – Usability: Functionality and Navigation, this CSF does not focus on the importance of specific website functionality including navigability, but instead on issues to do with reasonable response times. It therefore is linked in part to technical issues of system response, in particular MAS_CSF 7 - ICT Infrastructure: Availability and Functionality, which highlights that it is critical to understand users’ technology availability in order to decide how to prepare content and present knowledge in order to achieve acceptable response times (e.g., when loading pages and downloading resources).

“The information must be easy to access. If the address is too long, has many slashes, it will trouble the users” (PM1: Assistant Director ICT).

Lastly is easy access. The website should not have too many graphics” (PM3: ICT Officer).

“We have to make sure that the items are compatible with most of the specifications. Not too big and easy to be found” (PM12: Chief Assistant Director ICT).

The extant literature on website service quality (Appendix D) acknowledges the importance of accessibility, characterised as a two-way interaction between government and users (Zeithaml, Parasuraman & Malhota 2002; Yang & Fang 2004; Parasuraman, Zeithaml & Malhotra 2005; Hu et al. 2009).

MAS_CSF 7 - ICT Infrastructure: Availability and Functionality

**Definition:** Basic ICT infrastructure should be available to users. It should function properly and respond quickly to support users to access and use the knowledge resources.
This CSF acknowledges that MASED must understand the ICT infrastructure available to its users and ensure that the website delivered is compatible with that infrastructure. Further, MASED must ensure that the network and server are stable.

In the Malaysian context, MASED oversees the provision of ICT facilities (hardware and software) to teachers at schools throughout Malaysia. MASED must ensure that the ICT facilities provided are in good condition, that the application software provided is suitable to purpose, and that it supports efficient access to the information, knowledge resources and services provided via the website.

This CSF is associated with **MAS_CSF 6 – Accessibility** in that it highlights that it is critical to understand users’ technology availability in order to decide how to prepare content and present knowledge to achieve acceptable response times (e.g., when loading pages and downloading resources). Issues such as hosting, server stability, and the speed of internet connection may have significant implications concerning website design.

"The hosting and stability of the website are important so that users can download information” (PM1: Assistant Director ICT).

"Network and server must be functioning properly so that users find it easy to submit forms” (PM2: Assistant ICT Officer).

"Speed of the Internet connection is also important. If the speed is slow, users will have trouble getting the information” (PM3: ICT Officer).

"The Internet connection has to work properly and function accordingly” (PM8: Assistant Director ICT).

"Our main concern is users in the rural areas, so that they have access to the ICT infrastructure” (PM10: Director ICT).

This CSF echoes the research of Cooper, Lichtenstein and Smith (2006) who identified the availability of appropriate IT infrastructure capability at both provider and user sites as critical to the achievement of KT in the context of WSS.

**MAS_CSF 8 – Leadership**

**Definition:** Management should proactively persuade and encourage usage of the website by supporting, explaining and creating awareness of the online services to users, especially government employees. This should be supported by documented policy, rules and regulations.
This CSF moves beyond the user focus of the preceding CSFs, to issues surrounding particular stakeholders – in this case a management focus. Management, especially senior officers should support and encourage the usage of the website. They should provide exemplars, create awareness and explain to users the online services. They should also encourage users to follow rules and regulations that have been implemented for the website. They should direct and facilitate KM efforts, supervise projects, support work groups, and provide incentives to encourage knowledge sharing and reuse. Also they can play a role as a director and coordinator in order to promote quality services.

“Enforcement and commitment to follow the rules and regulations. Also support by top management is important” (PM1: Assistant Director ICT).

“Keep on encouraging users to refer to the website” (PM4: Chief Assistant Director ICT).

As reported in the extant literature (Appendix B), leadership and strategic thinking readiness is a key e-government challenge. This challenge includes the readiness of a leader to think strategically in order to develop clear strategies for e-government, expressed as visions, missions and objectives (Heeks 2002; Jaeger & Thompson 2003; Ndou 2004). In a similar vein, in the context of customer service (Section 2.7.1), top management leadership and support are reported as critical (Wagenheim & Reurink 1991; Deloitte Consulting and Deloitte & Touche 2000; Kearns 2004; Schedler & Summermatter 2007; Castelnovo & Simonetta 2008; UN 2008).

MAS_CSF 9 – User ICT Literacy: Awareness

**Definition:** Developers must be aware of users’ different levels of ICT literacy in order to prepare content and to present knowledge.

In **MAS_CSF 7 – ICT Infrastructure: Availability and Functionality**, the importance of understanding the ICT infrastructure available to users was raised. This CSF has some links to that, but emphasises that MASED should be aware of the differences in ICT user capability – the knowledge users have of how to work with the ICT available to them. MASED can probe the ICT literacy levels of users during visits to schools (see Table 4.5 for the feedback mechanisms related to this CSF). Drawing upon that, MASED staff design knowledge resources and present them on the website, to cater to all user levels.
Users on the other hand, should take the initiative to learn how to use the ICT facilities provided. They should communicate with MASED regarding any difficulties experienced while using ICT facilities. One of the respondents explicitly mentioned that users who have below average levels of ICT literacy, have been observed to be having difficulties accessing knowledge resources from some areas of the MASED websites.

This CSF has some relationship to *MAS_CSF 10 – Education, Training and Knowledge Sharing*, insomuch as MAS_CSF 10 captures the criticality of a successful response to identified shortfalls in user ICT literacy levels.

“Knowledge of users. Sometimes users would like to download information but they don’t know where to click. We have provided everything on the website. Users need to have knowledge, for example on where to click for the information and how to save the information received” (PM1: Assistant Director ICT).

“User should know how to use the ICT equipment” (PM3: ICT Officer).

This CSF reflects the findings of Cooper, Lichtenstein and Smith (2006), who reported as critical “organisational commitment and readiness”, encompassing appropriate levels of user ICT literacy, for KT to be achieved when WSS is used in a business-to-business (B2B) environment.

**MAS_CSF 10 – Education, Training and Knowledge Sharing**

**Definition:** Additional support such as education and training should be provided to users to assist them retrieving and applying knowledge. Support management can be provided via face-to-face sessions, telephone, e-mail or other channels. Instruction manuals can also be provided on the website. Users should be encouraged to share the knowledge that they have learned from the training sessions.

This CSF is focussed upon responding to shortfalls in user ICT expertise recognised in *MAS_CSF 9: User ICT Literacy: Awareness*. In response, MASED provides training for user to use online services. Training is conducted in small groups. Individual coaching is also available upon request. In addition, MASED provides manuals supporting the online services on websites. The manuals can assist users with data entry and processing, reduce human error and reduce the turnaround time for processing, hence increasing service quality and the continuance intention of users of online
services. Users can also call or e-mail MASED, to obtain help to access knowledge on the website (see Section 4.3.3).

“We provide training for users on how to use the materials. We also give users our mobile number for them to contact us if they are having problems while using the material” (PM1: Assistant Director ICT).

“We need to provide training for users on how to use any new systems and explain the guidelines. We also have to make sure the manuals that we provide are correct and comprehensive ...” (PM8: Assistant Director ICT).

This CSF is consistent with the findings of Cooper, Lichtenstein and Smith (2006), who stressed the criticality of educating and assisting users in order to achieve KT via WSS in B2B environments. Cooper, Lichtenstein and Smith (2006) saw this as an element of a broader requirement of establishing organisational commitment and readiness.

**MAS_CSF 11 – Employee Focus**

**Definition:** Management should understand the processes involved in administering the website. This should address staffing levels, awareness and understanding of users’ job tasks.

MASED respondents argued that management, in particular human resource management (HRM), must be aware of the specific job tasks of the website providers. Further, it is critical that management must provide sufficient, appropriately skilled staff to develop content and operate the website. In the absence of such employees, the quality and delivery of information, knowledge resources and services will suffer, so compromising the achievement of KT by means of the website.

According to the MASED respondents, currently content managers for each division must be knowledgable concerning all tasks related to knowledge resource preparation and delivery via the website. At MASED, it falls to HRM to understand the requirements to undertake such work tasks and to specify the employee roles and skill sets.

“The important factor is manpower. We need people to manage the website. The main task is to manage the website” (PMS5: Assistant Director ICT).

The explicit recognition of this CSF by MASED respondents, in the context of achieving KT via an e-government website, is interesting inasmuch as the extant literature in related disciplines does not explicitly raise this as a CSF. References to
employee skill sets that do exist relate instead to matters related to broader project implementation success. For example, Staniszkis and Staniszkis (2006) advocate that human resource divisions should match work participant qualifications with requirements of the process work tasks in all projects, including those related to KM. Traunmuller, Orthofer and Gieber (2006) advocate that employees should be assigned tasks according to job specifications and their qualifications to ensure smooth process execution in an administrative environment. It is of interest to note that in the Malaysian context, Siddiquee (2008) reports that to support the emergence of technology, Malaysia has had to introduce programs to address specifically the critical challenge of manpower needs.

**MAS_CSF 12 – Interactive Platform**

**Definition:** The website should be developed to provide users with a platform that can enable users to actively interact with the department, by giving opinions and suggestions for improvement.

Respondents have argued that, recognising the capabilities expected of websites at maturity levels above Level 2 (see Section 4.3.1, MASED Government Website Maturity Level), it is important to deliver knowledge resources via an interactive platform. Specifically, MASED is seeking to design its website as an interactive platform that facilitates users providing feedback to the departmental knowledge providers and website developers. In addition, the interactive platform facilitates the delivery of WSS to users. Further, users can participate in the whole process of service and content design, through access to the feedback capabilities supported by an interactive platform.

“We need to provide a platform for users to contribute ideas freely. This is also to allow users to participate in managing e-government projects” (PM4: Chief Assistant Director ICT).  
“We ensure that the website becomes an interactive medium between the division and users. We have to provide according to users need” (PM13: Chief Assistant Director ICT).

While this CSF has not been explicitly recognised in the literature drawn from associated disciplines (see Chapter 2), there are some indicators of its importance. In the KM literature, Misra, Hariharan and Khaneja (2003) report that tacit knowledge is best shared through interaction and dialogue, such as e-mail, discussion groups, expert locators, chat rooms, e-learning through online seminars and virtual classrooms, audio
and videoconferencing links and other virtual interactive collaborative workspaces. In the customer service literature, Liu and Lee (2006) state that customers should be encouraged to participate in steering committees and supervisory or advisory boards in order to design interactive websites to meet customer and business needs. Hu et al. (2009) suggest that the opportunity for users to interact with specialists can provide website assurance to users - an ability of the website to inspire trust and confidence. Finally, in the context of e-government, Traunmuller, Orthofer and Gieber (2006) assert that citizen involvement and democratic deliberation are important in the governance cycle of e-government solutions, and can only be supported by sites that support G2C and C2G interaction.

**MAS_CSF 13 – Attitude and Change Management**

**Definition:** The website should be developed for the purpose of dissemination of knowledge resources to users. Therefore, the whole organisation should be keen to learn and adopt the new work practices and new ways of processing and performing tasks.

This CSF looks to organisational issues surrounding shaping organisational culture, and facilitating change management. As such, it is essential to proactively affect attitude and facilitate appropriate change in both the developer and user communities, to realise the opportunities that come with learning and adopting the new work practices and new ways of processing and performing tasks that are being presented on the website.

Specifically, and within its control, MASED employees seek to change the way they work and MASED employs change management approaches to shape attitudes.

“It is the attitude of users. They have to start using the online services and go to the websites for information. But most of them prefer to call the department. Of course we assist them. But then the objective of using the websites to distribute information and services has not been achieved yet” (PM6: Chief Assistant Director ICT).

“Culture and attitude of users. We have to encourage the users to actually follow instructions” (PM10: Director ICT).

According to the discussion in Section 2.2.6 and Appendix B (Table B.1), change management is a key e-government challenge (Ndou 2004; Traunmuller & Wimmer 2004). United Nations (UN) (2008), for example, emphasises the importance of codes of conduct - formal documentation in an organisation which identifies values and
beliefs held within an organisation and governing behaviour when establishing e-government processes and infrastructure. Establishing such documents and attitudes that are attuned to them is critical.

In the context of KM, Misra, Hariharan and Khaneja (2003) advocate that providers need to establish a culture where staff constantly scan the environment for potential opportunities and threats. The organisation must be fully prepared to exploit emerging situations to their advantage, and must administer and maintain the KM portal and its contents so that they are fully geared to meet the demands of users, and interact with team members and other government departments to explore possible areas of knowledge sharing. In similar vein, in the extant customer service literature, Liu and Lee (2006) emphasise that creating a culture of teamwork is crucial for customer relationship management (CRM) success.

In this regard, Misra, Hariharan and Khaneja (2003) and Dooley (1997) report that there are many ways of shaping attitudes to make KM part of the regimen of staff, such as making the knowledge portal a gateway to all the daily computer activities such as e-mails, news, knowledge resources, access to experts, interactions etc. Cullen (2008) and Staniszki and Staniszki (2006) note that the employees of the organisation must be encouraged to build a culture of working together to meet the objectives of website development.

**MAS_CSF 14 – Security**

**Definition:** The website should provide users with a secure environment that makes users feel confident to use the website.

This CSF argues that website users must feel secure when using the website if KT is to proceed. Although the MASED website does not require users to input personal information, MASED still seeks to create an environment where users feel safe and confident. This CSF relates, in part at least, to **MAS_CSF 3 - User Focus: Understand Needs of the Recipient.**

Perceived levels of security can profoundly influence users’ perceptions of online service quality. This can be addressed via website design, by providing evidence or
certifications that demonstrate how secure the website is. At MASED, users are encouraged to e-mail MASED if they feel that their activity while using the website is not safe.

“Security also becomes an issue. Users need to feel safe and confident - then they will use the services” (PM4: Chief Assistant Director ICT).

“Policy makers are also critical. It is not easy to set a standard policy regarding security and firewalls” (PM9: Senior Coordinator ICT).

The critical nature of perceived security has been recognised in the existing customer service literature. For example, Hu et al. (2009) assert that security can influence users’ perceptions of online service quality. This can be addressed via website design that provides evidence or certifications that demonstrate how secure the website is. Smith (2008) proposes that with the rapid growth of e- and m-government activities, government has to improve security and trust in their CRM in order to become successful.

This factor has also been recognised in the extant WSS literature. Cooper, Lichtenstein and Smith (2006) stress that it is critical for WSS success that the website provider enforces system security and data privacy.

Table 4.4 presents a summary of the definitions of the CSFs, identified above. This list will be revisited in Chapter 6.
Table 4.4: Summary of Definitions of CSFs

<table>
<thead>
<tr>
<th>CSF</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS_CSF 1 – Awareness and Notification</td>
<td>Promotion of the site and proactive communication should be undertaken to raise awareness and to inform external users of the site, of its content, functionality, and modifications and/or new developments affecting website operation and/or content.</td>
</tr>
<tr>
<td>MAS_CSF 2 – Usability: Functionality and Navigation</td>
<td>The website should contain hypertext links that connect users to the intended knowledge efficiently and effectively. The links should be meaningful and easy for users to operate to access knowledge resources.</td>
</tr>
<tr>
<td>MAS_CSF 3 - User Focus: Understand Needs of the Recipient</td>
<td>The website content should be prepared with the recipient in mind, including the choice of meaningful and simple language. The user perspective must be understood.</td>
</tr>
<tr>
<td>MAS_CSF 4 – Presentation of Knowledge Resources</td>
<td>The website content should be presented in a format that takes advantage of the variety of available presentation options including colour, font and the opportunity to include multimedia.</td>
</tr>
<tr>
<td>MAS_CSF 5 – Content</td>
<td>The website should contain content that is accurate, relevant, regularly updated and which meets user requirements. The content should include the name of the content author and their division. It should also contain advice on update schedules so that users can organise their revisit times.</td>
</tr>
<tr>
<td>MAS_CSF 6 – Accessibility</td>
<td>The website should be developed and designed to provide users with easy and fast access to downloadable knowledge resources.</td>
</tr>
<tr>
<td>MAS_CSF 7 - ICT Infrastructure: Availability and Functionality</td>
<td>Basic ICT infrastructure should be available to users. It should function properly and respond quickly to support users to access and use the knowledge resources.</td>
</tr>
<tr>
<td>MAS_CSF 8 – Leadership</td>
<td>Management should proactively persuade and encourage usage of the website by supporting, explaining and creating awareness of the online services to users, especially government employees. This should be supported by documented policy, rules and regulations.</td>
</tr>
<tr>
<td>MAS_CSF 9 – User ICT Literacy: Awareness</td>
<td>Developers must be aware of users’ different levels of ICT literacy in order to prepare content and to present knowledge.</td>
</tr>
<tr>
<td>MAS_CSF 10 – Education, Training and Knowledge Sharing</td>
<td>Additional support such as education and training should be provided to users to assist them retrieving and applying knowledge. Support management can be provided via face-to-face sessions, telephone, e-mail or other channels. Instruction manuals can also be provided on the website. Users should be encouraged to share the knowledge that they have learned from the training sessions.</td>
</tr>
<tr>
<td>MAS_CSF 11 – Employee Focus</td>
<td>Management should understand the processes involved in administering the website. This should address staffing levels, awareness and understanding of users’ job tasks.</td>
</tr>
<tr>
<td>MAS_CSF 12 – Interactive Platform</td>
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</tr>
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<td>MAS_CSF 13 – Attitude and Change Management</td>
<td>The website should be developed for the purpose of dissemination of knowledge resources to users. Therefore, the whole organisation should be keen to learn and adopt the new work practices and new ways of processing and performing tasks.</td>
</tr>
<tr>
<td>MAS_CSF 14 – Security</td>
<td>The website should provide users with a secure environment that makes users feel confident to use the website.</td>
</tr>
</tbody>
</table>

4.3.3: Feedback Mechanisms

In this section, nine mechanisms for seeking feedback on website performance, as highlighted by the MASED respondents, are reported. These suggest some feedback mechanisms that may be used to evaluate some elements of the performance of
websites as vehicles for KT. Subsequently, as summarised in Table 4.5, these mechanisms are related to the 14 CFSs identified above. As will be clear, these tend to relate heavily to the technical performance of the website, reflecting a clear focus on technical rather than managerial or organisational issues in the MASED identified CSFs above. Issues related to the need for feedback mechanisms to more comprehensively address other dimensions of the CSFs, will be revisited in Chapter 6, once the validated CSFs from both sites have been determined.

Note that the order below does not represent the priority reported by the respondents, but simply the order in which the various feedback mechanisms emerged during the analysis of interview transcripts.

1) **E-mail and Telephone Feedback** - Users e-mail or telephone MASED whenever they fail to download items from the website, or experience system failure. Further, during meetings with teachers, feedback (both positive and negative) regarding the website is provided. Positive feedback serves as confirmation that the site is meeting user needs, whilst negative feedback is an indicator of site shortfalls. Specifically, positive interactions provide confirmation that the user knows how to use the website. In addition, shortfalls in knowledge content can be identified. MASED also receives feedback from users regarding accessibility and the usability features of the website by these means.

“Users will e-mail or call whenever they don’t get the information. They also inform me whenever the system fails. I always draw a conclusion based on the feedback that I receive from teachers .... Whenever we receive a submission regarding ICT reports online we can identify whether the user understands or not” (PM1: Assistant Director ICT).

“If we receive e-mail or calls from a user asking about any content, we know that that information has not been updated” (PM2: Assistant ICT Officer).

2) **Self-checks** – Content managers regularly self-check websites to ensure that they are performing. Content on the website will be checked for ease of download. Any errors or problems encountered will be conveyed to IM Division. This can provide insights into whether the presentation of the website is appropriate. The website is also checked for the security compliance.

“We always perform self-checking on the website - from time to time. If there are errors or problems, we send feedback to IM Division. I always test the website. Easy to upload or download content” (PM1: Assistant Director ICT).

“For the website, there will be an officer to double check the website on a weekly basis and to provide feedback on the condition of the website” (PM3: ICT Officer).
3) **Content Download Hits** – MASED tracks how many times various content on the website has been downloaded. Frequent successful download may be indicative of correct technical website performance. Further, frequent downloads may suggest that the content is deemed important by users, fitting their knowledge resource needs. It is important to note, however, that one cannot assume just because an item is downloaded many times it works or meets user needs – an alternative explanation is that the item may be hard to understand with one read, or that an installation may fail on initial access attempts. As such, MASED staff use content hits as positive indicators only if supported by other indicators.

“If any information is uploaded to the MOE website, the website can count how many times the information has been downloaded. If the information has been downloaded many times then we have succeeded” (PM1: Assistant Director ICT).

“From the hits of the information. If the hits are high, we know that information is important to users. Therefore, we have to make sure that information can be easy to download” (PM11: ICT Officer).

4) **Training Feedback** – MASED provides training to existing and new users, especially teachers. During training sessions, MASED can obtain feedback regarding the website and can identify users’ ICT capability levels, understandings that may form important input to the design or redesign of the website or website content.

“From the training that we conduct for new and existing users whenever there is new system. During the training I can identify that the users fall in many levels of ICT knowledge, either high or low” (PM1: Assistant Director ICT).

5) **Visits** – MASED also visits schools to identify their ICT needs and to receive feedback on the websites. MASED can also identify the attitudes of users, especially teachers, to ICT usage. These insights can relate both to the technology and to the design, content and performance of the site.

“We visit the schools and get feedback. I knew that teachers could not use the SchoolNet from the feedback from the ICT Coordinators in schools. They told me that the Internet is slow. From there I know that users are having problem with the Internet connection” (PM1: Assistant Director ICT).

“Same goes for the attitude of the teachers. When we visit the schools we know how the teachers react towards the ICT equipment” (PM3: ICT Officer).

6) **Record Keeping** – MASED keeps records of all ICT equipment that has been allocated to schools. This facilitates MASED knowing, in detail, the ICT infrastructure of all schools. This is relevant in particular to the achievement of **MAS_CSF 7 – ICT Infrastructure: Availability and Functionality.** By accessing these records, MASED can know the ICT facilities available to users and they can use this understanding to design
sites that are compatible with the capability of users’ ICT equipment and so facilitate users accessing knowledge resources on the website efficiently.

“We keep records on whatever ICT equipment that we deliver to the schools” (PM3: ICT Officer).

7) **Surveys** – MASED surveys users to assess their ICT skills, to facilitate the planning of ICT training. Using these surveys, MASED also seeks insight into the information needs that might be provided via the website, to their relevance to users meeting their transferred knowledge expectations.

“For the teachers’ skills, we do a survey” (PM3: ICT Officer).

“We ask for their requirements regarding information that they want on the website” (PM4: Chief Assistant Director ICT).

8) **Compliance with Guidelines** – MASED provides services to users based on the client’s charter. As stated in Table 4.1, the client’s charter records MASED’s determination to provide quality services for their user communities. MASED has therefore established guidelines that capture website management, design and implementation practices consistent with achieving the charter. When carrying out site reviews (eg, see “self checks” above), consistency with these guidelines is, in part at least, an indicator of site quality as a vehicle for KT.

“For users’ needs, we can refer to the clients’ charter. We need to provide users with information according to the charter,” (PM8: Assistant Director ICT).

9) **Visit Counters** – MASED uses counters to identify the number of daily visitors to its websites. Using this information MASED can identify which parts of each website have been frequently visited, indicative of the function and relevance to users of this information and the available services. Note that this is related to the “content download hits” website performance measure highlighted earlier. This measure, however, counts visits rather than specific resource downloads. Nevertheless, MASED staff are aware that high numbers of visits are not necessarily indicators of satisfaction. As noted above, frequent visits to an area may actually be indicative of that item being hard to understand with one read or that an installation may even fail on initial access attempts.

“We have a counter on the website that can inform us of number of visitors” (PM13: Chief Assistant Director ICT).

Table 4.5 reports the alignment of the above nine feedback mechanisms to the identified CSFs. It represents an assessment, drawing upon the commentary above from
respondents, as to which mechanisms might provide feedback relevant to forming a judgement, in part at least, on the achievement of particular CSFs. As shown, the mechanisms cited by users apply widely across a number of CSFs rather than being specific to particular CSFs. In addition, some CSFs (e.g., Awareness and Notification, Leadership, Employee Focus) do not appear to have any mechanisms for assessing achievement identified other than the suggestion that e-mail and telephone feedback may provide some insights. The application of these feedback mechanisms will be revisited, and critiqued in Chapter 6, together with those identified in the AUSED case study.
Table 4.5: Alignment of Feedback Mechanisms with the Identified CSFs

<table>
<thead>
<tr>
<th>CSFs</th>
<th>E-mail and Telephone Feedback</th>
<th>Self-Checks</th>
<th>Content Download Hits</th>
<th>Training Feedback</th>
<th>Visits</th>
<th>Record Keeping</th>
<th>Surveys</th>
<th>Compliance with Guidelines</th>
<th>Visit Counters</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS_CSF 1 – Awareness and Notification</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 2 – Usability: Functionality and Navigation</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 3 - User Focus: Understand Needs of the Recipient</td>
<td>✓</td>
<td></td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 4 – Presentation of Knowledge</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 5 – Content</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 6 – Accessibility</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 7 - ICT Infrastructure: Availability and Functionality</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 8 – Leadership</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 9 – User ICT Literacy: Awareness</td>
<td>✓</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 10 – Education, Training and Knowledge Sharing</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 11 – Employee Focus</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 12 – Interactive Platform</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 13 – Attitude and Change Management</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 14 – Security</td>
<td>✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3.4: The Association of CSFs with the KT Stages

To establish the CSFs reported above, respondents had been asked to consider, in turn, factors that were critical to each of the four KT stages (Initiation, Implementation, Ramp-up and Integration – see Figures 4.4 – 4.7). In this section the 14 CSFs reported in Table 4.4 are unpacked, highlighting the specific KT stages with which each CSF was considered to be associated.

These results are reported in Table 4.6, which shows, for each CSF, the number of respondents who reported each CSF at each stage, and overall. These figures are displayed graphically in Figure 4.9.

Table 4.7 revisits the results reported in Table 4.6, but reports only instances where a CSF was the first mentioned by a respondent when considering each KT stage. This subset of the results may provide some insight into which CSFs were at the front of each respondent’s mind, and will be discussed further in Chapter 6 as a means of appreciating the priority placed by respondents on each identified CSF. This technique was previously introduced and discussed in Section 3.9.

Some initial observations, drawn from these results, include:

- CSFs have been identified almost uniformly across the four stages: ten CSFs in each of Stage 1 – Initiation, Stage 3 – Ramp-up and Stage 4 – Integration, and eight CSFs in Stage 2 – Implementation.
- Overall, the most frequently cited CSFs are: MAS_CSF 3 – User focus: Understand needs of recipient; MAS_CSF 7 – ICT infrastructure: Availability and functionality; MAS_CSF 5 – Content; MAS_CSF 13 – Attitude and change management; and MAS_CSF 9 – User ICT literacy: Awareness.
- During the Initiation Stage respondents report MAS_CSF 3 – User focus: Understand needs of recipient most frequently, followed by MAS_CSF 1 – Awareness and Notification and MAS_CSF 7 – ICT infrastructure: Availability and functionality.
- During the Implementation Stage respondents report MAS_CSF 7 – ICT infrastructure: Availability and functionality most frequently, followed by MAS_CSF 9 – User ICT literacy: Awareness and MAS_CSF 6 – Accessibility.
• During the **Ramp-up Stage** respondents report *MAS_CSF 13 – Attitude and change management* most frequently, followed by *MAS_CSF 9 – User ICT literacy: Awareness* and *MAS_CSF 10 – Education, training and knowledge sharing*.

• Finally, during the **Integration Stage** respondents clearly report *MAS_CSF 5 – Content* most frequently.
# Table 4.6: The CSFs reported by the Respondents, associated with each KT Stage

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Stage 1 - Initiation</th>
<th>Stage 2 - Implementation</th>
<th>Stage 3 - Ramp-up</th>
<th>Stage 4 - Integration</th>
<th>Total number of times the CSF has been raised by the respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS_CSF 1 – Awareness and notification</td>
<td>3 respondents (PM8: Assistant Director ICT, PM10: Director ICT, PM11: ICT Officer)</td>
<td>2 respondents (PM8: Assistant Director ICT, PM14: Assistant ICT Officer)</td>
<td>1 respondent (PM13: Chief Assistant Director ICT)</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>MAS_CSF 2 – Usability: Functionality and navigation</td>
<td>2 respondents (PM13: Chief Assistant Director ICT, PM14: Assistant ICT Officer)</td>
<td>2 respondents (PM8: Assistant Director ICT, PM15: Director)</td>
<td>-</td>
<td>1 respondent (PM3: ICT Officer)</td>
<td>5</td>
</tr>
<tr>
<td>MAS_CSF 3 – User focus: Understand needs of recipient</td>
<td>10 respondents (PM1: Assistant Director ICT, PM4: Chief Assistant Director ICT, PM5: Assistant Director ICT, PM6: Chief Assistant Director ICT, PM7: Assistant Director ICT, PM8: Assistant Director ICT, PM10: Director ICT, PM11: ICT Officer, PM13: Chief Assistant Director ICT, PM15: Director)</td>
<td>2 respondents (PM3: ICT Officer, PM5: Assistant Director ICT)</td>
<td>2 respondents (PM13: Chief Assistant Director ICT, PM14: Assistant ICT Officer)</td>
<td>1 respondent (PM15: Director)</td>
<td>15</td>
</tr>
<tr>
<td>MAS_CSF 4 – Presentation of knowledge resources</td>
<td>1 respondent (PM12: Chief Assistant Director ICT)</td>
<td>-</td>
<td>-</td>
<td>2 respondents (PM8: Assistant Director ICT, PM14: Assistant ICT Officer)</td>
<td>3</td>
</tr>
<tr>
<td>MAS_CSF 5 – Content</td>
<td>2 respondents (PM2: Assistant ICT Officer, PM15: Director)</td>
<td>-</td>
<td>1 respondent (PM12: Chief Assistant Director ICT)</td>
<td>8 respondents (PM3: ICT Officer, PM5: Assistant Director ICT, PM6: Chief Assistant Director ICT, PM7: Assistant Director ICT, PM8: Assistant Director ICT, PM10: Director ICT, PM11: ICT Officer, PM12: Chief Assistant Director ICT)</td>
<td>11</td>
</tr>
</tbody>
</table>
Table 4.6: The CSFs reported by the respondents, associated with each KT Stage – (Continued)

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Stage 1 - Initiation</th>
<th>Stage 2 - Implementation</th>
<th>Stage 3 - Ramp-up</th>
<th>Stage 4 - Integration</th>
<th>Total number of times the CSF has been raised by the respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS_CSF 6 – Accessibility</td>
<td>2 respondents (PM1: Assistant Director ICT, PM12: Chief Assistant Director ICT)</td>
<td>3 respondents (PM3: ICT Officer, PM4: Chief Assistant Director ICT, PM6: Chief Assistant Director ICT)</td>
<td>-</td>
<td>1 respondent (PM3: ICT Officer)</td>
<td>6</td>
</tr>
<tr>
<td>MAS_CSF 7 – ICT infrastructure: Availability and functionality</td>
<td>3 respondents (PM1: Assistant Director ICT, PM3: ICT Officer, PM9: Senior Coordinator ICT)</td>
<td>7 respondents (PM1: Assistant Director ICT, PM2: Assistant ICT Officer, PM8: Assistant Director ICT, PM10: Director ICT, PM11: ICT Officer, PM12: Chief Assistant Director ICT, PM13: Chief Assistant Director ICT)</td>
<td>2 respondents (PM2: Assistant ICT Officer, PM4: Chief Assistant Director ICT)</td>
<td>2 respondents (PM2: Assistant ICT Officer, PM9: Senior Coordinator ICT)</td>
<td>14</td>
</tr>
<tr>
<td>MAS_CSF 8 – Leadership</td>
<td>-</td>
<td>-</td>
<td>1 respondent (PM1: Assistant Director ICT)</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>MAS_CSF 9 – User ICT literacy: Awareness</td>
<td>1 respondent (PM3: ICT Officer)</td>
<td>4 respondents (PM1: Assistant Director ICT, PM7: Assistant Director ICT, PM9: Senior Coordinator ICT)</td>
<td>4 respondents (PM3: ICT Officer, PM7: Assistant Director ICT, PM8: Assistant Director ICT, PM9: Senior Coordinator ICT)</td>
<td>-</td>
<td>9</td>
</tr>
</tbody>
</table>
Table 4.6: The CSFs reported by the Respondents, associated with each KT Stage – (Continued)

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Stage 1- Initiation</th>
<th>Stage 2 - Implementation</th>
<th>Stage 3 - Ramp-up</th>
<th>Stage 4- Integration</th>
<th>Total number of times the CSF has been raised by the respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS_CSF 10 – Education, training and knowledge sharing</td>
<td>1 respondent (PM3: ICT Officer)</td>
<td>1 respondent (PM4: Chief Assistant Director ICT)</td>
<td>3 respondents (PM1: Assistant Director ICT, PM3: ICT Officer, PM8: Assistant Director ICT)</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>MAS_CSF 11 – Employee Focus</td>
<td>1 respondent (PM5: Assistant Director ICT)</td>
<td>-</td>
<td>1 respondent (PM4: Chief Assistant Director ICT)</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>MAS_CSF 12 – Interactive platform</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2 respondents (PM4: Chief Assistant Director ICT, PM13: Chief Assistant Director ICT)</td>
<td>2</td>
</tr>
<tr>
<td>MAS_CSF 13 – Attitude and change management</td>
<td>-</td>
<td>1 respondent (PM9: Senior Coordinator ICT)</td>
<td>7 respondents (PM3: ICT Officer, PM5: Assistant Director ICT, PM6: Chief Assistant Director ICT, PM10: Director ICT, PM11: ICT Officer, PM12: Chief Assistant Director ICT, PM15: Director)</td>
<td>2 respondents (PM4: Chief Assistant Director ICT, PM9: Senior Coordinator ICT)</td>
<td>10</td>
</tr>
<tr>
<td>MAS_CSF 14 - Security</td>
<td>-</td>
<td>-</td>
<td>1 respondent (PM4: Chief Assistant Director ICT)</td>
<td>2 respondents (PM4: Chief Assistant Director ICT, PM9: Senior Coordinator ICT)</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>26</td>
<td>8</td>
<td>22</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Total</th>
<th>CSFs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>10</td>
<td>26</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>23</td>
<td>23</td>
</tr>
</tbody>
</table>
Figure 4.9: The CSFs reported by the Respondents, associated with each KT Stage
Table 4.7: The CSFs reported by the Respondents, associated with each KT Stage – constrained to instances where a CSF was the first mentioned by a respondent when considering each KT stage.

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Stage 1 Initiation</th>
<th>Stage 2 Implementation</th>
<th>Stage 3 Ramp-up</th>
<th>Stage 4 Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS_CSF 1 – Awareness and notification</td>
<td>1 respondent (PM14: Assistant ICT Officer)</td>
<td>1 respondent (PM14: Assistant ICT Officer)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MAS_CSF 2 – Usability: Functionality and navigation</td>
<td>1 respondent (PM14: Assistant ICT Officer)</td>
<td>2 respondents (PM8: Assistant Director ICT, PM15: Director)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MAS_CSF 3 – User focus: Understand needs of recipient</td>
<td>8 respondents (PM1: Assistant Director ICT, PM4: Chief Assistant Director ICT, PM6: Chief Assistant Director ICT, PM7: Assistant Director ICT, PM8: Assistant Director ICT, PM10: Director ICT, PM11: ICT Officer, PM13: Chief Assistant Director ICT)</td>
<td>2 respondents (PM3: ICT Officer, PM5: Assistant Director ICT)</td>
<td>1 respondent (PM13: Chief Assistant Director ICT, PM14: Assistant ICT Officer)</td>
<td>-</td>
</tr>
<tr>
<td>MAS_CSF 4 – Presentation of knowledge resources</td>
<td>1 respondent (PM14: Assistant ICT Officer)</td>
<td>-</td>
<td>-</td>
<td>1 respondent (PM14: Assistant ICT Officer)</td>
</tr>
<tr>
<td>MAS_CSF 5 – Content</td>
<td>2 respondents (PM2: Assistant ICT Officer, PM15: Director)</td>
<td>-</td>
<td>-</td>
<td>8 respondents (PM3: ICT Officer, PM5: Assistant Director ICT, PM6: Chief Assistant Director ICT, PM7: Assistant Director ICT, PM8: Assistant Director ICT, PM10: Director ICT, PM11: ICT Officer, PM12: Chief Assistant Director ICT)</td>
</tr>
<tr>
<td>MAS_CSF 6 – Accessibility</td>
<td>1 respondent (PM12: Chief Assistant Director ICT)</td>
<td>1 respondent (PM6: Chief Assistant Director ICT)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 4.7: The CSFs reported by the respondents, associated with each KT Stage – constrained to instances where a CSF was the first mentioned by a respondent when considering each KT stage – (Continued)

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Stage 1 Initiation</th>
<th>Stage 2 Implementation</th>
<th>Stage 3 Ramp-up</th>
<th>Stage 4 Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS_CSF 7 – ICT infrastructure: Availability and functionality</td>
<td>1 respondent (PM9: Senior Coordinator ICT)</td>
<td>6 respondents (PM1: Assistant Director ICT, PM2: Assistant ICT Officer, PM10: Director ICT, PM11: ICT Officer, PM12: Chief Assistant Director ICT, PM13: Chief Assistant Director ICT)</td>
<td>1 respondent (PM2: Assistant ICT Officer)</td>
<td>1 respondent (PM2: Assistant ICT Officer)</td>
</tr>
<tr>
<td>MAS_CSF 8 – Leadership</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>2 respondents (PM1: Assistant Director ICT, PM4: Chief Assistant Director ICT)</td>
</tr>
<tr>
<td>MAS_CSF 9 – User ICT literacy: Awareness</td>
<td>1 respondent (PM3: ICT Officer)</td>
<td>2 respondents (PM7: Assistant Director ICT, PM9: Senior Coordinator ICT)</td>
<td>2 respondents (PM7: Assistant Director ICT, PM9: Senior Coordinator ICT)</td>
<td>-</td>
</tr>
<tr>
<td>MAS_CSF 10 – Education, training and knowledge sharing</td>
<td>✓</td>
<td>1 respondent (PM4: Chief Assistant Director ICT)</td>
<td>2 respondents (PM1: Assistant Director ICT, PM3: ICT Officer)</td>
<td>-</td>
</tr>
<tr>
<td>MAS_CSF 11 – Employee focus</td>
<td>1 respondent (PM5: Assistant Director ICT)</td>
<td>-</td>
<td>1 respondent (PM4: Chief Assistant Director ICT)</td>
<td>-</td>
</tr>
<tr>
<td>MAS_CSF 12 – Interactive platform</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 respondent (PM13: Chief Assistant Director ICT)</td>
</tr>
<tr>
<td>MAS_CSF 13 – Attitude and change management</td>
<td>-</td>
<td>✓</td>
<td>6 respondents (PM5: Assistant Director ICT, PM6: Chief Assistant Director ICT, PM10: Director ICT, PM11: ICT Officer, PM12: Chief Assistant Director ICT, PM15: Director)</td>
<td>1 respondent (PM9: Senior Coordinator ICT)</td>
</tr>
<tr>
<td>MAS_CSF 14 - Security</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Total of CSFs associated with KT stages</strong></td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

**Notes:** ✓ indicates that the CSF has been mentioned by the respondents but not as the first factor
If one focuses only at each stage on the first mentioned CSF (see Table 4.6) the most important CSFs at each stage are clearly differentiated:

- **At Initiation**, *MAS_CSF 3 – User focus: Understand needs of recipient*;
- **At Implementation**, *MAS_CSF 7 – ICT infrastructure: Availability and functionality*;
- **At Ramp-up**, *MAS_CSF 13 – Attitude and change management*; and
- **At Integration**, *MAS_CSF 5 – Content*.

The above highlights that at Initiation, which involves the knowledge provider preparing knowledge content for the website and the potential user recognising a need for knowledge and commencing a search for that knowledge, the respondents see as critical that the website content should be prepared with the recipient in mind, including the choice of meaningful and simple language (*MAS_CSF3 – User Focus: Understand needs of recipient*). In short, the user perspective must be understood.

At Implementation, which begins with the decision of the knowledge recipient to proceed to acquire the knowledge, focus shifts to the basic ICT infrastructure which must be available to users. It should function properly and respond quickly to support users to access and use the knowledge (*MAS_CSF 7 – ICT infrastructure: Availability and functionality*).

At Ramp-up, which begins when the knowledge recipient starts applying the received knowledge, the respondents see as critical that the whole organisation should be keen to learn and adopt new work practices and new ways of processing and performing tasks (*MAS_CSF13 – Attitude and change management*).

Finally, at Integration, when the knowledge recipient has received the transferred knowledge and moves to integrate its use with their needs, the respondents see that it is critical that the website should contain content that is accurate, relevant, regularly updated and which meets user requirements. It should also contain advice on update schedules so that users can organise their revisit times (*MAS_CSF5 - Content*). At this stage the content itself is seen as critical – a lack of accuracy, relevance, currency and a
failure to meet user requirements, will be exposed as the user seeks to integrate the acquired knowledge with their ongoing needs.

These results will be revisited and further analysed in Chapter 6, when the CSFs established in the Australian-based case study are available as a point of comparison.

4.4: Chapter Summary

In this chapter results have been reported for an analysis of CSFs for KT from government sources to stakeholders (citizens, business entities, other government agencies and employees) via a government education website operated by the Malaysian government. The analysis has drawn upon interviews with key Malaysian government respondents.

The results include:

- A discussion of the process and criteria adopted when selecting the case study organisation, referred to throughout this thesis as MASED (Section 4.2).
- A discussion and a model of the MASED context and KT processes (Section 4.3.1).
- Initial determination of some 14 CSFs (Section 4.3.2), starting with CSFs related to establishing awareness, ensuring website usability, and understanding stakeholder perspectives, presentation requirements and content requirements. Speed and efficiency of access have been recognised in a group of CSFs. A CSF related to understanding the available user infrastructure has also been reported. CSFs related to the role of senior management, and to being aware of user ICT literacy and instituting ICT education have been reported. Finally, a number of practical issues have been highlighted, captured in CSFs related to developer staffing, ensuring interactivity, change management and security. Note that validation of these CSFs, drawing on data collected at a subsequent focus group, will be reported in Chapter 6.
- Nine feedback mechanisms for determining website performance have been identified, as highlighted by the respondents. These feedback mechanisms may be useful to evaluate some components of the performance of the websites as
vehicles for KT (Section 4.3.3).

- The associations of CSFs with the various KT stages, as reported by the respondents, have been identified (Section 4.3.4). The analysis has highlighted four key CSFs, associated by the respondents with each of the four KT stages.

In the following chapter (Chapter 5) the results collected in a similar, parallel case study conducted in Australia, are reported and analysed.
Chapter 5: Case Study 2 – Victorian State Government Education Website

5.1: Introduction

In this chapter the approach adopted in Chapter 4 is reapplied to conduct an analysis of critical success factors (CSFs) for knowledge transfer (KT) from government sources to stakeholders (citizens, business entities, other government agencies and employees) via a government education website operated by the Victorian State government (Australia). The analysis draws upon interviews with key Australian government respondents following the adapted CSF approach described in Chapter 3 (Section 3.8). As in Chapter 4, the analysis is compared against various concepts established in the literature analysis of candidate domains as reported in Chapter 2 (Section 2.9). Some connections to the literature are noted in this chapter, although detailed discussion of the CSFs related to the extant literature will be presented in Chapter 6. The structure of this chapter is represented schematically in Figure 5.1.

The chapter commences with discussion of the selection of the case study organisation, to be referred to throughout this thesis as AUSED (Section 5.2). The results are then reported in Section 5.3. Initially the AUSED context and KT processes are described and modelled (Section 5.3.1). Initial determination of the CSFs is then reported (i.e. the determination based upon the initial round of interviews) in Section 5.3.2. (Validation of these CSFs, drawing on data collected at a subsequent focus group, will be reported in Chapter 6). Feedback mechanisms for determining website performance as highlighted by the respondents, which may be used to evaluate the performance of the websites as vehicles for KT, are then reported in Section 5.3.3. Also presented are the associations of CSFs with the various KT stages as reported by the respondents (Section 5.3.4). Finally, a chapter summary is provided (Section 5.4).
5.2: Selection of Case Study Organisation (AUSED)

The rationale for studying KT via government websites, in particular the CSFs as perceived by the knowledge providers – the government departmental staff with responsibilities for website content and delivery - has been previously reported (Section 4.2). In that section it was argued that by comparing the perceived CSFs at two organisations, in different countries, one could highlight shared CSFs, and points of difference. Such a study will provide insight into both core CSFs (those common to both organisations) and into context-sensitive factors that can shape CSFs that are specific to the two individual organisations in different countries.
In this chapter, results are reported for the second organisation selected for study - a group of staff within the Department of Education and Early Childhood Development (DEECD), Victoria, Australia, with responsibilities for the provision of website technology and content, referred to henceforth as AUSED. The choice of education as the focus of this second study facilitates comparison of the two cases. Further, choosing an Australian organisation allows comparison of websites situated in different historical, cultural and political contexts (as has been discussed in Chapter 2).

The specific area studied as the second case, within the DEECD, Victoria Australia, operates established websites, developed over a number of years, and which it can be argued represent an example of best Australian government practice (see Chapter 2). The websites that have been established and maintained are accessed by a diverse user community, as reported in the following section (Section 5.3). It should be acknowledged also that a further rationale for choice of AUSED for study, at a pragmatic level, is that the researcher’s senior supervisor has established links to officers in the department, so facilitating ready access to potential case study respondents.

5.3: AUSED Case Study and Results

This section reports findings from the initial study of the AUSED case study organisation based upon the initial round of interviews. These results will be subsequently subjected to a validation process in a focus group setting, as will be reported in Chapter 6.

Initially, the case study organisation is introduced, outlining its mission and objectives (Section 5.3.1). This section also explains the organisational structure of AUSED including an introduction to those interviewed, provides insight into the working culture at AUSED, introduces AUSED’s key stakeholders, and provides an assessment of the AUSED government website maturity level. As required by the focus in this research on KT via government education websites, the key knowledge management (KM) processes and structures at AUSED are then introduced, together with a description of KT processes at AUSED classified in terms of the four steps KT model reviewed in Chapter 2 (see Section 2.6.5). Finally, consistent with the approach taken to
identifying possible CSFs by studying associated disciplines (Section 2.6 - 2.8), some additional observations on AUSED’s approaches to customer service and web-based self-service (WSS) are examined.

The initial identification of CSFs is then reported (Section 5.3.2), followed by a discussion of the processes currently adopted for obtaining feedback on organisation performance (Section 5.3.3). Finally, results related to the association of CSFs with KT stages are reported (Section 5.3.4).

This mirrors the reporting structure for the MASED case study (Chapter 4), so facilitating the cross-case analysis presented in Chapter 6.

5.3.1: AUSED – Context and Knowledge Transfer Processes

The AUSED case study focuses on elements of the Victoria (Australia) State Government’s DEECD. The DEECD brings together a range of learning and development services for Victorian children, young people and adults. Specifically, AUSED is responsible for the learning, health, development and wellbeing of all young Victorians, from birth to adulthood (AUSED 2008). With the motto of “every child, every opportunity” and a vision that seeks a state in which “every young Victorian thrives, learns and grows to enjoy a productive, rewarding and fulfilling life, while contributing to the local and global communities” (AUSED 2006), AUSED seeks to ensure that every child in Victoria has access to education and development services that meet the needs of all families in Victoria (AUSED 2006). In order to achieve this vision, AUSED meets four primary responsibilities as listed in Table 5.1.

Table 5.1: AUSED’s Primary Responsibilities

<p>| | |</p>
<table>
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</thead>
<tbody>
<tr>
<td>1)</td>
<td>Provide policy advice to the Ministers about education, early childhood development and children’s services in general;</td>
</tr>
<tr>
<td>2)</td>
<td>Implement Victorian government policy on early childhood services;</td>
</tr>
<tr>
<td>3)</td>
<td>Implement Victorian government policy on school education for all school age students; and</td>
</tr>
<tr>
<td>4)</td>
<td>Manage and drive continuous improvement in the delivery of primary and secondary education in Victorian government schools.</td>
</tr>
</tbody>
</table>

Source: AUSED (2009)
5.3.1.1: AUSED Organisational Structure

Figure 5.2 summarises the organisational structure of AUSED. Note that, given the breadth of the organisational structure at AUSED, the areas highlighted in Figure 5.2 are shown only in sufficient detail to delineate areas in which the respondents in this research are located.

Specifically, AUSED is structured as four offices:

- **The Office for Government School Education**: Note that the core function of the Office for Government School Education is to manage, coordinate and implement high-quality government school education across Victoria. In doing this the Office aims to improve the education outcomes of all students in government schools, addressing variations in school performance across the state, developing highly skilled teachers and school leaders, and facilitating parent and community engagement (AUSED 2006). Since 2010, the Office has undertaken the function of planning, managing and supporting the delivery of outcomes for children 0-18 years through the Department’s nine regional offices. These regional offices play a key role in implementing a school improvement agenda and delivery of early childhood and youth services throughout Victoria.

- **The Office for Children and Portfolio Coordination**: The core functions of the Office for Children and Portfolio Coordination relate to planning, strategy and coordination, particularly as they relate to children and early childhood development. Amongst activities indicative of the work of this office are: developing a Health and Wellbeing Service Framework for Children and Young People 0-18 years; developing a statement on early childhood development to provide an overview of the implementation of reforms; implementing the Council of Australian Government’s Early Childhood agenda; developing a Plan for Aboriginal Children and Young People 2010-20; and implementing communications strategies to increase public awareness in government schools (AUSED 2006).
Figure 5.2: The AUSED Organisation Structure Pertinent to the Present Study (shaded areas highlight divisions from which respondents in the present study have been sourced)
Source: AUSED (2006)
• **The Office for Policy, Research and Innovation:** The core functions of the Office for Policy, Research and Innovation are to initiate and undertake major research and innovation programs to drive the Department's policy agenda and to establish partnerships that enable the more effective provision of education and training for children and young people aged 0-18 in all schools and early childhood settings. As such, this Office leads the Department's education strategic policy development and cross-sectoral Commonwealth-State and international relationships (AUSED 2006).

• **The Office for Resources and Infrastructure:** The core functions of the Office for Resources and Infrastructure include responsibilities for the development and implementation of policies and procedures for the Department in the areas of finance, infrastructure, information technology, human resources and corporate services. Specifically, the Office provides direct services to the Department's central offices and to government schools (AUSED 2006). Indicative projects include: implementation of the Commonwealth Government's National Solar Schools Program, together with the Victorian Government's Solar in Schools initiative, to deliver solar energy and other energy savings to all Victorian schools; design, development and coordinated delivery of the Ultranet system (a state-wide, secure site that students, parents and teachers can access via the internet to undertake online learning activities such as creating a learning portfolio and using online communication tools such as wikis, blogs and discussion boards); and implementation of the 1:1 computer-to-student ratio in Victorian government schools for Years 9 to 12 by the end of 2011.

(Note also, that not shown in Figure 5.2, as staff from this area were not accessed in this research, is the **Office for Skills Victoria** which provides strategic advice and analysis of Victoria's skill needs, and acts as the system manager for the vocational education and training sector. The Deputy Secretary of this Office primarily supports the Minister for Higher Education and Skills).
Each of the offices is headed by a Deputy Secretary who reports to the Secretary of the Department. The Secretary exercises Chief Executive Officer responsibilities and is responsible directly to the Minister.

Each of the offices has divisions which address the specific specialisations of the relevant office, and implement the objectives of the department as shown in Figure 5.2 (AUSED 2006). In the present research, respondents were drawn from three divisions in three different offices (see highlighted divisions in Figure 5.2). Selection of the nine respondents from these three divisions was on the recommendation of contact officials in the Offices and Divisions, with the selection being based upon the crucial roles each plays in the preparation of content and delivery of website technologies. The responsibilities of these staff, indicative of the particular responsibilities of the divisions they are part of, are reported in Table 5.2 (AUSED 2006). Specifically:

- Student Learning Programs Division leads and develops curriculum, assessment and reporting and teaching strategies (AUSED 2006).
- Communication Division provides communication services within the department and from the department to the public (AUSED 2006). This division is also responsible for managing the department’s public web presence (AUSED 2006).
- Information Technology (IT) Division is responsible for the information communication and technology (ICT) infrastructure of the department (AUSED 2008).

Also shown in Table 5.2 are the codes assigned to each respondent to identify them when reporting the results that follow.

In order to better understand the discussion of stakeholders later in this chapter it should also be noted that AUSED is responsible for the employment of principals and deputy principals of schools in Victoria. The government schools in Victoria are independent legal entities and the principals are employed by AUSED. The teachers, however, are employed by the schools. The school principal and school council decide which staff they employ. Teachers have to be registered with AUSED in order to be employed at the schools. In order to be employed, teachers have to meet certain
standards, have certain qualifications and be registered with the Victorian Institute of Teaching. As reported by one of the respondents:

“Our government schools are independent legal entities. The principals are employed by the department but the teachers are employed by the school. And the school with the principal and the school council decides which staff they employ. You have to be registered with the department to be registered teacher. Teachers have to meet certain standards and have to hold certain qualifications and be registered with the Victorian Institute of Teaching.” (PA3: Online Communication Advisor).

Table 5.2: Description of the Respondents involved in the Interviews at AUSED

<table>
<thead>
<tr>
<th>Job title</th>
<th>Division</th>
<th>Job description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA5: Senior Communication Advisor</td>
<td>Communication Office for Children &amp; Portfolio</td>
<td>Works as a project manager, managing web projects. Liaises with system designers and system developers to complete the projects.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA1: Senior Online Editor</td>
<td>Communication Office for Children &amp; Portfolio</td>
<td>Manages the knowledge content relevant to parents for the whole website. Writes and edits the content for parents. Ensures that the content is written specifically for the parent; up-to-date; accurate; and meets government and international accessibility standards.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA3: Online Communication Advisor</td>
<td>Communication Office for Children &amp; Portfolio</td>
<td>Manages the knowledge content for school professionals, especially for teachers. Ensures that the content is up-to-date and accurate. Communicates with the content author regarding content that is going to expire. Does the final quality check before materials are uploaded to the website.</td>
</tr>
<tr>
<td>Middle Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA7: Senior Online Communication Advisor</td>
<td>Communication Office for Children &amp; Portfolio</td>
<td>Administers the website, ensuring that the website is maintained, broken links are fixed, reviewing the content on the website, ensuring that the content is updated, managing the content management system (CMS) training for staff and managing and planning the website information architecture.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA2: Website Specialist</td>
<td>Student Learning Programs Office for Government School Education</td>
<td>Maintains the knowledge content for school professionals, especially for teachers. Writes the content for teachers. Ensures that the content is up-to-date and accurate. Provides technical support for users.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA9: Website Specialist</td>
<td>Student Learning Programs Office for Government School Education</td>
<td>Administers the information architecture of the website to ensure that it is consistent across all the content sections for each stakeholder group. Ensures that the website follows the guidelines and best practices that have been determined by the Victorian government.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA4: Web Specialist</td>
<td>Information Technology Office for Resources &amp; Infrastructure</td>
<td>Administers the web CMS. Provides technical support and is involved in quality assurance for the website applications.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA6: Customer Support Officer</td>
<td>Information Technology Office for Resources &amp; Infrastructure</td>
<td>Responsible for the intranet website. Performs the check point installation, fixing minor problems on page layout and providing support to internal users.</td>
</tr>
<tr>
<td>Operational Management Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA8: Project Officer</td>
<td>Information Technology Office for Resources &amp; Infrastructure</td>
<td>Maintains both internal and public websites. Designs, maintains, and provides technical support to new and existing websites.</td>
</tr>
</tbody>
</table>
5.3.1.2: AUSED Culture

The culture that AUSED seeks to engender in staff is characterised on their website by statements such as: “A career in education and early childhood development can be stimulating, satisfying and rewarding, and provides the opportunity to influence and shape many lives” (http://www.education.vic.gov.au/careers/earlychildhood/). At the heart of such statements is a belief that working as either an educator, or an education manager/administrator should be viewed as stimulating, satisfying and rewarding – that shaping the lives of young people should be embraced by all staff as an immensely worthwhile and important undertaking.

As was reinforced repeatedly in interviews with AUSED respondents, consistent with a culture that emphasises the importance of a career in education and early childhood development, there is an expectation that in delivering outcomes one is part of a team. For the subset of staff relevant to this case study, it was emphasised that each team accepts responsibility for one part of the website. A team will be led by an “account manager”, who will ensure that the content on an area of the website is current and relevant. Within the organisation, the working teams will create their own website components. These teams will collaborate to share their resources and exchange ideas.

“We have a team of people. My, we have team of people - each of the people in my team, in the team, specialises in each of those areas. So my area is the parent area.” (PA1: Senior Online Editor)

As employees of the Victorian State Government, staff have available a range of Victorian government employment benefits intended to support a satisfying and secure work environment, including formally reviewed and specified salaries, flexible leave arrangements, and training and development opportunities. All employees of the Victorian Public Service are bound by the Code of Conduct for Public Sector Employees 2007. The terms and conditions of employment in the Victorian Public Service are in accordance with the Public Administration Act 2004 and the Commonwealth Fair Work Act 2009. Furthermore, each department complies with the National Fair Work Employment Standards that apply from 1 January 2010.

Remuneration arrangements include direct employer contributions to an approved superannuation fund, under the Superannuation Guarantee legislation, with some salary
packaging options. Victorian Government departments also seek to create an environment that supports staff in achieving a balance between work life and home life, including some opportunities for part-time work and job sharing.

Of particular relevance to the case study area, employees are provided with relevant training to support performance of their duties. For example, AUSED staff receive training in use of an electronic document management systems (EduTrack) to provide an organisation-wide repository of shared documents. In addition, those working directly with the website receive training in the operation of the web CMS that supports the preparation and maintenance of website knowledge resources.

“We have a mailing list of people who have done training in our web content management system. I also work on the document management system – we’re rolling out the electronic document management system in the department called EduTrack. I’m involved in the EduTrack process, getting our division to save all our electronic files or versions into a common repository where whole of shared drives are saved there. I build the intranet team sites - the collaboration team site,” (PA3: Online Communication Advisor).

5.3.1.3: AUSED Website Key Stakeholders

The AUSED website recognises five stakeholder groups:

- Parents – the website provides information and resources to parents about their child’s development, schooling and education from birth through to 18 years of age. This includes resources on learning, health, wellbeing and school life from early childhood through primary and secondary school, as well as life after school;
- Students and Children – the website provides a range of learning and research resources, information on school life, and games and activities. As well as a link to Connect (the Connect website links to websites which have games and activities and information for projects), there is a whole assortment of information on everything from exams and bullying, to what to do after students leave school;
- School Professionals – the website provides information and policies on all aspects of the school system, from curriculum resources, to management processes and wellbeing guidelines;
- Early Childhood Professionals – the website provides a range of information and resources relating to the care and education of children 0–8 years of age; and
• Community and “Stakeholders” – the website provides information and resources on a range of policies, research, partnership opportunities and Department initiatives. The intent is to provide in-depth information about the Department’s current programs and projects.

In terms of the discussion of stakeholders at MASED that was presented in Section 4.3.1, the above structure can be classified into four stakeholders’ groupings:

• Government-to-Citizens (G2C): Parents, students and children;
• Government-to-Employee (G2E): School professionals, early childhood professionals, and employees at AUSED. Note that the school professionals and early childhood professionals are not just teachers but includes childhood nurses, child care workers, people who administer in schools, school psychologists, school nurses, school help nurses, cleaners and others who work in the schools;
• Government-to-Business (G2B): Community and stakeholders; and
• Government-to-Government (G2G): Public officers from other ministries.

Illustrative of these views of the stakeholder groups, are responses such as:

“What we’ve done is we organise into audience. We have an audience for parents, for students particularly, another area which is school professionals, early childhood professionals, we have the community and stakeholders which is everybody else in the state,” (PA1: Senior Online Editor).

“Teachers mostly. It’s the public website. Parents can access as well but our main audience is targeted at teachers,” (PA2: Website Specialist).

Examples of the knowledge resources available to these stakeholder groups are presented in Table 5.3. Note that this represents the state of the website at the date (2009) when the interviews with respondents were conducted. There have since been relatively minor additions to website coverage up until the time of thesis completion (March 2011). Note that G2G stakeholders might access knowledge resources from the areas provided for any of the other stakeholder groups, in particular the resources developed for the G2E and G2B groupings.
Table 5.3: Knowledge Resources (Information and Services) Available To Stakeholder Groups via the AUSED Public Website

<table>
<thead>
<tr>
<th>AUSED Stakeholder</th>
<th>Knowledge resources available via AUSED public website</th>
</tr>
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<tbody>
<tr>
<td><strong>G2C</strong>&lt;br&gt;• Parents</td>
<td>▪ Information about early childhood development from birth through to 8 years of age&lt;br&gt;▪ Information about schooling and education from 5 to 18 years of age&lt;br&gt;▪ Information about life after school, specifically for 16+ years of age&lt;br&gt;▪ News related to schools and education, such as school term dates&lt;br&gt;▪ Publications such as Department’s corporate plan and parent newsletter&lt;br&gt;▪ Events and awards&lt;br&gt;▪ Education channel (Connect)&lt;br&gt;▪ Information about financial assistance and parent payments&lt;br&gt;▪ Parent complaints and information about school councils&lt;br&gt;▪ Children’s services</td>
</tr>
<tr>
<td><strong>G2B</strong>&lt;br&gt;• Community and stakeholders</td>
<td>▪ Education channel (Connect) specifically for early childhood, primary and secondary students&lt;br&gt;▪ Information for international students&lt;br&gt;▪ Study information&lt;br&gt;▪ Health and wellbeing information&lt;br&gt;▪ Information about financial assistance&lt;br&gt;▪ Resources for learning languages online&lt;br&gt;▪ Term dates and public holidays; events and awards</td>
</tr>
<tr>
<td><strong>G2E</strong>&lt;br&gt;• School professionals</td>
<td>▪ Resources for partners and stakeholders of AUSED, including policies, research, partnership opportunities and AUSED initiatives, programs and projects&lt;br&gt;▪ Information about careers in education and early childhood development&lt;br&gt;▪ Information about childhood learning, services management, health and wellbeing, school management, student learning and youth transition&lt;br&gt;▪ Latest news, publications and events&lt;br&gt;▪ Information about permission to conduct research, statutory authorities, children’s service, key dates, kindergarten/maternal/child health services, regional offices and schools.</td>
</tr>
<tr>
<td><strong>Early Childhood Professionals</strong></td>
<td>▪ Practical resources and information for all school staff including teachers, principals, education support, health and wellbeing staff and school counsellors&lt;br&gt;▪ Information about careers in education and early childhood development&lt;br&gt;▪ Resources relevant to early childhood learning&lt;br&gt;▪ Information about health and wellbeing, human resources, professional learning, school management, pay advice, staff members, regional offices and schools, term dates, public holidays and job vacancies&lt;br&gt;▪ Research, publications and innovations&lt;br&gt;▪ Resources related to student learning and youth transition&lt;br&gt;▪ Latest news and bulletin from the Department of Education&lt;br&gt;▪ IT service desk&lt;br&gt;▪ Online Education magazine (“Shine”)&lt;br&gt;▪ Term dates and public holidays; events and awards</td>
</tr>
<tr>
<td></td>
<td>▪ Resources for everyone who works with children 0-6 years, including nurses and managers at kindergartens and child care&lt;br&gt;▪ Information about careers in education and early childhood development&lt;br&gt;▪ Information about early childhood learning, services management, health and well being, human resources, professional learning, research and innovation&lt;br&gt;▪ Latest news, publications, and events&lt;br&gt;▪ Information about children’s services, kindergarten/maternal/child health services, regional offices, publications, research and schools&lt;br&gt;▪ Term dates and public holidays</td>
</tr>
</tbody>
</table>

Source: AUSED (2006)
5.3.1.4: AUSED Government Website Maturity Level

According to interview respondents, the AUSED government website maturity level (see Section 2.2) should be classified as Stage 2 (Interactive). Currently, the website has all the features required of Stage 1: Informative and Stage 2: Interactive. The website, however, is still implementing and further developing features expected of Stage 3: Transactional and Stage 4: Integration.

According to the Senior Online Editor (PA1) and Online Communication Advisor (PA3), from the content management point of view, the website is primarily a static website but with limited applications that make it partially dynamic. The website has lots of documents that can be downloaded and information about licenses and regulations. In fact it is likened below to “an intranet that anybody can read” – arguably part intranet and part extranet. The website however, cannot perform any financial transactions and does not have e-banking, debt payment/taxes online, e-procurement capability or e-voting.

Indicative of respondent responses are:

“We have online surveys, lots of things you can download. We don’t do e-banking, procurement, debts or taxes, but we have information about the license you need to run an early childhood centre, links to the act - we are integrated in the website. We are open to anybody to read the resources. It’s like an intranet that anybody can read,” (PA1: Senior Online Editor).

“The public facing website would be stage 2, somewhere stage 3 and 4,” (PA3: Online Communication Advisor).

5.3.1.5: Knowledge Management at AUSED

Knowledge and KM have been defined in Chapter 2 (Section 2.6.1). In this section discussion is limited to KM as facilitated using the AUSED website.

The key AUSED principle related to KM via the website is that the organisation of knowledge resources must be driven by an understanding of the needs of the key stakeholders, and be organised according to those stakeholders. As previously discussed in detail (see Section 5.3.1.3: AUSED Website Key Stakeholders above), the website is organised with separate tabs to address the needs of:
Case Study 2 – Australian Government Education Website

- Parents – this tab provides information and resources to parents about their child’s development, schooling and education from birth through to 18 years of age;
- Students and Children – this tab provides a range of learning and research resources, information on school life, and games and activities;
- School Professionals – this tab provides information and policies on all aspects of the school system, from curriculum resources, to management processes and wellbeing guidelines;
- Early Childhood Professionals – this tab provides a range of information and resources relating to the care and education of children 0–8 years of age; and
- Community and “Stakeholders” – this tab provides information and resources on a range of policies, research, partnership opportunities and Department initiatives.

As stated by the Senior Online Editor:

“What we’ve done is we organise into audience areas. So we have an audience of parents, so we have an entrance for parents.” (PA1: Senior Online Editor).

Examples of the information and services available to these stakeholder groups have been presented in Table 5.3.

To manage knowledge, as presented via government websites, the Victorian Government mandates compliance with the Whole of Victorian Government Website Standards. These encompass nine website standards developed to promote consistent application of website standards across Victorian Government departments and agencies, including standards that relate specifically to aspects of knowledge resource provision, including: Accessibility; Consistent User Elements; Content Approval and Review; Discoverability; Domain Names and Allocation; Information Architecture/Classification; Legal Compliance; Minimum Information Provision; and Privacy.

All content authors at AUSED are responsible to follow these standards while preparing website content. Content as disseminated via the website proceeds through multiple steps before it is uploaded to the website (this is further discussed in the
context of the Stage 1 KT model reported in the following section). In outline, content authors write the content with the audience in mind. The content then goes to internal approvers for editing. This review takes place within the relevant Departmental Business Unit itself, to check for correct language use, that there is no offensive content, and that the content addresses the information or service objectives of that part of the website. The content is then forwarded to the final quality checker before going live. The final quality checker, usually within the Communication Division, will check for compliance with the government standards and best practices.


- **Consistent User Elements Standard** - The Consistent User Elements standard provides for consistent branding of websites and layout of common components, which contributes to a consistent experience for users of websites.

- **Content Ownership, Approval and Review Standard** - The Content Ownership, Approval and Review standard prescribes an ongoing, planned approach to the content lifecycle processes across each department and agency. The standard promotes transparent and evident content ownership, approval and review processes.

- **Discoverability Standard** - The Discoverability standard prescribes the use of meta tags and Australia Government Locator Service (AGLS) metadata by the Victorian Government to assist the findability of Victorian Government information and services through Victoria Online and non-government search engines and directories.

- **Domain Names and Allocation Standard** - The Domain Names standard provides for consistent allocation, naming, management and review of domains incorporating both vic.gov.au and the broader requirement for other second level domains (SLDs) within the “.au” domain.
Case Study 2 – Australian Government Education Website

- Information Architecture (IA) (Structure, Classification & Navigation) Standard - Victorian Government departments/agencies must develop and maintain: Documented IA strategy which describes, justifies and provides a strategic direction for the IA of their portfolio of websites; and/or documented IA plans for each individual website within their portfolio.

- Legal Compliance Standard - Victorian Government departments and agencies will ensure that website content, services and processes are aligned with departmental/agency and government legal compliance practices, to protect the rights and interests of citizens and manage operational risks.

- Minimum Information Provision Standard - The Minimum Information Provision standard specifies the minimum information that must be made available by Victorian Government websites to meet the above expectations and requirements. and

- Privacy Standard - The Privacy Standard provides direction to Victorian Government Departments and Agencies to ensure that website content, services and processes conform to Victorian privacy legislation and principles.”

To facilitate website operations, underpinning the delivery of the AUSED website is a CMS. A web content management (WCM) system is a CMS designed to simplify the publication of web content to web sites, allowing content creators to submit content without requiring technical knowledge of HyperText Markup Language (HTML) or the uploading of files. At AUSED, the structure of the website is initially specified by staff of the Communication Division. Staff of the IT Division then create templates based on the specification given. Communication Division and other content authors can then use the CMS, access it and update content to suit business requirements.

5.3.1.6: Knowledge Transfer Process at AUSED

The researcher turns now to a conceptualisation of the KT process at AUSED, structured according to the four stages (Initiation; Implementation; Ramp-up; and Integration) discussed in Chapter 2 (Section 2.6.5). The model, built upon the inputs of respondents, is depicted schematically in Figures 5.3 – 5.6, employing a standard flowchart notation. The model follows closely that presented for the MASED case
study (Chapter 4). The accompanying text, however, describes the way in which various activities/tasks are actually assigned and undertaken at AUSED. The models that are provided are at a high level of abstraction and have been designed to provide an overview of the processes carried out that can mapped to the four stages model only. That is, they are macro rather than micro models.

**Stage 1: Initiation (see Figure 5.3)**

This stage involves the knowledge provider preparing knowledge resources for the website. As discussed in the preceding discussion of KM (Section 5.3.1.5) content as disseminated via the website proceeds through multiple steps before it is uploaded to the website. As shown in Figure 5.3, content authors write the content with the audience in mind.

"[knowledge providers] could be people from different divisions within the department - so they may have a half dozen pages on the website that they need to add content into. When they have entered the content in they can’t actually push it live - they need to put it workflow’’ (PA4: Web Specialist)

The content is subjected to “internal checking” by approvers within the relevant Departmental Business Unit itself, who carry out reviews and editing, checking language and content. Shortfalls are referred back to the content author.

“I am a writer and an editor and that’s my skill base, and I have particular skills and experience in writing web content and writing specifically for parents in a wider …. Engaging them, putting information that’s important for them first - not what’s important to the government or to the business area. So it’s about liaising with the rest of the departments. If they want to talk to parents they come and speak to me and then I - well there are two ways of doing it. They write it and I edit it or change it and get their approval, and then put it up on the website, or I write it and get their approval for it.” (PA1: Senior Online Editor)

The content is then forwarded to the final quality checker (the “quality assurance check”) in the Communication Division who will check for compliance with the government standards and best practices (see preceding discussion of KM in Section 5.3.1.5). Shortfalls are again referred back to the content author. Approved content is then made live on the CMS, which services the website.

“Our team basically is the final quality checker before material goes live. We have lots of authors around the department - probably up to 100 authors of content ... they have internal approvers. Within the business unit they would approve content, but the ultimate approval of what goes live is ours. ...We basically ... do the final check.” (PA3: Online Communication Advisor).
Stage 1: Initiation

Knowledge provider

Prepare knowledge based on audience

Internal check

Quality assurance check

CMS

Website

Knowledge recipient

Knowledge Search

AUSED support agent

Troubleshoot

Initiation Stage complete. Continue to Implementation Stage (Figure 5.4)

Figure 5.3: Flowchart for the Initiation Stage at MASED
Note also that AUSED sometimes follows processes for quality assurance of websites that include inviting user stakeholder groups to test, evaluate and provide direct feedback on the website (see detailed discussion in Section 5.3.3).

The potential website user, on the other hand, has recognised a need for knowledge and starts a search for knowledge to fulfil that need. They enter the website, selecting an area appropriate to their stakeholder group (see preceding discussion of stakeholders in Section 5.3.1.3) and explore the navigation paths provided and/or use the provided search engine (“knowledge search”). During knowledge searching if any problem arises, users can refer to “Help” resources provided on the website for solution, or they can contact an AUSED support agent for assistance. Means of contacting a support agent, by phone or e-mail, are discussed in Section 5.3.3. The support agent will advise the user on possible means of addressing the problem, and so facilitate access to the knowledge resources.

“The user is able to solve their own problems without calling the service desk because we have online help” (PA6: Customer Support Officer).

During this stage AUSED must ensure that the CMS and website are functioning properly, so supporting the knowledge provider to prepare/update content, and the user to access the knowledge.

**Stage 2: Implementation (see Figure 5.4)**

This stage (see Figure 5.4) begins with the decision of the knowledge recipient to proceed to acquire the knowledge. After the knowledge recipient has found the knowledge resources that they need from the website, they will acquire it (read from the screen or print). If the knowledge resource is in video format, the knowledge recipient can choose to play the video.

During the download of knowledge resources, if the knowledge recipient experiences problems, they can contact an AUSED support agent for assistance. The means of contacting a support agent, by phone or e-mail, are discussed in Section 5.3.3. The support agent will advise the user of possible means of addressing the problem, and so facilitate access to the knowledge resources.
From Initiation Stage

Stage 2: Implementation

Implementation Stage complete.
Continue to Ramp-up Stage
(Figure 5.5)

The AUSED support agent must ensure during the implementation stage that the CMS and website are functioning correctly. In particular, there is regular checking for broken links (see discussion of processes for doing this in Section 5.3.3) and a requirement to reply promptly to any queries from knowledge recipients.

Stage 3: Ramp-up (see Figure 5.5)

The ramp-up stage (see Figure 5.5) begins when the knowledge recipient starts applying the received knowledge. During the application, the knowledge recipient may identify unexpected problems. If this happens, the knowledge recipient can refer to the
online “Help” facilities on the website for a solution or contact AUSED for assistance. Given that during the ramp-up stage the recipient is seeking to apply the received knowledge, queries to AUSED at this stage are less likely to have to do with technical issues concerning acquisition of the knowledge resources or operation of the website, but to involve instead matters of interpretation of the received knowledge, that may well have to be referred to content authors (“Troubleshooting”). At this stage high levels of expertise in terms of how to solve the problem or where to get the answer to the user’s enquiry are expected of AUSED staff in order for them to assist knowledge recipients promptly. The outcomes of such troubleshooting may prompt a need to correct/update the website.

During this stage, as in Stage 1 – Initiation and Stage 2 – Implementation, AUSED must ensure that the knowledge presented on the website is correct. A particular issue relates to updating incorrect or possibly changed directions or expectations arising from governmental decisions to change policy or process. In this case it is essential that the website must provide the latest updates, including advice on dates of amendment. During this stage AUSED staff must follow the Content Ownership, Approval and Review Standard guidelines that prescribe an ongoing, planned approach to the content lifecycle processes across each department and agency. The standard promotes a transparent and evident content ownership, approval and review process.
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Chapter 5

Stage 3: Ramp-up

From Implementation Stage

- Search information
  - Website
    - Yes
    - No
  - No

- Apply knowledge
  - Knowledge recipient
    - Yes
    - No

- Troubleshoot
  - Yes
  - No

Ramp-up Stage complete. Continue to Integration Stage (Figure 5.6)

Figure 5.5: Flowchart for the Ramp-up Stage at AUSED

Stage 4: Integration (see Figure 5.6)

At this stage (see Figure 5.6) the knowledge recipient will have received the transferred knowledge, and integrated its use with their needs. Given success, they will refer to the
website again in future to meet further knowledge needs, or to reinforce their recollections of already acquired knowledge.

At this stage, the knowledge provider continues to maintain the website and responds to on-going emerging knowledge needs. At AUSED, Communication Division takes responsibility for this. During this stage also, IT Division ensures that the website is functioning properly and that the system is stable. Even though at this stage users have received the knowledge resources and may not necessarily be accessing the website regularly, users may choose to refer to the website to reconfirm their understandings. As such, it is essential that the website continues to function well at all times. In particular, IT Division staff must ensure that the CMS continues to function correctly. Also crucial at this stage, is a requirement for AUSED to remain alert to the need to update the website to reflect urgent updates and timely news, in response to governmental decisions or emerging issues. This role is primarily monitored by staff in Communication Division.

Consistent with the approach taken to identify concepts relevant to KT via the website (by studying associated disciplines) (see Sections 2.6 – 2.8), additional aspects of AUSED’s wider approaches to customer service and WSS are now briefly examined.
5.3.1.7: Customer Service at AUSED

As previously highlighted AUSED places a priority on responding to the requirements of stakeholders. With the motto “Every child, every opportunity”, AUSED seeks to ensure that knowledge resources available to each website user are based on stakeholder needs. Several examples of this focus on proactive customer service include:

- Towards the end of every year, AUSED informs users via the website, in particular parents, about school start bonuses, including how to apply. These bonuses assist parents to equip their children for the start of the new school year;
- Via the website, AUSED delivers prepared teaching and learning resources for teachers and students. The resources can also assist parents seeking to assist their children with school work;
- AUSED has created a search engine called Connect. The Connect website links to websites which have games and activities and information for projects;
- AUSED provides ongoing in-service training for teachers, so enhancing teaching skills;
- AUSED has created Ultranet, a state-wide, secure website that students, parents and teachers can access via the internet to undertake online learning activities such as creating a learning portfolio and using online communication tools such as wikis, blogs and discussion boards. This can connect students, teachers and parents for information sharing. Parents can know their children’s activities in school, can communicate with teachers, and can monitor their children’s performance; and
- AUSED has a focus on providing website accessibility to users with disabilities. For example, a transcript is available with all embedded video for users with hearing disabilities. The font of the website can be enlarged for users with vision disabilities.

“A lot of it is translated into different languages,” (PA1: Senior Online Editor).
“The student learning section fits under school professional. Everything in there is for teachers. How they can conduct assessment, how they can plan the curriculum for the year,” (PA2: Website Specialist).
“We have a search engine called Connect. The content has been reviewed by our staff and it gives student material that has been approved, and without any pornography or violent material,” (PA3: Online Communication Advisor).
5.3.1.8: Web-based Self-Service at AUSED

WSS is based upon a philosophy that a website should provide users with a technology that facilitates the relationship between provider and website users, by allowing users to address their knowledge needs without a requirement for provider agent intervention.

To appreciate WSS as practiced at AUSED, it should be understood that AUSED operates two types of website. The first is an intranet/extranet - a share point for internal staff and principals only. The intranet/extranet websites are essentially static. The second is a public website - the focus of this research. The public website is interactive and can be accessed by the public at http://www.education.vic.gov.au. The website is very large, consisting of nearly 30,000 pages. The public website provides knowledge resources, guidelines and advice for stakeholders regarding the Victorian education system, designed based on Victorian government standards and best practices. The knowledge resources available have been summarised in Table 5.3.

The website design is motivated by the objective that, as far as possible, stakeholders accessing the system should be able to service their own knowledge needs (i.e. its design is consistent with a WSS philosophy).

5.3.2: Results: Initial Identification of CSFs

This section addresses the CSFs for KT via a government education website, identified using the techniques described in Chapter 3, from respondent interviews conducted in Australia. Note that the grouping/ordering of CSFs is tentative at present. Five of ten CSFs have a focus on the user, including the importance of raising user awareness of the website (AUS_CSF 1), providing users with easy-to-use functionality that will support them with clear and unambiguous advice concerning their current location and navigation path options (AUS_CSF 2), understanding the needs of the recipient in order to provide relevant knowledge in meaningful language (AUS_CSF 3), that the website content should be presented in concise, attractive formats (AUS_CSF 4), and that the first experience of the website by users should be positive (AUS_CSF 8). Two CSFs to do with content, addressing its relevance (AUS_CSF 5) and the importance of the knowledge storage architecture (AUS_CSF 9), have been identified. (Note that further consideration of AUS_CSF 9, and its association content and/or technology, will be
presented in Chapter 6.) Finally, three CSFs have been identified to do with technology issues, including website availability/accessibility (AUS_CSF 6), awareness of users’ technology availability (AUS_CSF 7), and the important role of the search engine (AUS CSF 10). Refinement and grouping of these CSFs will be revisited in Chapter 6. The differences in CSFs between those identified at MASED and AUSED will be discussed explicitly in Section 6.4, at which stage any differences will be considered in the context of discussion that have taken place in the focus groups.

**AUS_CSF 1 – Awareness and Notification**

**Definition:** Promotion of the website and proactive communication should be undertaken to raise awareness and to inform current and potential external users of the website, regarding its content, functionality, modifications and new developments.

AUSED respondents have emphasised their commitment to advertising and promoting the public education website as a source of knowledge, so increasing public awareness of the website. A focus of this is the annual public Education Week promotion. Education Week is normally celebrated each year in mid-May, and is a time when kindergartens and government schools throughout Victoria open their doors to parents and their broader communities through information nights, open days, student displays, performances and other special events that showcase their programs and achievements.

A second example is the frequent e-mails to the School Principals’ mailing list which is extensively used to raise awareness of new issues and teaching and learning resources available on the website.

AUSED also advertises the website in the education monthly magazine “Shine”. *Shine* magazine was AUSED’s monthly publication for school staff in Victoria, from January 2009 to December 2010. The magazine was re-named *Inspire* in January 2011. The magazine is published monthly during the school year, and is available for free download.

The website Uniform Resource Locator (URL) is also promoted through government media releases, when those releases are related to education issues.
AUSED also visits schools to identify their ICT needs, to receive feedback on the websites, and to promote online resources. This activity is linked also to AUS_CSF 3 - User Focus: Understand Needs of Recipient, as a means for AUSED to build an understanding directly from users concerning their knowledge needs.

“We do a lot of advertising as well to get our website out there,” (PA1: Senior Online Editor).
“We also send out e-mail circulars,” (PA2: Website Specialist).
“Sometime the website gets advertised as a URL in media releases. Various aspects of our website are being used, like our URL. Media releases talking about education - they put the URL” (PA5: Senior Communication Advisor).

The extant literature offers support to this CSF. For example, in the context of WSS, Cullen (2008) reports that communications with key stakeholders, especially the media, and the management of public and media awareness, is important in order to motivate users to use a website. Cooper, Lichtenstein and Smith (2006) also stress that the provider needs to establish awareness and marketing programmes to promote WSS to user communities. In the broader KM literature, Misra, Hariharan and Khaneja (2003) state that it is important to publicise available knowledge, so increasing acceptance among the user community. The provider needs to constantly build awareness of KM initiatives and their successes through seminars, workshops and training courses.

AUS_CSF 2 – Usability: Functionality and Navigation

Definition: The website should be developed to provide users with easy to use functionality that will support them with clear and unambiguous advice concerning their current location and navigation path options. Different categories of users should be supported when locating and retrieving required knowledge efficiently and effectively.

AUSED respondents have emphasised the criticality of appropriate functionality, in particular the capability to easily and efficiently navigate to required knowledge resources. Examples of design features cited by respondents that have been employed to deliver this outcome include:

- Categorisation of knowledge resources, and partitioning of them on the website, according to stakeholder group;
- The use of distinctive colours for screens relevant to each stakeholder group consistently throughout the website;
- Provision of a carefully designed website map;
• Links to knowledge have associated carefully composed, meaningful texts;
• Links with images and colours are employed consistently to aid user recognition; and
• Instructions for downloadable knowledge resources employ explanations that are meaningful to the stakeholder group.

This CSF has some links to aspects of AUS_CSF 9 – Knowledge Storage and Retrieval: Architecture, insomuch as the delivery of a website built upon sound information architecture can facilitate the implementation of efficient knowledge resource retrieval capabilities.

“Easy navigation which I mentioned earlier is a bit of a problem because, by the time they get to student learning, they’ve clicked on the department of education homepage and then they may have gone to the school professional’s section,” (PA2: Website Specialist).

“Site maps - number two,” (PA4: Web Specialist).

This CSF is consistent with results reported in other contexts to evaluate the effectiveness of websites. As discussed in Section 2.3.2.1 usability includes the availability of a website map, and high quality, meaningful navigation labels throughout a website (Misic & Johnson 1999; Bauer & Scharl 2000; Huizingh 2000; Smith 2001; West 2001a; West 2001b; Barnes & Vidgen 2003a, 2003b, 2006; Parasuraman, Zeithamal & Malhorta 2005; Yen, Hu & Wang 2005, 2007; Ceri et al. 2007; Loiacono, Watson & Goodhue 2007; Soufi & Maguire 2007; Huang & Shyu 2008). Further, the interface should be consistent in colour and in the design of links (Bauer & Scharl 2000; Olsina, Lafuente & Rossi 2001; Yen, Hu & Wang 2005, 2007).

AUS_CSF 3 – User Focus: Understand Needs of Recipient

Definition: The website should provide relevant knowledge to users in such a way that the content is easy to understand, and it is written in simple and meaningful language chosen with the recipient in mind.

Knowledge resources on the website must, above all, be relevant to the needs of the relevant stakeholder group. Further, they must be expressed in clear, simple and easy to understand terms, chosen with the user in mind. The knowledge resources prepared must be written using language directed to specific stakeholder user groups.
Achievement of this is predicated upon a clear understanding of the stakeholder group, their knowledge needs, and the language that is meaningful to them.

In order to prepare knowledge resources according to user needs, AUSED encourages users to provide feedback regarding required knowledge needs. Means of achieving this are detailed in Section 5.3.3 and include user testing, email feedback, telephone feedback, site visits, focus groups and qualitative surveys.

To ensure appropriate use of language, as discussed in Section 5.3.1 (KT Stage 1 – Initiation) AUSED has a defined process involving content authors, internal checking and quality assurance checking in place.

This CSF has some links to aspects of AUS_CSF 2 - Usability: Functionality and Navigation and AUS_CSF 4 - Presentation of Knowledge Resources. This CSF demands an understanding of the user, with a focus on relevance and appropriate language. AUS_CSF 2 requires delivery of relevant functionality with an emphasis on navigation, whilst AUS_CSF 4 requires use of appropriate presentation means. Together, these are the core of a strong user focus.

"Try to communicate as clearly as we can," (PA2: Website Specialist).
"Issue of content quality - whether the material has been written for the web audience, where we try very hard to make sure our content is not written in jargon especially for the parent audiences," (PA3: Online Communication Advisor).
"I think we have a website for particular audiences like when we said these documents are good for teachers, we make sure that it’s published in the section of the website so that teachers can download,” (PA8: Project Officer).

In the extant customer service literature there are many research contributions that emphasise the importance of focusing on users’ needs. Wagenheim & Reurink (1991) emphasise that to be customer-oriented, identifying what customers do not want (such as the desire to not have to wait in line, or that customers do not want useless information provided by discourteous or misinformed individuals) is every bit as important as understanding what they want. What government customers want is to get their job done, have their promises kept and have their goals and needs met (Wagenheim & Reurink 1991).

AUS_CSF 4 – Presentation of Knowledge Resources
**Definition:** Website content should be presented with the recipient in mind. The content format should be concise, attractive, informative and available in multiple formats that take advantage of the variety of available presentation options, including colour, font and the opportunity to include multimedia. The formats need also to consider the size of the document.

The presentation of knowledge resources must facilitate the user accessing content. This includes issues such as an appropriate choice of colours, font and multimedia effects. Further, the design of the website needs to be consistent throughout, so avoiding user confusion. Knowledge resources also need to be presented in multiple media formats (PDF, audio, video and other appropriate formats) so allowing the user to choose a format that suits their learning style. It has been reported by some respondents that choice of format must also consider file size, so avoiding unacceptable download performance. As noted earlier (Section 5.3.1), guidance to achieving this outcome is available at AUSED in the form of a Consistent User Elements Standard (which provides for consistent branding of websites and layout of common components, which contributes to a consistent experience for users of websites).

As noted above, this CSF has some links to aspects of AUS_CSF 2 - Usability: Functionality and Navigation and AUS_CSF 3 - User Focus: Understand Needs of Recipient in that, taken together, they constitute the core of a strong user focus.

“Just trying to make it attractive - not too text heavy I suppose.” (PA2: Website Specialist).

“All of the factors about presenting words well on the web’s screen and for printing and writing for the web,” (PA3: Online Communication Advisor).

“Often things will be provided in multiple formats. If things are only, for example, acrobat reader files, PDFs, then there will be a link to acrobat reader to download.” (PA4: Web Specialist).

As stated in Section 2.3.2.1, the extant literature cites design quality as one of the key features to be considered when evaluating websites. Design quality includes quality images and an appropriate presentation style (Huizingh 2000). Further, Traunmuller, Orthofer and Gieber (2006a) recognise standardisation of the website as one way of enhancing performance. According to the AUSED respondents, developers must consider the design of the page on which knowledge resources are located – teacher pages have a degree of formality that is not appropriate to student pages.
AUS_CSF 5 - Content

**Definition:** The website should contain content that is regularly updated, accurate, meets user requirements and includes advice on update times so that users can schedule their revisit times.

AUSED’s team approach to the preparation of website materials supports meeting this CSF. As discussed in Section 5.3.1 (KT Stage 1 – Initiation) AUSED has a defined process involving content authors, internal checking and quality assurance checking in place to assure the accuracy of content. Further, procedures discussed in Section 5.3.1 (KT Stage 4 – Integration) are designed to ensure that content on the website remains current and is relevant. In particular, use of the Content Ownership, Approval and Review standards promotes a transparent approach. In accord with these processes, AUSED includes advice on planned updates so that a user can know when to schedule revisits to the website.

Feedback mechanisms reported in Section 5.3.3, including user email feedback, telephone feedback, site visits, focus groups and qualitative surveys, serve to highlight content inadequacies.

This CSF has some connections to AUS_CSF 2 – Usability: Functionality and Navigation, AUS_CSF 3 – User Focus: Understand Needs of Recipient and AUS_CSF 4 – Presentation of Knowledge Resources above, in that all are predicated on understanding aspects of the needs of the user community. AUS_CSF 5 however, has a very specific focus on content accuracy, and so is arguably linked with AUS_CSF 9 – Knowledge Storage and Retrieval: Architecture, insomuch as a sound underlying information architecture facilitates the maintenance of accurate content.

“I think that our other obligation is not to put up a lot of erroneous, not only erroneous but unnecessary information, where we could be publishing more than we are publishing now. One of the things that the communication area is trusted to do is to make the information concise and relevant to the audiences.” (PA7: Senior Online Communication Advisor).

“Features are highly updated.” (PA8: Project Officer).

As discussed in Section 2.7.2, content is the key to the assessment of website services. The elements of website content assessment include availability, depth, quality, reliability and accuracy (Zeithaml, Parasuraman and Malhorta 2002).
AUS_CSF 6 – Accessibility

**Definition:** The website should be available, whenever it is needed, and provide alternative ways for users to access knowledge that is fast and easy for users to download.

While at first sight this CSF may appear closely linked to AUS_CSF 2 – Usability: Functionality and Navigation, this CSF does not focus on the importance of specific website functionality including navigability, but instead on broader issues of overall accessibility of the website as a whole – availability of the website, with reasonable response times. It therefore is linked in part to technical issues of system response, in particular AUS_CSF 7 - ICT Infrastructure: Awareness of Users’ Technology Availability, which highlights that it is critical to understand users’ technology availability in order to decide how to prepare content and present knowledge in order to achieve acceptable response times (e.g. when loading pages and downloading resources).

This CSF also emphasises that to achieve KT to the wider stakeholder group, multiple access means need to be considered. In the case of AUSED, extensive telephone HelpLine services are provided, for stakeholders who choose to speak in certain circumstances, directly with the Department.

“I think the critical success factors are, I suppose, being able to go to the site and [being able to access it] right from the start,” (PA7: Senior Online Communication Advisor).

“We try to be aware of this [accessibility] but response time at schools sometimes are not good,” (PA9: Website Specialist).

As discussed in Section 2.7.2, accessibility is a key component of service quality assessment criteria used for service quality assessment (Zeithaml, Parasuraman and Malhorta 2002). Elements of accessibility include a two-way interaction between government and users including the provision of contact details such as physical addresses, e-mail addresses and telephone numbers for users to contact customer service agents, and availability of knowledgeable online representatives. Websites should also be accessible to disabled users. In addition, drawing upon past research, usability must also address the extent to which the website supports multiple languages (Bauer & Scharl 2000; Olsina, Lafuente & Rossi 2001; Yen, Hu & Wang 2005, 2007). AUSED has implemented multiple languages in various areas of its website (e.g.,
crucial information to parents related to the annual vouchers, is available in Mandarin, Indonesian, Arabic and other foreign languages. Further, AUSED has facilities for parents to request, from AUSED, to have website contents translated, in hard or softcopy, at no charge.

**AUS_CSF 7 - ICT Infrastructure: Awareness of Users’ Technology Availability**

**Definition:** Users’ technology availability must be considered in order to decide how to prepare the content and present knowledge.

In order to design the website it is critical that AUSED staff are aware of the types of infrastructure available to stakeholder groups. By knowing this, AUSED can prepare the knowledge in multiple formats in order to achieve acceptable response times for users (e.g., when loading pages and downloading resources).

This CSF has some links to **AUS_CSF 6 – Accessibility**, as noted in the discussion of CSF 6.

“Success factors in ... being aware of ... the limitations of users’ technology,” (PA5: Senior Communication Advisor).

“Obviously want to be successful. I mean look - one is our mission -- we look at technology,” (PA7: Senior Online Communication Advisor).

This CSF reflects elements of core advice in extant e-government literature. Specifically, United Nations (UN) (2008) reports that government should provide an infrastructure both within the public sector and across society at large, based upon reliable and affordable internet connectivity for citizens, businesses and all stakeholders in a given jurisdiction. This CSF is reflected also in the WSS literature, where Cooper, Lichtenstein and Smith (2006) stress the criticality of technical infrastructure at provider and customer firms being able to provide sufficient system access, internet connection and technical performance to support service needs.

**AUS_CSF 8 – User Positive Experience**

**Definition:** The website should be viewed as a positive experience by users, by providing knowledge according to users’ requirements.
This CSF, in a sense, represents an outcome of the successful achievement of all other CSFs. As stated by the Online Communication Advisor (PA3), “The number one success factor to get people to come back is to give them a good experience to start with. If they arrive at our website and they wander around and they can’t get what they are after, chances are that they leave the website.” He further states that by implementing all the eight CSFs, namely AUS_CSF 2 – Usability: Functionality and Navigation, AUS_CSF 3 – User Focus: Understand Needs of Recipient, AUS_CSF 4 – Presentation of Knowledge Resources, AUS_CSF 5 – Content, AUS_CSF 6 – Accessibility, AUS_CSF 7 – ICT Infrastructure: Awareness of Users’ Technology Availability, AUS_CSF 9 – Knowledge Storage and Retrieval: Architecture and AUS_CSF 10 – Search Engine. AUSED seeks to provide users with a positive experience using the website, whilst acknowledging that the user’s experience is subjective.

This CSF echoes the work of Cooper, Lichtenstein and Smith (2006) who stress that in the context of WSS it is critical that a user experiences a positive outcome that engenders in the user a conviction that they are valued by the provider. In similar vein, Yen, Hu and Wang (2005, 2007) and Al-Mashari (2007), stress the criticality of providing quality online services - users must emerge from the online interaction acknowledging a positive experience, so shaping an intention to return to the website in future.

**AUS_CSF 9 - Knowledge Storage and Retrieval: Architecture**

**Definition:** Guidelines should exist that authors should follow when preparing content and procedures to ensure compliance. The guidelines include website maps that specify locations for the storage of knowledge.

Underpinning operation of the website is a requirement for guidelines to be followed when preparing content. The Victorian Government mandates compliance with an extensive set of guidelines (see Section 5.3.1, KM at AUSED) - the Whole of Victorian Government Website Standards. Respondents in particular highlighted the importance of guidelines related to information architecture – at AUSED the IA (Structure, Classification & Navigation) standard requires that Victorian Government departments/agencies must develop and maintain: a documented IA strategy which...
describes, justifies and provides a strategic direction for the IA of their portfolio of websites; and/or documented IA plans for each individual website within their portfolio. As pointed out, this is one way for AUSED to manage their huge website.

For any new knowledge resource section, AUSED will initially update the IA. Usually the content author is the person who suggests a new section. The content author then proposes the new section to the Communication Division team (see Section 5.3.1.5 for the process of KM at AUSED). The Communication Division team will check with the current IA to avoid data redundancy. When the Communication Division team has made a decision, they will inform all content authors in the department of the new section that has been added to the IA. Content authors then can see the new section in the CMS.

For any section that needs to be deleted from the IA, the Communication Division team will take the decision. The Communication Division team will set an expiry date for each content element in the IA. This expiry date serves as an alert to content authors to update the content and as an indicator to the Communication Division team to check whether the section is still relevant in the IA. Content authors also can propose to the Communication Division team that a section needs to be deleted. Before a decision is made for a deletion in the IA, technical issues if present need to be resolved. Once resolved and agreed and supported by the Communication Division team, a section is will be deleted from the IA. The Communication Division will then inform all the content authors in the department regarding the deletion section in the IA. If any user searches for the deleted knowledge, they will receive a message advising that the page is no longer available or be redirected to another page.

“There is a predetermined information architecture that is the basis of a website and that sort of puts things into categories,” (PA1: Senior Online Editor).

“There is a need to make it clear... through the information architecture structure that there is ... a clear path that a user can see - that their content would be discoverable,” (PA7: Senior Online Communication Advisor).

“Whenever we have got new content we draw up a site map, just to see what all the content is,” (PA2: Website Specialist).

**AUS-CSF 10 - Search Engine**

**Definition:** The website should provide users with efficient and effective search functionality, including search engine capabilities.
AUSED respondents highlighted the criticality of the search engine that underpins the provided website. AUSED ensures that the website provides users with efficient and effective search functionality via an efficient search engine that facilitates keyword searches.

At AUSED, the IT team lists keywords related to each topic. The IT team will also request that the content author suggests keywords. The IT team will subsequently monitor the search activities of users to identify favourite keywords. If keywords that users have used are not in the keywords list, the IT team will consider adding those keywords. In order for the IT team to clarify whether such keywords are appropriate, they will ask the content author.

The IT team at AUSED will also develop an “incorrect” keywords list attempting to anticipate common misspellings.

“We have the search functionality – the user is looking for some keywords they just type in and get the information.” (PA8: Project Officer).

“Also adequate search facilities … some people will use the navigation on the site - some will use the search engine.” (PA3: Online Communication Advisor).

The extant literature supports identification of the criticality of the search engine as a possible CSF. For example, Cooper, Lichtenstein and Smith (2006) stress the criticality to WSS of search engines that must be efficient and effective to facilitate the findability of relevant knowledge.

Table 5.4 presents a summary of the definitions of the CSFs. This will be revisited in Chapter 6.
### Table 5.4: Summary of Definitions of CSFs

<table>
<thead>
<tr>
<th>CSF</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS_CSF 1 – Awareness and Notification</td>
<td>Promotion of the website and proactive communication should be undertaken to raise awareness and to inform current and potential external users of the website regarding its content, functionality, modifications and new developments.</td>
</tr>
<tr>
<td>AUS_CSF 2 – Usability: Functionality and Navigation</td>
<td>The website should be developed to provide users with easy to use functionality that will support them with clear and unambiguous advice concerning their current location and navigation path options. Different categories of users should be supported when locating and retrieving required knowledge efficiently and effectively.</td>
</tr>
<tr>
<td>AUS_CSF 3 – User focus: Understand Needs of Recipient</td>
<td>The website should provide relevant knowledge to users in such a way that the content is easy to understand, and it is written in simple and meaningful language chosen with the recipient in mind.</td>
</tr>
<tr>
<td>AUS_CSF 4 – Presentation of Knowledge Resources</td>
<td>Website content should be presented with the recipient in mind. The content format should be concise, attractive, informative and available in multiple formats that take advantage of the variety of available presentation options, including colour, font and the opportunity to include multimedia. The formats need also to consider the size of the document.</td>
</tr>
<tr>
<td>AUS_CSF 5 - Content</td>
<td>The website should contain content that is regularly updated, accurate, meets user requirements and includes advice on update times so that users can schedule their revisit times.</td>
</tr>
<tr>
<td>AUS_CSF 6 – Accessibility</td>
<td>The website should be available, whenever it is needed, and provide alternative ways for users to access knowledge that is fast and easy for users to download.</td>
</tr>
<tr>
<td>AUS_CSF 7 - ICT Infrastructure: Awareness of Users’ Technology Availability</td>
<td>Users’ technology availability must be considered in order to decide how to prepare the content and present knowledge.</td>
</tr>
<tr>
<td>AUS_CSF 8 – User Positive Experience</td>
<td>The website should be viewed as a positive experience by users, by providing knowledge according to users’ requirements.</td>
</tr>
<tr>
<td>AUS_CSF 9 - Knowledge Storage and Retrieval: Architecture</td>
<td>Guidelines should exist that authors should follow when preparing content and procedures to ensure compliance. The guidelines include site maps that specify locations for the storage of knowledge.</td>
</tr>
<tr>
<td>AUS_CSF 10 - Search Engine</td>
<td>The website should provide users with efficient and effective search functionality, including search engine capabilities.</td>
</tr>
</tbody>
</table>
5.3.3: Feedback Mechanisms

In this section ten mechanisms for determining website performance, as highlighted by the AUSED respondents, are reported. These suggest some feedback mechanisms that may be used to evaluate the performance of websites as vehicles for KT. Subsequently these mechanisms are related to the ten CFSs identified above, as summarised in Table 5.4. As will be clear, these tend to relate heavily to the technical performance of the website, reflecting a clear focus on technical rather than managerial or organisational issues in the AUSED identified CSFs above. Comparison of the mechanisms identified at MASED and AUSED, and issues related to the need for feedback mechanisms to more comprehensively address other dimensions of the CSFs (in particular in areas highlighted in the MASED case study), will be revisited in Chapter 6 (Section 6.7.1), once the validated CSFs from both sites have been determined.

Note that the order below does not represent the priority reported by the respondents, but simply the order in which the various feedback mechanisms emerged during the analysis of interview transcripts.

1) Web analytic tools – AUSED operates web analytic tools to collect web statistics, tracking the number of website visitors and their behaviour whilst visiting the website. Analysis of these logs allows AUSED staff to identify the total number of visitors on a daily basis. The analysis allows initial visits (i.e. first time visits), and repeat visits to be identified and counted. Further, for each visit, AUSED staff can identify the duration of the visit to the website, the navigation of users around the website, and downloads.

Highlighted particularly by respondents is “Audience signal” tracking (AUSED staff can use web analytic tools to analyse the path that a user or user group follows while accessing a website) and “Video tracking” (AUSED staff can track video play, so determining whether a video is being accessed, providing insight into the users’ assessment of the relevance of provided video materials).
Statistical records of this analysis are stored on a special purpose database for future access and use.

“We have web statistics which tell us how many people come and visit us on the site on a daily basis.” (PA1: Senior Online Editor)

“We also get audience signal on the web statistics. If someone is arriving as a parent, we will look at the pages that they go to, and aggregate that over time, and we say ok the majority of parents go down this path, and there is another group of parents who go here and then stop, and there is another group go here and then go to totally different places.” (PA3: Online Communication Advisor)

“At the moment that [video tracking] is something that is being implemented. We are looking at embedding code with an analytic package to track video play. We can see whether video is being downloaded or played. That is something that is happening at the moment.” (PA4: Web Specialist).

2) **User testing** – As mentioned as part of the modelling of the KT Initiation stage (Figure 5.3), AUSED follows processes for quality assurance of websites that include inviting user stakeholder groups to test, evaluate and provide direct feedback on the website. For example, AUSED will invite a group of parents to evaluate a component of the website designed to be released as part of the parents’ section. The test subject group will be instructed to complete a task requiring access to the website, and will be observed undertaking that task, without any prior advice or associated hints. AUSED staff will observe the group completing the task, logging errors and false navigation paths. If the test group encounters problems in the completion of tasks, AUSED will undertake redesign/restructuring of the website, and can schedule retesting. Such sessions of user testing are held two to three times in a year, responding to the identified need for testing as significant new website areas are developed for release.

3) **E-mail feedback** – On the website, at a number of places, there are clearly delineated invitations inviting comments, suggestions or corrections concerning the website by online means, which are directed to the relevant website administration team. In some places these links simply involve provision of an email address, while at others there is a provided online feedback form, including designated areas such as: Subject; Feedback Category; Usability Rating (1-5); Feedback Text; Name (optional); and Email address (optional). In particular, this alerts AUSED staff to links that are not working and to incorrect information on the website. AUSED staff respondents emphasised that they take seriously any such user complaint, with processes requiring prompt action.

“We also conduct user testing on our site. We also have e-mail feedback links.” (PA1: Senior Online Editor)
4) **Telephone feedback** – The AUSED website provides information concerning more traditional contact mechanisms, including general switchboard, postal address and street address. Specific stakeholder groups are also advised of dedicated telephone lines including: Maternal and Child Health line; and Parentline. Users can call AUSED seeking assistance with specific needs. As pointed out by the respondents, the number and content of such calls related to issues that have been raised on the website can provide insights into required website improvement as a means of KT.

“The amount of telephone calls we get on particular issues is also feedback into and including some of the content,” (PA1: Senior Online Editor).

5) **Checklist** – As mentioned as part of the modelling of the KT Initiation stage (Figure 5.3), AUSED follows processes for quality assurance of websites that include using a checklist that is based the Victorian government standards for e-government websites. The whole Victorian Government Website Standards encompass nine website standards that have been developed to promote consistent application of website standards across Victorian Government departments and agencies. As previously discussed, the standards address: Accessibility; Consistent User Elements; Content Approval and Review; Discoverability; Domain Names and Allocation; IA/Classification; Legal Compliance; Minimum Information Provision; and Privacy. All content authors at AUSED are responsible to follow these standards while preparing website content. Government Departments/Agencies are required to report their compliance to these website standards annually in accordance with the reporting dates set out in each standard. As such, the extent to which the website meets the expectations in the standards may be indicative of website performance as a means of KT.

“And we’ve got whole of government standards on how we set up our web pages so we’ve get consistency of heading and how you can get back to main section,” (PA2: Website Specialist).

6) **Site visits** – AUSED also visits schools to identify their ICT needs and to receive feedback on the websites. As part of these visits, AUSED can identify the attitudes of users, especially teachers, to ICT usage. Of particular value, from these visits AUSED can identify content or functionality that may need to be added to the website.
7) **Focus groups** – AUSED holds focus groups with sets of stakeholders, seeking feedback on the website. Such focus groups can be mediated by external usability experts. During these, participants will typically be given a task on the website to complete. The activity is videoed and following completion of the task, participants will be asked to verbalise their thought processes as they worked their way through the activity. A replay of the video recording of their website session can serve as a prompt to remind them of their actions/key clicks.

“We try to regularly have focus groups where we get a group of people from our major stakeholder groups like teachers or parents and we get external usability experts to take participants through tasks from our website - get registered to go to conference or something that we offered through the site - so they test subjects. If you will ... they get a task to do and in the usability lab they try to complete that task. It’s videoed and we ask people to talk about their thought processes, their clicking on different links.” (PA3: Online Communication Advisor).

8) **Eye tracking** – In recent times, AUSED staff have been working with eye tracking technology, which allows them to determine where on a web page a user’s eyes are focused. Participants are given a task to complete on the website. Using the eye tracking software, a diagram is produced showing where on each page the user’s eyes focused/moved. Access to such technology facilitates taking decisions on the placement of key content and links on each page, to maximise the likelihood that a user will notice such features, and to diagnose the misplacement of important content/features. As such, AUSED is able to improve website design.

“We have also recently done some eye tracking where once again they complete a task and this technology focuses on where their eyes glance on the page. We get a little diagram on the page showing their eyes mostly focus on the top left hand corner or ... they didn’t go where we expected at all - we are looking here instead of here at the body of the text.” (PA3: Online Communication Advisor).

9) **Qualitative surveys** – AUSED, as occasionally required, will run (online) qualitative surveys, seeking user feedback on their experience accessing the website or particular parts/features of the website. A particular focus of surveys has been access and navigation. Given that the website operated by AUSED is extensive, with dense information, survey information can facilitate redesign to minimise, for example, the number of user clicks to access knowledge resources.

“We also do some qualitative surveys. We asked people in the survey have they had any problem accessing the information” (PA3: Online Communication Advisor).

10) **Links checks** – AUSED has a system which can be used to check a website for broken links. The system produces reports on the condition of each link on the
website. As noted by one respondent, given the huge size of the website, running the link checking software takes hours, although, as noted below, a recent report discovered in excess of a thousand broken links.

“We’ve got a links checking process in place. They take hours to run because the site is huge. I think the last report we had over thousand broken links but then a lot of those links will link on to several pages.” (PA4: Web Specialist).

Table 5.5: Alignment of Feedback Mechanisms with the Identified CSFs

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Web analytic tools</th>
<th>User testing</th>
<th>E-mail feedback</th>
<th>Telephone feedback</th>
<th>Checklist</th>
<th>Site visits</th>
<th>Focus groups</th>
<th>Eye tracking</th>
<th>Qualitative surveys</th>
<th>Links checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS_CSF 1 – Awareness and notification</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUS_CSF 2 – Usability: Functionality and navigation</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AUS_CSF 3 – User focus: Understand needs of recipient</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AUS_CSF 4 – Presentation of knowledge resources</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AUS_CSF 5 - Content</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AUS_CSF 6 – Accessibility</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AUS_CSF 7 - ICT infrastructure: Awareness of users’ technology availability</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AUS_CSF 8 – User positive experience</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AUS_CSF 9 - Knowledge storage and retrieval: Architecture</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AUS_CSF 10 - Search engine</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Table 5.5 reports the alignment of the above ten feedback mechanisms to the identified CSFs. It represents an assessment, drawing upon the commentary above from respondents, as to which mechanisms might provide some feedback relevant to forming a judgement on the achievement of particular CSFs. As shown, the mechanisms cited by users apply widely across a number of CSFs rather than being specific to particular CSFs. In number of cases they relate more specifically to the technical performance of
the website, and insights into whether KT is being achieved, as such, are really only inferred. In addition, the mechanisms cited by users tend to apply most frequently to CSFs related to ensuring user needs have been understood, website usability (functionality/navigation), and presentation of knowledge resources. The application of these feedback mechanisms will be revisited, and critiqued, in Chapter 6, together with those identified in the MASED case study.

5.3.4: The Association of CSFs with the Knowledge Transfer Stages

To establish the CSFs reported above, respondents had been asked to consider, in turn, factors that were critical to each of the four KT stages (Initiation, Implementation, Ramp-up and Integration – see Figures 5.3 – 5.6). In this section the ten CSFs reported are unpacked in Table 5.6, highlighting the specific KT stages with which each CSF was considered to be associated. Table 5.6 shows, for each CSF, the total number of times each CSF has been reported by the respondents at each stage, and overall. These figures are displayed graphically in Figure 5.7.

Table 5.7 revisits the results reported in Table 5.6, but reports only instances where a CSF was the first mentioned by a respondent when considering each KT stage. As previously noted in Section 4.3.4, this subset of the results may provide some insight into which CSFs were at the front of each respondent’s mind, and will be discussed further in Chapter 6 as a means of appreciating the priority placed by respondents on each identified CSF. This technique was previously introduced and discussed in Section 3.9. Some initial observations, drawn from these results, include:

- CSFs have been identified almost uniformly across the four stages: Eight CSFs in Stage 1 – Initiation, 7 CSFs in each of Stage 2 – Implementation and Stage 4 – Integration and 5 CSFs in Stage 3 – Ramp-up. This indicates that the respondents have no difficulty in appreciating critical factors across all stages of the KT model.

- Overall, the most frequently cited CSFs are: AUS_CSF 3 – User focus: Understand needs of recipient; AUS_CSF 2 – Usability: Functionality and navigation; and AUS_CSF 5 – Content. AUSED acknowledges that in order to successfully transfer knowledge to users, the government provider must be responsive to users’ needs.
Table 5.6: The CSFs reported by the Respondents, associated with each KT Stage

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Stage 1 - Initiation</th>
<th>Stage 2 - Implementation</th>
<th>Stage 3 - Ramp-up</th>
<th>Stage 4 - Integration</th>
<th>Total number of times the CSF has been raised by the respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS_CSF 1 – Awareness and notification</td>
<td>2 respondents (PA1: Senior Online Editor, PA2: Website Specialist)</td>
<td>-</td>
<td>-</td>
<td>1 respondent (PA2: Website Specialist)</td>
<td>3</td>
</tr>
<tr>
<td>AUS_CSF 2 – Usability: Functionality and navigation</td>
<td>5 respondents (PA2: Website Specialist, PA3: Online Communication Advisor, PA4: Web Specialist, PA5: Senior Communication Advisor, PA6: Customer Support Officer)</td>
<td>3 respondents (PA1: Senior Online Editor, PA2: Website Specialist, PA8: Project Officer)</td>
<td>2 respondents (PA5: Senior Communication Advisor, PA9: Website Specialist)</td>
<td>1 respondent (PA5: Senior Communication Advisor)</td>
<td>11</td>
</tr>
<tr>
<td>AUS_CSF 3 – User focus: Understand needs of recipient</td>
<td>3 respondents (PA3: Online Communication Advisor, PA5: Senior Communication Advisor, PA7: Senior Online Communication Advisor)</td>
<td>3 respondents (PA2: Website Specialist, PA3: Online Communication Advisor, PA9: Website Specialist)</td>
<td>7 respondents (PA1: Senior Online Editor, PA3: Online Communication Advisor, PA4: Web Specialist, PA5: Senior Communication Advisor, PA7: Senior Online)</td>
<td>5 respondents (PA3: Online Communication Advisor, PA4: Web Specialist, PA5: Senior Communication Advisor, PA7: Senior Online Communication Advisor, PA9: Website Specialist)</td>
<td>18</td>
</tr>
<tr>
<td>AUS_CSF 4 – Presentation of knowledge resources</td>
<td>1 respondent (PA3: Online Communication Advisor)</td>
<td>2 respondents (PA4: Web Specialist, PA6: Customer Support Officer)</td>
<td>1 respondent (PA2: Website Specialist)</td>
<td>3 respondents (PA3: Online Communication Advisor, PA5: Senior Communication Advisor, PA8: Project Officer)</td>
<td>7</td>
</tr>
<tr>
<td>AUS_CSF 5 - Content</td>
<td>3 respondents (PA4: Web Specialist, PA7: Senior Online Communication Advisor, PA8: Project Officer)</td>
<td>1 respondent (PA1: Senior Online Editor)</td>
<td>2 respondents (PA1: Senior Online Editor, PA9: Website Specialist)</td>
<td>5 respondents (PA1: Senior Online Editor, PA4: Web Specialist, PA5: Senior Communication Advisor, PA6: Customer Support Officer, PA8: Project Officer)</td>
<td>11</td>
</tr>
</tbody>
</table>
Table 5.6: The CSFs reported by the Respondents, associated with each KT Stage – (Continued)

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Stage 1 - Initiation</th>
<th>Stage 2 - Implementation</th>
<th>Stage 3 - Ramp-up</th>
<th>Stage 4 - Integration</th>
<th>Total number of times the CSF has been raised by the respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS_CSF 6 – Accessibility</td>
<td>1 respondent (PA7: Senior Online Communication Advisor)</td>
<td>4 respondents (PA1: Senior Online Editor, PA3: Online Communication Advisor, PA7: Senior Online Communication Advisor, PA9: Website Specialist)</td>
<td>1 respondent (PA6: Customer Support Officer)</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>AUS_CSF 7 – ICT infrastructure: Awareness of users’ technology availability</td>
<td>-</td>
<td>2 respondents (PA5: Senior Communication Advisor, PA7: Senior Online Communication Advisor)</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>AUS_CSF 8 – User positive experience</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 respondent (PA3: Online Communication Advisor)</td>
<td>1</td>
</tr>
<tr>
<td>AUS_CSF 9 – Knowledge storage and retrieval: Architecture</td>
<td>3 respondents (PA1: Senior Online Editor, PA7: Senior Online Communication Advisor, PA9: Website Specialist)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>AUS_CSF 10 – Search engine</td>
<td>4 respondents (PA3: Online Communication Advisor, PA4: Web Specialist, PA7: Senior Online Communication Advisor, PA8: Project Officer)</td>
<td>1 respondent (PA2: Website Specialist)</td>
<td>-</td>
<td>1 respondent (PA8: Project Officer)</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>22</td>
<td>7</td>
<td>16</td>
<td>5</td>
</tr>
</tbody>
</table>
Figure 5.7: The CSFs reported by the Respondents, associated with each KT Stage
Table 5.7: The CSFs reported by the Respondents, associated with each KT Stage – constrained to instances where a CSF was the first mentioned by a respondent when considering each KT stage.

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Stage 1 Initiation</th>
<th>Stage 2 Implementation</th>
<th>Stage 3 Ramp-up</th>
<th>Stage 4 Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS_CSF 1 – Awareness and notification</td>
<td>√</td>
<td>-</td>
<td>-</td>
<td>1 respondent (PA2: Website Specialist)</td>
</tr>
<tr>
<td>AUS_CSF 2 – Usability: Functionality and navigation</td>
<td>4 respondents (PA2: Website Specialist, PA3: Online Communication Advisor, PA5: Senior Communication Advisor, PA6: Customer Support Officer)</td>
<td>1 respondent (PA8: Project Officer)</td>
<td>√</td>
<td>1 respondent (PA5: Senior Communication Advisor)</td>
</tr>
<tr>
<td>AUS_CSF 3 – User focus: Understand needs of recipient</td>
<td>√</td>
<td>√</td>
<td>5 respondents (PA3: Online Communication Advisor, PA4: Web Specialist, PA5: Senior Communication Advisor, PA7: Senior Online Communication Advisor, PA8: Project Officer)</td>
<td>2 respondents (PA7: Senior Online Communication Advisor, PA9: Website Specialist)</td>
</tr>
<tr>
<td>AUS_CSF 4 – Presentation of knowledge resources</td>
<td>√</td>
<td>2 respondents (PA4: Web Specialist, PA6: Customer Support Officer)</td>
<td>1 respondent (PA2: Website Specialist)</td>
<td>√</td>
</tr>
<tr>
<td>AUS_CSF 5 - Content</td>
<td>1 respondent (PA8: Project Officer)</td>
<td>√</td>
<td>2 respondent (PA1: Senior Online Editor, PA9: Website Specialist)</td>
<td>3 respondents (PA1: Senior Online Editor, PA4: Web Specialist, PA6: Customer Support Officer)</td>
</tr>
</tbody>
</table>
Table 5.7: The CSFs reported by the Respondents, associated with each KT Stage – constrained to instances where a CSF was the first mentioned by a respondent when considering each KT stage – (Continued)

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Stage 1 Initiation</th>
<th>Stage 2 Implementation</th>
<th>Stage 3 Ramp-up</th>
<th>Stage 4 Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS_CSF 6 – Accessibility</td>
<td>1 respondent (PA7: Senior Online Communication Advisor)</td>
<td>3 respondents (PA1: Senior Online Editor, PA3: Online Communication Advisor, PA9: Website Specialist)</td>
<td>1 respondent (PA6: Customer Support Officer)</td>
<td>-</td>
</tr>
<tr>
<td>AUS_CSF 7 – ICT infrastructure: Awareness of users’ technology availability</td>
<td>-</td>
<td>2 respondents (PA5: Senior Communication Advisor, PA7: Senior Online Communication Advisor)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AUS_CSF 8 – User positive experience</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 respondent (PA3: Online Communication Advisor)</td>
</tr>
<tr>
<td>AUS_CSF 9 - Knowledge storage and retrieval: Architecture</td>
<td>2 respondents (PA1: Senior Online Editor, PA9: Website Specialist)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AUS_CSF 10 - Search engine</td>
<td>1 respondent (PA4: Web Specialist)</td>
<td>1 respondent (PA2: Website Specialist)</td>
<td>-</td>
<td>1 respondent (PA8: Project Officer)</td>
</tr>
<tr>
<td><strong>Total of CSFs associated with KT stages</strong></td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

**Notes:** √ indicates that the CSF has been mentioned by the respondents but not as the first factor
During the **Initiation Stage** respondents report \textit{AUS-CSF 2 – Usability: Functionality and navigation} most frequently; followed by \textit{AUS-CSF 10 - Search engine}.

During the **Implementation Stage** respondents report \textit{AUS-CSF 6 – Accessibility} most frequently; followed by \textit{AUS-CSF 2 – Usability: Functionality and navigation} and \textit{AUS-CSF 3 – User focus: Understand needs of recipient}.

During the **Ramp-up Stage** respondents clearly report \textit{AUS-CSF 3 – User focus: Understand needs of the recipient} most frequently.

Finally, during the **Integration Stage** respondents report \textit{AUS-CSF 3 – User focus: Understand needs of recipient} and \textit{AUS-CSF 5 – Content} most frequently; followed by \textit{AUS-CSF 4 – Presentation of knowledge}.

If one focuses only at each stage on the first mentioned CSF (see Table 5.7) the most important CSFs at each stage are differentiated:

- **Initiation**: \textit{AUS-CSF 2 – Usability: Functionality and navigation};
- **Implementation**: \textit{AUS-CSF 6 – Accessibility};
- **Ramp-up**: \textit{AUS-CSF 3 – User focus: Understand needs of recipient}; and
- **Integration**: \textit{AUS-CSF 5 – Content}.

The above highlights that at Initiation, which involves the knowledge provider preparing knowledge content for the website and the potential user recognising a need for knowledge and commencing a search for that knowledge, the respondents see as most critical that easy-to-use functionality that will support users with clear and unambiguous navigation options must be identified (\textit{AUS-CSF2 – Usability: Functionality and navigation}).

At Implementation, which begins with the decision of the knowledge recipient to proceed to acquire the knowledge, focus shifts to the ICT infrastructure which must support a website, that it is available, whenever it is needed, and must provide alternative ways for users to access knowledge that is fast and easy for users to download (\textit{AUS-CSF 6 – Accessibility}).
At Ramp-up, which begins when the knowledge recipient starts applying the received knowledge, the respondents see as critical that the website should provide relevant knowledge to users in such a way that the content is easy to understand, and is written in simple and meaningful language chosen with the recipient in mind (AUS_CSF 3 – User focus: Understand needs of recipient). As stated by the Online Communication Advisor, “The number one success factor to get people to come back is to give them a good experience to start with. If they arrive at our website and they wander around and they can’t get what they are after chances are that they leave the site” (PA3: Online Communication Advisor).

Finally, at Integration, when the knowledge recipient has received the transferred knowledge and moves to integrate its use with their needs, the respondents see that it is critical that the website should contain content that is accurate, relevant, regularly updated and which meets user requirements (AUS_CSF 5 – Content). At this stage the content itself is seen as critical – a lack of accuracy, relevance, currency and a failure to meet user requirements, will be exposed as the user seeks to integrate the acquired knowledge with their ongoing needs.

Note that comparisons of the association of CSFs with KT stages at the two sites, and the patterns of the associations of CSFs with the stages of Szulanski’s model, are discussed in Chapter 6 (Section 6.7.2), including reference to relevant supporting literature.

5.4: Chapter Summary

In this chapter results have been reported for an analysis of CSFs for KT from government sources to stakeholders (citizens, business entities, employees, and other government agencies) via a government education website operated by the Australian government. The analysis has drawn upon interviews with nine key Australian government respondents.

The results include:

- A discussion of the process and criteria adopted when selecting the case study organisation, referred to throughout this thesis as AUSED (Section 5.2).
• A discussion and a model of the AUSED context and KT process (Section 5.3.1).

• Initial determination of some ten CSFs (Section 5.3.2). Five of these have a focus on the user, including the importance of raising user awareness of the website, providing users with easy-to-use functionality that will support them with clear and unambiguous advice concerning their current location and navigation path options, understanding the needs of the recipient in order to provide relevant knowledge in meaningful language, that the website content should be presented in concise, attractive formats, and that the first experience of the website by users should be positive. Two CSFs to do with content, addressing its relevance and the importance of the knowledge storage architecture have been identified. Finally, three CSFs have been identified to do with technology issues, including website availability/accessibility, awareness of users’ technology availability, and the important role of the search engine. Note that validation of these CSFs, drawing on data collected at a subsequent focus group, will be reported in Chapter 6.

• Ten mechanisms for determining website performance have been identified, as highlighted by the respondents. These suggest feedback mechanism that might be used (in part at least) to evaluate the performance of the websites as vehicles for KT (Section 5.3.3).

• The associations of CSFs with the various KT stages, as reported by the respondents, have been identified (Section 5.3.4). The analysis has highlighted four key CSFs, associated by the respondents with each of the four KT stages.

In the following chapter (Chapter 6) these results, and those collected in the similar, parallel case study conducted in Malaysia (as reported in Chapter 4), are validated separately in focus group sessions. The resulting CSFs are aligned with the extant literature (drawing on literature analysis of candidate domains as reported in Chapter 2 (Section 2.9)). Finally, Chapter 6 reports the findings of a cross-case analysis of the resulting two CSF sets, and discusses further the results obtained on feedback mechanisms, and the association of CSFs with KT stages.
Chapter 6: Cross-Case Analysis and Discussion

6.1: Introduction

In this chapter the cross-case analysis of the studies conducted in Malaysia (Chapter 4) and in Australia (Chapter 5) is reported, and the results obtained, for each individual case study and specific observations emerging from the cross-case analysis, are discussed. In the course of reporting this analysis the focus groups conducted with respondents in Malaysia and in Australia are reported, as it will be remembered that the critical success factor (CSF) validation focus groups conducted in this research served a dual purpose: rather than only asking the respondents during the focus groups to refine and confirm the CSFs identified by analysis of interview notes and transcripts, the respondents were also asked to express their opinions of the CSFs that had been identified at the alternate organisation. In particular, respondents were encouraged to advance their views concerning factors in their own context that may explain points of difference (see Section 3.8). It is important to note that, consistent with a focus on determining CSFs (essentially a goal-oriented objective), the focus groups did not set out to extensively explore operational issues associated with day-to-day implementation of activities – although when such commentary emerged in the focus group discussions it was captured and is reported.

As a preface to this chapter it is important to recall that the notion of comparison in qualitative research, and in particular as applied here, is built upon developing understanding rather than measuring difference (Ritchie & Lewis 2003) (see Section 3.6.3). The focus of comparative study, as conducted herein, is on identifying similarities and differences between units, in order to broaden understanding of the phenomena, as opposed to research in a single setting which focuses on a restricted range of possible social activity (Neuman 2006).

The structure of this chapter is shown in Figure 6.1. In Section 6.2, the initial CSFs resulting from one-to-one interviews are categorised into themes. The individual CSFs are then aligned to the existing literature (Section 6.3). This is facilitated by associating the themes (as reported in Section 6.2) with the potential groupings of concepts that
were identified in the literature review (Section 2.9), drawing upon the existing literatures in several associated areas: knowledge management (KM), customer service and web-based self-service (WSS). Section 6.4 then reports outcomes of the comparative analysis as it applies to the CSFs identified for the two case study sites, based upon the one-to-one interviews at MASED (see Chapter 4) and AUSED (see Chapter 5). Not only are CSF definition differences noted, but differences in the emerging CSF themes at the two organisations are identified.

Section 6.5 then moves to reporting the focus groups, reporting initially discussion of the validation of the identified CSFs at MASED (Sections 6.5.1 and 6.5.2) and AUSED (Sections 6.5.3 and 6.5.4). Section 6.5.5 reports the feedback collected from the respondents at both focus groups on their interpretation of points of similarity and difference observed in the CSFs collected at the two organisations. Section 6.6 then provides a reflection on the observations of the respondents, in particular on the points of difference, and tentatively proposes some literatures that might provide insights into the reasons advanced by the respondents.

It should be noted, given a requirement imposed by management to constrain the duration of the focus group sessions to approximately 60 minutes (although they actually each ran approximately 90 minutes or more with the respondents’ agreement), only differences in CSFs were explored therein. In Section 6.7, however, a brief commentary is presented on a comparison of other matters related to CSFs that were investigated during the two case studies, specifically: Section 6.7.1 - Comparison of Identified Feedback Mechanisms; and Section 6.7.2 - Comparison of Association of CSFs with KT Model Stages.

Finally, the outcomes reported in this chapter are summarised in Section 6.8.
Cross-Case Analysis and Discussion

Figure 6.1: Structure of Chapter 6

- Introduction (6.1)
- Thematic Grouping of the CSFs (6.2)
- Comparison and Alignment of CSFs with the Existing Literature (6.3)
- CSF Comparative Analysis (6.4)
- Results: Validation of Critical Success Factors (6.5)
  - Confirmation of the CSFs at MASED (6.5.1)
  - Final List of the CSFs at MASED (6.5.2)
  - Confirmation of the CSFs at AUSED (6.5.3)
  - Final List of the CSFs at AUSED (6.5.4)
  - Feedback – Points of Similarity and Difference: Malaysia and Australia (6.5.5)
- Reflection on Identified Points of CSF Difference: Malaysia and Australia (6.6)
- Case Study Comparison: Other Dimensions (6.7)
  - Comparison of Identified Feedback Mechanisms (6.7.1)
  - Comparison of Association of CSFs with KT Model Stages (6.7.2)
- Summary (6.8)
6.2: Thematic Grouping of the CSFs

To facilitate conduct of the cross-case analysis, it was decided that rather than attempting an initial one-to-one CSF comparison, the CSFs at MASED and AUSED would be grouped into a set of common categories (referred to herein as “themes”). The CSFs in each theme could then be subjected to comparison – theme by theme.

To generate these thematic groups of CSFs, each of the groupings identified in the literature review (Section 2.9) was re-examined and its definition explored, including consideration of some of the relevant literature. Then each CSF was considered against that discussion and assigned to a grouping. At the conclusion of this exercise it was found that there were no unassigned CSFs – indeed the groupings postulated in the conceptual framework in Section 2.9, translated quite naturally to six CSF themes that were sufficient to include all CSFs identified at both organisations.

Table 6.1 summarises the assignment of identified CSFs at both organisations to the set of six themes. The considerations that generated this table are now discussed.

**Theme 1: Management** – As introduced in Section 2.9, the management grouping includes factors connected to exercise of the roles and responsibilities that may be expected of management (summarised as management’s requirement to demonstrate leadership and top management support of development). The literature base reviewed in Chapter 2 related to this group (see Table 2.9) includes:

- **E-Government Literature: Readiness of Leadership** – In the e-government literature various authors have identified as a challenge the readiness of leadership to think strategically, developing clear strategies for e-government, especially by determining both the underlying vision and the mission of e-government (Heeks 2002; Jaeger & Thompson 2003; Ndou 2004).

- **KM Processes Literature: Leadership and Top Management Support** – Literature related in particular to the “management” role in KM stresses that management must demonstrate leadership that can direct and facilitate KM efforts. This will include the provision of high quality supervision, work group support and incentives to encourage knowledge sharing and reuse (Markus 2001; Koskinen 2003; Kulkarni, Ravindran & Freeze 2006). Exercising such
leadership, including providing top management support of KM system development, is essential if a culture of knowledge transfer (KT) is to be promoted in an organisation (Markus 2001; Koskinen 2003; Kulkarni, Ravindran & Freeze 2006).

Table 6.1: Initial CSF Thematic Groupings

<table>
<thead>
<tr>
<th>MASED</th>
<th></th>
<th>AUSED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme 1: Management role</strong></td>
<td>MAS_CSF 8 – Leadership</td>
<td><strong>Theme 1: Management role</strong></td>
</tr>
<tr>
<td><strong>Theme 2: User focus</strong></td>
<td>MAS_CSF 1 – Awareness and notification</td>
<td><strong>Theme 2: User focus</strong></td>
</tr>
<tr>
<td></td>
<td>MAS_CSF 2 – Usability: Functionality and navigation</td>
<td>AUS_CSF 1 – Awareness and notification</td>
</tr>
<tr>
<td></td>
<td>MAS_CSF 3 - User focus: Understand needs of recipient</td>
<td>AUS_CSF 2 – Usability: Functionality and navigation</td>
</tr>
<tr>
<td></td>
<td>MAS_CSF 4 – Presentation of knowledge</td>
<td>AUS_CSF 3 – User focus: Understand needs of recipient</td>
</tr>
<tr>
<td></td>
<td>MAS_CSF 9 – User ICT literacy: Awareness</td>
<td>AUS_CSF 4 – Presentation of knowledge</td>
</tr>
<tr>
<td></td>
<td>MAS_CSF 10 – Education, training and knowledge sharing</td>
<td>AUS_CSF 8 – User positive experience</td>
</tr>
<tr>
<td><strong>Theme 3: Employee focus</strong></td>
<td>MAS_CSF 11 – Employee focus</td>
<td><strong>Theme 3: Employee focus</strong></td>
</tr>
<tr>
<td><strong>Theme 4: Content focus</strong></td>
<td>MAS_CSF 5 – Content</td>
<td><strong>Theme 4: Content focus</strong></td>
</tr>
<tr>
<td><strong>Theme 5: Technology focus</strong></td>
<td>MAS_CSF 6 – Accessibility</td>
<td><strong>Theme 5: Technology focus</strong></td>
</tr>
<tr>
<td></td>
<td>MAS_CSF 7 - ICT infrastructure: Availability and functionality</td>
<td>AUS_CSF 6 – Accessibility</td>
</tr>
<tr>
<td></td>
<td>MAS_CSF 12 – Interactive platform</td>
<td>AUS_CSF 7 - ICT infrastructure: Awareness of users’ technology availability</td>
</tr>
<tr>
<td><strong>Theme 6: Organisational culture</strong></td>
<td>MAS_CSF 13 – Attitude and change management</td>
<td><strong>Theme 6: Organisational culture</strong></td>
</tr>
<tr>
<td></td>
<td>MAS_CSF 14 – Security</td>
<td>This area was not raised by participants</td>
</tr>
</tbody>
</table>

- Customer Service Literature: Management Responsibilities, Strong Leadership and Support – A theme in this literature argues that public managers should serve their customers using management concepts drawn from effective private sector service firms, and become more customer focussed (e.g., Fountain 2001).

One essential component for a customer service program to be successful is to have the necessary resources and processes in place to deliver the services (Wagenheim & Reurink 1991).
WSS Literature: Management for Strategic and Operational Benefits – Cooper, Lichtenstein and Smith (2006) have identified that “the WSS strategy must assist the organisation in attaining its strategic and operational objectives”, a high level success factor that expresses an intention that a WSS strategy, in a commercial setting (such as the information technology (IT) Industry studied by Cooper, Lichtenstein and Smith (2006)) must deliver benefits aligned to the organisation’s objectives. A distinctive fine-grained factor, associated uniquely with Management for Strategic and Operational Benefits by Cooper, Lichtenstein and Smith (2006) is Cost Effectiveness, defined in essentially accounting terms as – “The cost equation for providing/using WSS must be better, or at least not worse, than providing/using non-WSS.”

In aligning the CSFs identified at MASED and AUSED against the above, it is apparent that none raised at AUSED lie in this theme. At MASED, however MAS_CSF 8 – 

Leadership (Definition: Management should proactively persuade and encourage usage of the website by supporting, explaining and creating awareness of the online services to users, especially government employees. This should be supported by documented policy, rules and regulations) clearly captures issues including the need to rise to the challenges of leadership readiness and the need to demonstrate top management support. Management issues such as management for strategic and operational benefit, at least as it encompasses cost benefit, were not raised in the context of MASED observations on management responsibilities as they relate to KT via websites.

**Theme 2: Site User** – As introduced in Section 2.9, the website user grouping includes factors connected to understanding, about the user community, its knowledge needs, level of ICT literacy, need for training and education, perceptions of usability, need to have website awareness and to receive update notifications, and need for reinforcing positive experiences – both initial and ongoing. The literature base reviewed in Chapter 2 related to this group (see Table 2.9) includes:

- E-Government Literature: Customer-driven Objectives – A number of authors stress that in e-government, objectives must be customer driven, designed to meet customer needs and with an aim to improve the overall quality of life (Ndou 2004). Leaders should empower their team members to perform their tasks to achieve such goals (Traunmuller & Wimmer 2004).
• KM Processes Literature: KM Barriers: Knowledge Receivers – Ko, Kirsch and King (2005) suggest that barriers to KT can be reduced when the sender and receiver have shared some common understanding. Cooper, Lichtenstein and Smith (2007) categorise the barriers to KT, including receiver-based barriers that relate to the receiver’s ability to understand knowledge. Understanding the website user is paramount.

• Customer Service Literature: Customer Service Needs – In order to be customer-oriented governments require knowledge and understanding of customer service needs (Kearns 2004; Schedler & Summermatter 2007), which can improve the usability features of government websites (Kolsaker & Lee-Kelly 2006b; Schedler & Summermatter 2007).

• WSS Literature: Experience Management – Cooper, Lichtenstein and Smith (2006) amongst many authors, stress that WSS should manage the stakeholder’s experience, particularly at the end-user level. The stakeholder experience will directly affect satisfaction levels and therefore on-going use of WSS

In aligning the CSFs identified at MASED and AUSED against the above, it is apparent that MAS & AUS_CSF 1 – Awareness and notification, MAS & AUS_CSF 2 – Usability: Functionality and navigation, MAS & AUS_CSF 3 – User focus: Understand needs of recipient, MAS & AUS_CSF 4 – Presentation of knowledge, MAS_CSF 9 – User ICT literacy: Awareness, MAS_CSF 10 – Education, training and knowledge sharing and AUS_CSF 8 – User positive experience all match closely to this theme. All express CSFs related to taking a customer-centric approach, seeking to understand user expectations and to manage the user’s experience.

Theme 3: Development Employee – As introduced in Section 2.9, the development employee grouping includes factors connected to understanding, and establishing the required employee roles and competencies. The literature base reviewed in Chapter 2 related to this group (see Table 2.9) includes:

• E-Government Literature: Challenges, Readiness of Human Infrastructure – Various authors have discussed the challenge of ensuring readiness of human infrastructure (Heeks 2002; Edmiston 2003; Jaeger & Thompson 2003). An information communication and technology (ICT) division or unit needs to be
established to manage, guide and drive e-governance (Heeks 2002), for which the government requires staff trained in IT to operate the tasks (Heeks 2002; Edmiston 2003; Jaeger & Thompson 2003).

- WSS Literature: WSS Success, Experience Management – Cooper, Lichtenstein and Smith (2006) have stressed that a WSS should manage the stakeholder’s experience, including at the corporate (provider) level.

In aligning the CSFs identified at MASED and AUSED against the above, it is apparent that, MAS_CSF 11 – Employee focus is included in Theme 3: Employee focus. There is, however, no CSF identified by AUSED respondents that maps to this theme.

Theme 4: Content/Presentation – As introduced in Section 2.9, the content/presentation grouping includes factors that relate to understanding and having the capability to deliver required knowledge content and appropriate knowledge presentation. The literature base reviewed in Chapter 2 related to this group (see Table 2.9) includes:

- E-Government Literature: Data/Information Quality, Usability – A number of authors stress the importance of data/information quality and usability to e-government adoption (eg, Olsina, Lafuente & Rossi 2001; Smith 2001; West 2001a; Lee et al. 2002; Barnes & Vidgen 2003a; 2003b; 2006). For example, the e-government website should clearly state the purpose underlying its development, clearly describe the kinds of information and services available, state the target audience, and state the last update date. In addition, official information must be made clear, together with the contact information for the organisation, including e-mail and postal addresses, relevant government employees’ names and telephone numbers. Usability, including issues related to the understandability of a website - availability of a website map – has been extensively discussed (Misic & Johnson 1999; Bauer & Scharl 2000; Huizingh 2000; Smith 2001; West 2001a; West 2001b; Parasuraman, Zeithmal & Malhorta 2005; Yen, Hu & Wang 2005; 2007; Barnes & Vidgen 2003; 2006; Ceri et al. 2007; Soufi & Maguire 2007; Huang & Shyu 2008).

- KM Processes Literature: Content Creation – KM process models are constructed around knowledge content creation. For example, Alavi and Leidner (2001) divide KM processes into four classifications: knowledge creation;
knowledge storage and retrieval; KT; and knowledge application. Knowledge creation addresses the critical process of developing new or replacing existing content (Pentland 1995).

- Customer Service Literature: Information Availability and Content – Zeithaml, Parasuraman and Malhota (2002) assert that one important strategy for success is to deliver service quality through a website. They outline the criteria used by most researchers to evaluate service quality of websites, a key component of which is information availability and content.

- WSS Literature: Content Quality - A number of authors have stressed that the WSS must contain useful, accurate and up-to-date content in order to resolve the end-user’s knowledge requirement. Information on a website must continually be updated (Cheung 1998; Lee et al. 2002; Garofalakis et al. 2004). Guidelines and procedures are required to ensure consistent layout throughout the website for easy information retrieval (Garofalakis et al. 2004; Yen, Hu & Wang 2005). Both the technical and management teams in an organisation need to work together to formulate correct, easy, quality and understandable content and presentation for easy and fast searching (Garofalakis et al. 2004; Yen, Hu & Wang 2005; 2007; Cooper, Lichtenstein & Smith 2006).

In aligning the CSFs identified at MASED and AUSED against the above, it is apparent that both the CSFs MAS & AUS_CSF 5 – Content are included in Theme 4: Content focus, addressing the above dimensions of content creation.

**Theme 5: Technology** – As introduced in Section 2.9, the technology grouping includes factors connected to understanding the required ICT infrastructure, interactive platform functionality, search engine functionality, and security requirements. The literature base reviewed in Chapter 2 related to this group (see Table 2.9) includes:

- E-Government Literature: Readiness of Technology – Governments must develop portals for service provision (Jaeger & Thompson 2003; Traunmuller & Wimmer 2004). Since these portals can be accessed anywhere, they also need to address the issues of usability (Traunmuller & Wimmer 2004), language and communication (Jaeger & Thompson 2003), and government must ensure that users have access to Internet facilities (Heeks 2002; Jaeger & Thompson 2003; Ndou 2004).
• Customer Service Literature: Customer Service Quality, Privacy/Reliability/Accessibility/Responsiveness – Criteria for assessing service quality discussed in the extant literature (see Section 2.7.2) include: Privacy (Privacy involves the protection of personal information, such that the personal information collected from users is not shared with other parties or misused); Reliability (Reliability is based on the proper functioning and availability of the website. It is also includes the accuracy of the services claimed to be provided to users); Accessibility (A website should provide a two-way interaction between the government and users, knowledgeable online representatives should be available 24/7, and the websites should also be accessible to disabled users and provide online foreign language translation services; and Responsiveness (Responsiveness relates to the promptness of customer service agents in responding to customers).

• WSS Literature: IT Infrastructure Capability – As noted by Cooper, Lichtenstein and Smith (2006), an organisation must have an adequate IT infrastructure in place, to enable it to participate in WSS. The organisation must have an ICT infrastructure that supports connectivity (a robust broadband network), appropriate policies, capacity development (especially human resources), relevant content (Castelnovo & Simonetta 2008; United Nations (UN) 2008) and senior management support, and must provide training for employees to increase their productivity, and encourage staff to share their knowledge and to use the new system (Cooper, Lichtenstein & Smith 2006).

In aligning the CSFs identified at MASED and AUSED against the above, it is apparent that the CSFs MAS & AUS_CSF 6 – Accessibility, MAS_CSF 7 – ICT infrastructure: Availability and functionality, MAS_CSF 12 – Interactive platform, AUS_CSF 7 – ICT infrastructure: Awareness of users’ technology availability, AUS_CSF 9 – Knowledge storage and retrieval: Architecture and AUS_CSF 10 – Search engine map well to aspects of Theme 5: Technology focus.

Theme 6: Organisational Culture – As introduced in Section 2.9, the organisational culture grouping includes factors related to establishing, at the organisational level (both developer and website user), a positive user attitude to the technology and change
management support processes. The literature base reviewed in Chapter 2 related to this group (see Table 2.9) includes:

- **E-Government Literature**: Changes to Management Process, Building Trust – The capacity of the institution to implement e-government, requiring changes to culture, has been cited as a challenge (Jaeger & Thompson 2003; Traunmuller & Wimmer 2004; Davison, Wagner & Ma 2005; Luna-Reyes, Gil-Garcia & Cruz 2007). An organisation may need to change its management processes (Ndou 2004; Traunmuller & Wimmer 2004). Various literatures, emphasises the importance of building a culture of trust in the e-government website (Barnes & Vidgen 2006; Parasuraman, Zeithamal & Malhorta 2005; Loiacono, Watson & Goodhue 2007).

- **KM Processes Literature**: Barriers to KT, Sharer- and Context-based – Cooper, Lichtenstein and Smith (2007) have discussed groupings of the barriers to KT including sharer-based barriers and context-based barriers. Sharer-based barriers involve the attitude of people in terms of their willingness to share their knowledge, and context-based barriers include issues that relate to the organisational context, including culture, technical attributes, expertise and company regulations.

- **WSS Literature**: Organisational Commitment and Readiness – A strand in this literature argues that in order to transfer knowledge successfully via its website, an organisation needs to educate and assist its users (Deloitte Consulting and Deloitte & Touche 2000; Cooper, Lichtenstein & Smith 2006). Users need to have the required knowledge, know-how and attitudes that support the use of WSS (Cooper, Lichtenstein & Smith 2006).

In aligning the CSFs identified at MASED and AUSED against the above, it is apparent that *MAS_CSF 13 – Attitude and change management* and *MAS_CSF 14 – Security* are included in *Theme 6: Organisational culture*. Security is linked to the idea of shaping organisational culture by building trust. None of the respondents from AUSED raised any CSFs in this area.

### 6.3: Comparison and Alignment of CSFs with the Existing Literature

In the previous section CSFs were grouped into theme areas, and the literature associated with each broad theme area was considered. In this section, the individual
CSFs within each theme are aligned to literature, supporting also the identification of equivalent CSFs (i.e. CSFs that have been reported at both organisations). To address this undertaking efficiently, a tabular format has been adopted (Table 6.2), listing each CSF, highlights from the relevant recent existing literature, and reference to the source discipline from which the literature was sourced (i.e. KM, Customer Service, WSS).

An extensive comparison, organised by theme grouping, is presented in Table 6.2.

Table 6.2: Alignment of CSFs with the Extant Literature

<table>
<thead>
<tr>
<th>CSFs</th>
<th>Extant Literature</th>
<th>Literature – Source Disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>THEME 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Management Role</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS_CSF 8 - Leadership</td>
<td>Markus (2001), Koskinen (2003), and Kulkarni, Ravindran and Freeze (2006) state that management’s role in an organisation is to implement the objectives of that organisation. This role includes leadership that can direct and facilitate KM efforts, supervise projects, support work groups and provide incentives to encourage knowledge sharing and use. Singh (2008) suggests that the productivity of an organisation depends on the management of valid knowledge through suitable styles of leadership.</td>
<td>KM</td>
</tr>
<tr>
<td></td>
<td>Trivellas and Dargenidou (2009) note that a leader should play a role as a director and coordinator, in order to provide quality services. Indeed, top management support is an indicator of quality customer services (Castelnovo &amp; Simonetta 2008; Deloitte Consulting and Deloitte &amp; Touche 2000; Kearns 2004; Schedler &amp; Summermatter 2007; United Nations 2008; Wagenheim &amp; Reurink 1991).</td>
<td>Customer service</td>
</tr>
<tr>
<td></td>
<td>Cooper, Lichtenstein and Smith (2006) identify top management support as critical to any strategic organisational WSS initiative.</td>
<td>WSS</td>
</tr>
<tr>
<td><strong>THEME 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>User Focus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS &amp; AUS_CSF 1 – Awareness and notification</td>
<td>Misra, Harirahan and Khaneja (2003) recommend that staff should take the initiative, be aware of organisational knowledge and be willing to institutionalise it. They further state that it is important to publicise available knowledge, so increasing acceptance among the user community. In addition, the user needs to be informed of upcoming chat, audio and videoconferencing sessions and new knowledge in their areas of interest, through an e-mail based subscription manager. They also suggest that the provider needs to constantly build awareness of KM initiatives and their successes through seminars, workshops and training courses.</td>
<td>KM</td>
</tr>
<tr>
<td></td>
<td>Barnes and Vidgen (2006) report that users expect to receive notification services from the website advising of information updates.</td>
<td>Customer service</td>
</tr>
<tr>
<td></td>
<td>Cullen (2008) reports that communications with key stakeholders, especially the media, and the management of public and media awareness, is important in order to motivate</td>
<td>WSS</td>
</tr>
</tbody>
</table>
users to use a website. Cooper, Lichtenstein and Smith (2006) also stress that the provider needs to establish awareness and marketing programmes to promote WSS to user communities.

<table>
<thead>
<tr>
<th>MAS &amp; AUS, CSF 2 – Usability: Functionality and navigation</th>
<th>Cooper, Lichtenstein and Smith (2006) stress the crucial role of usability in website design. Usability issues include how a user perceives and interacts with a website, ease of navigation, and appropriate design, creating a positive experience for the user.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS &amp; AUS, CSF 3 – User focus: Understand needs of recipient</td>
<td>Barnes and Vidgen (2002; 2003; 2006) stress the crucial role of usability in website design. Usability issues include how a user perceives and interacts with a website, ease of navigation, and appropriate design, creating a positive experience for the user.</td>
</tr>
<tr>
<td></td>
<td>Phusavat and Anussornmitisarn (2008) report that there are basic knowledge needs and services that are critical and constantly needed by citizens, including identification or ID cards, copies of household certificates, updating births, deaths and marriage certificates, and other basic government knowledge services.</td>
</tr>
<tr>
<td></td>
<td>Liu and Lee (2006) note that the customer value-adding processes of a business should be aligned to delivery on customer-centric promises, such as guaranteed service levels, creativity or convenience.</td>
</tr>
<tr>
<td></td>
<td>Piccoli et al. (2004) propose a taxonomy of customer needs amenable to online fulfilment, including: knowledge of the company’s services offered; articles; company background; stock information and other information about the company; knowledge of products and services offered; catalogues; membership services; new products; and Frequently Asked Questions (FAQs). Cooper, Lichtenstein and Smith (2006) report that personalisation of support for individual customers must be provided through the knowledge base and system.</td>
</tr>
<tr>
<td></td>
<td>Traunmuller, Orthofer and Gieber (2006a) recognise standardisation of the website as one way of enhancing the performance of the website, including establishing a common understanding of processes, building on widespread administrative concepts, ensuring interoperable platforms, having an administrative domain ontology, defining formats for data interchange and other forms of standardisation.</td>
</tr>
<tr>
<td></td>
<td>Hu et al. (2009) state that website design is one of the determinants of service quality and continuance intention of online services. UN (2008) and Perez, Bolivar and Hernandez (2008) report that websites with attractive and simple design allow users to quickly find what they are looking for - the website should be tailored to the needs of its stakeholders. Wood et al. (2008) report that user friendly and well designed websites can increase the effectiveness of information dissemination. Barlow et al. (2007) assert that poor online design can affect customer relationship management (CRM) in e-government.</td>
</tr>
<tr>
<td></td>
<td>Cullen (2008) advocates online form design that can facilitate use, with minimal graphics, reduced download times and support for dial-up access. Kim, Hong and Park (2008) assert that the web designer should design web contents which contain maximum information in minimum pages. Cooper, Lichtenstein and Smith (2006) stress that support knowledge presented through a web interface must be presented in a form that is readily accessible to users.</td>
</tr>
<tr>
<td>MAS, CSF 9 – User ICT literacy</td>
<td>Cooper, Lichtenstein and Smith (2006) report that understanding the user’s technical capability and infrastructure (access, connectivity and availability) is critical,</td>
</tr>
</tbody>
</table>
### Awareness

| MAS_CSF 10 – Education, training and knowledge sharing | • Misra, Hariharan and Khaneja (2003) report that sharing knowledge among employees is one of the most important elements of the electronic KM framework for government organisations. | KM |
| • Cullen (2008) reports that in order for knowledge sharing to be practiced by staff, it must start from, and be promoted by, the top levels of management. | WSS |
| • Miranda and Tarapanoff (2008) and Newell and Edelman (2008) state that the manual is a form of organisational knowledge, based on individuals’ professional knowledge and on the knowledge of groups, that can enhance the capability of users to use websites, and so should be shared across the organisation. | KM |
| • Hu et al. (2009) and Siddiquee (2008) state that training and support based on a manual can assist users with data entry and processing, eliminate human errors and reduce the turnaround time for processing, hence increasing service quality and the continuance intention of online services. | Customer service |
| • Liu and Lee (2006) report that ICT professionals, including solution providers should provide professional training and education to employees. | Customer service |
| • Cooper, Lichtenstein and Smith (2006) stress the criticality of providing education and assistance to users of WSS systems. | WSS |

| AUS_CSF 8 – User positive experience | • Cooper, Lichtenstein and Smith (2006) stress that it is critical that user experiences with a system result in positive outcomes that includes both valuable support and engenders in the user that they are valued by the provider. | WSS |

### THEME 3 Employee Focus

| MAS_CSF 11 – Employee focus | • Staniszkis and Staniszki (2006) advocate that human resource divisions should match work participant qualifications with requirements of the process work tasks. | KM |
| | • The results of the study by Siddiquee (2008) report that to support the emergence of technology, Malaysia has introduced programs to address the critical challenge of manpower needs. | Customer service |
| | • Staniszkis and Staniszki (2006) and Traunmuller, Orthofer and Gieber (2006b) contend that employees should be assigned tasks according to job specifications and their qualifications to ensure smooth process execution in an administrative environment. | KM |
| | • Cooper, Lichtenstein and Smith (2006) stress the criticality of management providing training to site provider staff, in particular support agents, to promote knowledge transfer and reuse, and to improve productivity. | WSS |

### THEME 4 Content

| | • Misra, Hariharan and Khaneja (2003) note that an organisation must exercise care to ensure that knowledge is available to knowledge consumers, whenever and wherever they want. They further state that providers should constantly seek to improve the knowledge base by evaluating existing knowledge assets for their relevance, usefulness, and possible | KM |
### Cross-Case Analysis and Discussion

**MAS & AUS_CSF 5 - Content**

Enhancement, ensuring protection of the knowledge base by clearly specifying access privileges to employees as well as external users for various activities such as inserting, updating, and deleting knowledge assets. Ultimately, the entire set of activities must result in usage of knowledge assets by the employees in effectively rendering their official responsibilities.

- Arendsen and Engers (2004) report that government agencies have an obligation to transfer government information to users. Further, government agencies must ensure that the information they disseminate is free of error.
- Argote and Ingram (2000) and Balasubramanian et al. (1999) state that content quality can increase the probability of transferring knowledge to the user.

**THEME 5 Technical Focus**

**MAS & AUS_CSF 6 - Accessibility**

- Misra, Hariharan and Khaneja (2003) note that knowledge assets should be stored in an electronic medium in order to enable efficient and fast access and retrieval. Providers should establish a knowledge portal that is accessible via an organisation-wide intranet. The knowledge portal should provide access to all knowledge assets as well as the important information systems of the organisation. They further state that providers should provide customised access for user to knowledge resources. Providers also need to provide a powerful search capability to users to enable them to extract knowledge assets of interest to them.
- Barnes and Vidgen (2003a; 2003b) report that lack of accessibility features on a website will create frustration in users.
- Piccoli et al. (2004) recognise site navigation as an important aspect of website accessibility, because users need to conveniently find sought information. This can be addressed by services such as site maps and search features.

**MAS_CSF 7 – ICT infrastructure: Availability and functionality**

- Misra, Hariharan and Khaneja (2003), Dooley (1997), Arendsen and Engers (2004) advocate that the organisation should pay serious attention to technology in terms of the computing devices, network infrastructure and system software tools that will best fulfil the user’s need to access knowledge resources. They must establish an organisation-wide intranet that offers extensive communication and collaboration capabilities and ensure that processes and events that relate directly or indirectly to the organisation’s strategic direction are automated as computer-based information systems.
- Liu and Lee (2006) state that professional delivery of ICT must include the ICT infrastructure to improve CRM performance. Denhardt (1999) reports that an extraordinary explosion of new knowledge and technological innovations will continue to happen in the public sector in this technological era.

**MAS_CSF 12 –**

- Misra, Hariharan and Khaneja (2003) report that tacit knowledge is best shared through interaction and dialogue such as e-mail, discussion groups, expert locators, chat rooms, e-learning through online seminars and virtual classrooms, audio and videoconferencing links and other
Cross-Case Analysis and Discussion

<table>
<thead>
<tr>
<th>Interactive platform</th>
<th>virtual interactive collaborative workspace.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Liu and Lee (2006)</td>
<td>state that customers should be encouraged</td>
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<td></td>
<td>to participate in steering committees and</td>
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<td></td>
<td>supervisory or advisory boards in order</td>
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<td>to design interactive websites to</td>
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<td></td>
<td>meet customer and business needs.</td>
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<td>Traumuller, Orthofer and Gieber (2006a)</td>
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<td></td>
<td>assert that citizen involvement and</td>
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<td>democratic deliberation are important in</td>
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<td>the governance cycle of e-government</td>
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<td>solutions, and can only be supported by</td>
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<td></td>
<td>websites that support government-to-citizens (G2C) and</td>
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<td>citizens-to-government (C2G) interaction.</td>
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<td>• Hu et al. (2009)</td>
<td>suggest that the opportunity for user to</td>
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<td></td>
<td>interact with specialists can provide</td>
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<td></td>
<td>website assurance to users - an ability</td>
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<td>of the website to inspire trust and</td>
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<td></td>
<td>confidence.</td>
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<tr>
<td>Customer service and</td>
<td>KM</td>
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<tr>
<td>AUS_CSF 7 – ICT</td>
<td>Infrastructure:</td>
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<td></td>
<td>Awareness of users’ technology availability</td>
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<td>• UN (2008) reports that government</td>
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<td></td>
<td>should provide an infrastructure both</td>
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<td>within the public sector and across</td>
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<td>society at large, based upon reliable and</td>
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<td></td>
<td>affordable internet connectivity for</td>
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<td>citizens, businesses and all stakeholders</td>
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<td>in a given jurisdiction. Cooper,</td>
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<td>Lichtenstein and Smith (2006) stress the</td>
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<td>criticality of technical infrastructure</td>
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<td>at provider and customer firms being able</td>
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<td></td>
<td>to provide sufficient system access,</td>
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<td></td>
<td>internet connection and technical</td>
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<td></td>
<td>performance to support service needs.</td>
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<tr>
<td>WSS</td>
<td></td>
</tr>
<tr>
<td>AUS_CSF 9 – Knowledge</td>
<td>Storage and retrieval: Architecture</td>
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<tr>
<td></td>
<td>• Balasooriya, Prasad et al. (2008) and</td>
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<td></td>
<td>Antonellis, Melchiori and Plebani (2003)</td>
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<td></td>
<td>report that in providing services the</td>
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<td></td>
<td>system architecture is crucial.</td>
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<td></td>
<td>• Balasubramaniam et al (1999) assert that</td>
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<td></td>
<td>the information architecture is crucial</td>
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<td>in order for efficient knowledge</td>
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<td>management.</td>
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<td></td>
<td>• Martin (2007) asserts that the</td>
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<td>information architecture assists the</td>
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<td>organisation in addressing its complex</td>
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<td>information management challenges. When</td>
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<td>this complexity is addressed, the</td>
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<td>organisation will provide improved service</td>
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<td>to users.</td>
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<td>KM</td>
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<tr>
<td>Customer service</td>
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<tr>
<td>AUS_CSF 10 – Search</td>
<td>Engine</td>
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<td></td>
<td>• Moxley, Blake and Maze (2004) assert that</td>
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<td></td>
<td>search engines must support users accessing</td>
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<td></td>
<td>information. Users rely on search engines</td>
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<td>to retrieve and rank results of their</td>
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<td></td>
<td>searches.</td>
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<td></td>
<td>• Cooper, Lichtenstein and Smith (2006)</td>
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<td></td>
<td>stress the criticality of search engines</td>
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<td></td>
<td>that must be efficient and effective to</td>
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<td></td>
<td>improve the speed of search and findability</td>
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<td></td>
<td>of relevant knowledge.</td>
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<tr>
<td>Customer service</td>
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<tr>
<td>WSS</td>
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</tbody>
</table>

THEME 6
Organisational Culture

| MUCS_CSF 13 – Attitude and change management | Misra, Hariharan and Khaneja (2003) advocate that providers need to establish a culture where staff constantly scan the environment for potential opportunities and threats. The organisation must be fully prepared to exploit emerging situations to their advantage, and must administer and maintain the KM portal and its contents so that they are fully geared to meet the demands of users, and interact with team members and other government departments to explore possible areas of knowledge sharing. |
| Customer service |                                                                 |
| KM |                                                                            |

UN (2008) emphasises the importance of codes of conduct - formal documentation in an organisation which identifies
values and beliefs held within that organisation and governing behaviour. Establishing such documents and attitudes that are attuned to them is crucial for success.

- Misra, Hariharan and Khaneja (2003) and Dooley (1997) report that there are many ways of shaping attitudes to make KM part of the regimen of staff, such as making the knowledge portal a gateway to all the daily computer activities such as e-mails, news, knowledge resources, access to experts, interactions ...

- Cullen (2008) and Staniszczis and Staniszczis (2006) note that the employees of the organisation must be encouraged to build a culture of working together to meet the objectives of website development.

<table>
<thead>
<tr>
<th>CSF</th>
<th>Definitions/References</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS_CSF14 - Security</td>
<td>- Hu et al. (2009) assert that security can influence users’ perceptions of online service quality. This can be addressed via website design that provides evidence or certifications that demonstrate how secure the website is. Smith (2008) proposes that with the rapid growth of e- and m-government activities, government has to improve security and trust in their CRM in order to become successful.</td>
</tr>
<tr>
<td></td>
<td>- Cooper, Lichtenstein and Smith (2006) stress that it is critical that the website provider enforces system security and data privacy.</td>
</tr>
</tbody>
</table>

The alignment with the present literature in related areas (KM, customer service and WSS) reported in Table 6.2 shows that all identified CSFs have some level of support in the literature – indicating that the connection to these areas that was assumed when undertaking the initial literature review (Chapter 2), was well founded. Further, this observation gives confidence that a number of apparently relevant ideas that appear in the wide range of ideas reported in the existing literature that may be relevant for achieving KT via e-government websites are being successfully appropriated by the e-government developer staff at the two sites investigated.

6.4: CSF Comparative Analysis

This section addresses the direct comparative analysis of the two sets of CSFs obtained from responses collected at MASED and AUSED. This comparative analysis involves a comparison of CSF definitions, considering the emphasis or thrust of each definition. Particular note was taken of instances where both websites reported the same or similar CSFs, with a view to putting these forward to the focus groups as shared/core CSFs. To address this undertaking efficiently, a tabular format has been adopted (Table 6.3) listing, theme by theme, the CSFs and CSF definitions, and appending to each group brief notes supporting the identification of equivalent CSFs at the two websites, where
that occurs. Where core/shared CSFs have been identified, they are shown as shaded in Table 6.3.

Table 6.3: CSF Comparative Analysis

<table>
<thead>
<tr>
<th>MASED</th>
<th>AUSED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme 1: Management role</strong></td>
<td><strong>Theme 1: Management role</strong></td>
</tr>
<tr>
<td>MAS_CSRF 8 – Leadership Definition: Management should proactively</td>
<td><em>This area was not raised by participants</em></td>
</tr>
<tr>
<td>persuade and encourage usage of the website by supporting,</td>
<td></td>
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<tr>
<td>explaining and creating awareness of the online services to users,</td>
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<tr>
<td>especially government employees. This should be supported by</td>
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<tr>
<td>documented policy, rules and regulations.</td>
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<tr>
<td><strong>Discussion:</strong> MASED staff argued that the leadership role is</td>
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<tr>
<td>important, in order to encourage usage of the website and to</td>
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<tr>
<td>enforce rules and regulations pertaining to its operation.</td>
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<tr>
<td>Leadership is needed to explain, create awareness and support an</td>
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<tr>
<td>e-government website development project before, during, after</td>
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<td>implementation, and throughout ongoing operation. AUSED staff on the</td>
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<tr>
<td>other hand, did not raise any CSFs that would relate to the role of</td>
<td></td>
</tr>
<tr>
<td>management.</td>
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</tbody>
</table>
### Table 6.3: CSF Comparative Analysis – (Continued)

<table>
<thead>
<tr>
<th>Theme 2: User focus</th>
<th><strong>MASED</strong></th>
<th><strong>AUSED</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAS_CSF 1 – Awareness and notification</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> Promotion of the website and proactive communication should be undertaken to raise awareness and to inform users of the website, of its content, functionality, modifications and/or new developments affecting website operation and/or content.</td>
<td></td>
<td><strong>AUS_CSF 1 – Awareness and notification</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> Promotion of the website and proactive communication should be undertaken to raise awareness and to inform current and potential users of the website regarding its content, functionality, modifications and new developments.</td>
</tr>
<tr>
<td><strong>MAS_CSF 2 – Usability: Functionality and navigation</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> The website should contain hypertext links that connect users to the intended knowledge efficiently and effectively. The links should be meaningful and easy for users to operate to access knowledge.</td>
<td></td>
<td><strong>AUS_CSF 2 – Usability: Functionality and navigation</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> The website should be developed to provide users with easy to use functionality that will support them with clear and unambiguous advice concerning their current location and navigation path options. Different categories of users should be supported when locating and retrieving required knowledge efficiently and effectively.</td>
</tr>
<tr>
<td><strong>MAS_CSF 3 – User focus: Understand needs of recipient</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> The website content should be prepared with the recipient in mind, including the choice of meaningful and simple language. The content should be relevant to users and easy to understand.</td>
<td></td>
<td><strong>AUS_CSF 3 – User focus: Understand needs of recipient</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> The website should provide relevant knowledge to users in such a way that the content is easy to understand, and it is written in simple and meaningful language chosen with the recipient in mind.</td>
</tr>
<tr>
<td><strong>MAS_CSF 4 – Presentation of knowledge</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> The website content should be presented in a format that takes advantage of the variety of available presentation options including colour, font and the opportunity to include multimedia.</td>
<td></td>
<td><strong>AUS_CSF 4 – Presentation of knowledge</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> Website content should be presented with the recipient in mind. The content format should be concise, attractive, informative and available in multiple formats that take advantage of the variety of available presentation options, including colour, font and the opportunity to include multimedia. The formats need also to consider the size of the document.</td>
</tr>
<tr>
<td><strong>MAS_CSF 9 – User ICT literacy: Awareness</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> Developers must be aware of users’ different level of ICT literacy in order to prepare the content and to present knowledge.</td>
<td></td>
<td><strong>AUS_CSF 8 – User positive experience</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> The website should be viewed as a positive experience by users, by providing knowledge according to users’ requirements.</td>
</tr>
<tr>
<td><strong>MAS_CSF 10 – Education, training and knowledge sharing</strong>&lt;br&gt;&lt;br&gt;<strong>Definition:</strong> Additional support such as education and training should be provided to users to assist them retrieving and applying knowledge. Support management can be provided via face-to-face sessions, telephone, e-mail or other channels. Instruction manuals can also be provided on the website. Users should be encouraged to share the knowledge that they have learned from the training session.</td>
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</tbody>
</table>

**Discussion:** MASED and AUSED respondents both raised awareness and notification, usability, understand the needs of recipient, and presentation of knowledge, in similar...
terms and with similar emphasis, as reported in Chapters 4 and 5, and expressed in identical, or essentially identical terms in the definitions. These four CSF pairs where noted to be taken to the focus group, as potential members of the shared/core CSF set. MASED respondents further added that they also need to consider the different levels of users’ ICT literacy in order to prepare content and to design appropriate knowledge presentation. MASED staff also pointed out the importance of providing support training to assist users to access knowledge resources efficiently. AUSED staff, on the other hand did not raise users’ ICT literacy or training as an issue, but they did raise the importance of engaging the user – in particular to assure that users revisit the website. This was expressed as users having an initial, and an ongoing positive experience.

Table 6.3: CSF Comparative Analysis – (Continued)

<table>
<thead>
<tr>
<th>MASED</th>
<th>AUSED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme 3: Employee focus</strong></td>
<td><strong>Theme 3: Employee focus</strong></td>
</tr>
<tr>
<td><strong>MAS_CSF 11 – Employee focus</strong></td>
<td><strong>This area was not raised by participants</strong></td>
</tr>
<tr>
<td><strong>Definition:</strong> Management should understand the processes involved in administering the website. This should address staffing levels, awareness and understanding of users’ job tasks.</td>
<td><strong>Discussion:</strong> MASED staff highlighted the importance of addressing developer staff capability issues, specifically related to staffing levels, and awareness and understanding of job tasks. This matter was not raised by AUSED staff.</td>
</tr>
<tr>
<td><strong>Theme 4: Content focus</strong></td>
<td><strong>Theme 4: Content focus</strong></td>
</tr>
<tr>
<td><strong>MAS_CSF 5 – Content</strong></td>
<td><strong>AUS_CSF 5 - Content</strong></td>
</tr>
<tr>
<td><strong>Definition:</strong> The website should contain content that is accurate, relevant, regularly updated and which meets user requirements. The content should include the name of the content author and their division. It should also contain advice on update schedules so that users can organise their revisit times.</td>
<td><strong>Definition:</strong> The website should contain content that is regularly updated, accurate, meets user requirements and includes advice on update times so that users can schedule their revisit times.</td>
</tr>
<tr>
<td><strong>Discussion:</strong> Both MASED and AUSED respondents explicitly raised issues surrounding content, with specific shared references to it being current, accurate, relevant and meeting users’ requirements. Further, both raised the importance of informing users of update schedules.</td>
<td></td>
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</tbody>
</table>
Table 6.3: Comparative Analysis – (Continued)

<table>
<thead>
<tr>
<th>Theme 5: Technology focus</th>
<th>MASED</th>
<th>AUSED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAS_CSF 6 – Accessibility</strong></td>
<td><strong>Definition:</strong> The website should be developed and designed to provide users with easy and fast access to downloadable knowledge.</td>
<td><strong>Definition:</strong> The website should be available, whenever it is needed, and provide alternative ways for users to access knowledge that is fast and easy for users to download.</td>
</tr>
<tr>
<td>** MAS_CSF 7 - ICT infrastructure: Availability and functionality**</td>
<td><strong>Definition:</strong> Basic ICT infrastructure should be available to users. It should function properly and respond quickly to support users to access and use the knowledge.</td>
<td><strong>Definition:</strong> Users’ technology availability must be considered in order to decide how to prepare the content and present knowledge.</td>
</tr>
<tr>
<td><strong>MAS_CSF 12 – Interactive platform</strong></td>
<td><strong>Definition:</strong> The website should be developed to provide users with a platform that can enable users to actively interact with the department, by giving opinion and suggestions for improvement.</td>
<td><strong>Definition:</strong> The website should provide users with efficient and effective search functionality, including search engine capabilities.</td>
</tr>
</tbody>
</table>

**Discussion:** Both MASED and AUSED respondents raised issues that they referred to as “accessibility” and “ICT infrastructure” as important to achieving KT via an e-government website. In the case of accessibility the CSFs were tentatively cast as equivalent and taken to the focus groups. There were, however, differences in emphasis that indicated that the ICT infrastructure issues raised should not be treated as equivalent. In the area of ICT infrastructure, MASED staff placed emphasis on the availability and functionality of the infrastructure, whereas AUSED staff placed emphasis on a need to be aware of users’ technology availability in order for developers to decide how to prepare content and to present knowledge. MASED staff also mentioned that the website should constitute an interactive platform for users to provide suggestions for improvement. AUSED staff did not raise this issue. For AUSED staff, guidelines embracing all aspects of information architecture were deemed critical. Also, AUSED respondents cited the importance of an effective search engine, to underpin users accessing knowledge resources.
Table 6.3: Comparative Analysis – (Continued)

<table>
<thead>
<tr>
<th>MASED</th>
<th>AUSED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme 6: Organisational culture</strong></td>
<td><strong>Theme 6: Organisational culture</strong></td>
</tr>
</tbody>
</table>
| **MAS_CSF 13 – Attitude and change management**  
**Definition:** The website should be developed for the purpose of dissemination of government knowledge resources to users. Therefore, the whole organisation should be keen to learn and adopt the new work practices and new ways of processing and performing tasks. |  
**This area was not raised by participants** |
| **MAS_CSF 14 – Security**  
**Definition:** The website should provide users with a secure environment that makes users feel confident to use the website. | |

**Discussion:** Only MASED respondents raised attitude and change management as a critical factor. MASED staff stated that user organisations should be committed to change to new ways of working, informed by the website. Also, they expressed concern about security of the website, arguing that users’ perceptions of security could colour their trust of the knowledge resources delivered. AUSED respondents did not raise any issues relevant to this theme.

The judgements exercised above are presented in Figure 6.2 in Venn diagram form and in Table 6.4, highlighting the six CSFs tentatively assigned to the shared/core group, with the remainder of the CSFs characterising the positions on criticality for KT via e-government websites of MASED or AUSED respondents only.

Figure 6.2: Venn Diagram Representation of Shared/Core CSFs
Table 6.4: Identification of Shared/Core CSFs

<table>
<thead>
<tr>
<th>MASED only</th>
<th>Shared or similar CSFs</th>
<th>AUSED only</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) MAS_CSF 7 – ICT Infrastructure: Availability and Functionality</td>
<td>1) MAS &amp; AUS_CSF 1 – Awareness and Notification</td>
<td>1) AUS_CSF 7 – ICT Infrastructure: Awareness of Users’ Technology Availability</td>
</tr>
<tr>
<td>2) MAS_CSF 8 – Leadership</td>
<td>2) MAS &amp; AUS_CSF 2 – Usability: Functionality and Navigation</td>
<td>1) AUS_CSF 8 – User Positive Experience</td>
</tr>
<tr>
<td>3) MAS_CSF 9 – User ICT Literacy: Awareness</td>
<td>3) MAS &amp; AUS_CSF 3 – User focus: Understand needs of Recipient</td>
<td>2) AUS_CSF 9 – Knowledge Storage and Retrieval: Architecture</td>
</tr>
<tr>
<td>4) MAS_CSF 10 – Education, Training and Knowledge Sharing</td>
<td>4) MAS &amp; AUS_CSF 4 – Presentation of knowledge</td>
<td>3) AUS_CSF 10 - Search Engine</td>
</tr>
<tr>
<td>5) MAS_CSF 11 – Employee Focus</td>
<td>5) MAS &amp; AUS_CSF 5 – Content</td>
<td></td>
</tr>
<tr>
<td>6) MAS_CSF 12 – Interactive Platform</td>
<td>6) MAS &amp; AUS_CSF 6 – Accessibility</td>
<td></td>
</tr>
<tr>
<td>7) MAS_CSF 13 – Attitude and Change Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) MAS_CSF 14 – Security</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The cross-case analysis completed above has identified three points of comparison, to be taken to the focus groups:

1. A set of six shared/core CSFs;
2. Sets of four and eight CSFs that have been identified only at AUSED and MASED, respectively; and
3. The observation that at AUSED no CSFs were identified to be associated with the Management Role, Employee Focus or Organisational Culture themes.

These three issues were explicitly listed for discussion at the focus groups scheduled at AUSED and MASED. The agenda for both focus group meetings is included as Appendices Q and R respectively. Note that, at this point Table 6.3 is presented only to highlight the differences between the CSFs reported by the two organizations. The significance of these differences will be explored in Section 6.5, following consideration of the focus group discussions.

6.5: Results: Validation of Critical Success Factors

This section reports the focus groups, reporting initially discussion of the validation of the identified CSFs at MASED (Sections 6.5.1 and 6.5.2) and AUSED (Sections 6.5.3
and 6.5.4). Section 6.5.5 reports the feedback collected from the respondents at both focus groups on their interpretation of points of similarity and difference observed in the CSFs collected at the two organisations. The design, conduct and analysis of the focus groups have been reported at Sections 3.7.2 and 3.8.1. The agenda of the focus group are available in Appendices Q (AUSED) and R (MASED).

6.5.1: Confirmation of the CSFs at MASED

In accord with the agenda referred to above, the respondents at MASED were initially presented with the grouping structures created by the researcher and the CSFs and the associated definitions. These were promptly agreed. There was, however, a substantial and insightful debate amongst participants concerning the contexts in which the groupings and CSFs should be understood, with explicit reference to the management role, and the four proposed focus areas. There was also a move of one CSF (to do with security) from one grouping to another identified by the focus group, all of which is reported in the following:

Management Role - Leadership

Participants from MASED agreed the CSF MAS_CSF 8 – Leadership, and the definition under Theme 1 – Management role. According to the MASED respondents, it is critical that senior executives give full and unqualified support to website development projects, campaigns promoting the website and to the provision of training for online services. In addition, management must ensure that the ICT infrastructure is performing before the website is promoted to user communities. Internet connection, including wireless zones are presently an issue, particularly at government service focussed departments such as immigration. Moreover, leaders should encourage and support users to adopt online tools as a means of undertaking tasks.

“Leadership should come from the government through campaigns and training.” (PM12: Chief Assistant Director ICT)

“Before government endorses any policies, government should improve infrastructure. Make sure internet connection and wireless zones are accessible, especially at immigration for public use.” (PM12: Chief Assistant Director ICT)

“Regarding leadership, before management can preach on using online, the mechanisms behind the e-engine should be strong and convincing” (PM13: Chief Assistant Director ICT)

User Focus – Awareness and Notification
Participants from MASED agreed the CSF MAS_CSR 1 – Awareness and notification, and the definition under Theme 2 – User focus. As evidence of the criticality of this they reported their practice of e-mailing users to notify them of any significant new knowledge resources on the website, including a direct link to that knowledge. In addition, MASED collaborates with other government and non-government agencies to disseminate information – a form of website advertising that supplements their use of other promotional mechanisms such as the education exhibition. In the respondents’ feedback there were suggestions that the use of exhibitions in this way should be expanded.

“Regarding notification we send e-mail so that users can browse the information through the given link.” (PM12: Chief Assistant Director ICT)

“Collaboration efforts between government agencies serve as a way of notification. Information from one agency is advertised on another agency’s website as a way of notification” (PM12: Chief Assistant Director ICT).

“Regarding awareness and notification, from my point of view, we should reach out further to users through various promotional mechanisms such as exhibitions.” (PM13: Chief Assistant Director ICT).

**User Focus – Other CSFs**

Participants from MASED agreed the CSFs MAS_CSR 2 – Usability: Functionality and navigation, MAS_CSR 3 – User focus: Understand needs of recipient, MAS_CSR 4 – Presentation of knowledge, MAS_CSR 9 – User ICT literacy: Awareness, and MAS_CSR 10 – Education, training and knowledge sharing and their definitions under Theme 2 – User focus. Related to user literacy, one of the participants stated that it is difficult for MASED to generalise levels of user ICT literacy. He further stated that users need to change their attitude towards online services – at present online services are not the automatically accessed forms of interaction with government for many citizens/users. Related to education, training and knowledge sharing, another participant emphasised MASED’s responsibility to ensure provision of online education/training support tools - instruction manuals, video and other support tools which must be simple and easy to understand.

“Regarding user ICT literacy, it is true. Actually it is difficult to generalise levels of user ICT literacy. The problem is their attitude” (PM 9: Senior Coordinator ICT).

“About education, training and knowledge sharing, I agree that knowledge transfer can be done through this. Support management is important and it can also be provided via a video guide. The usage of instruction manuals is suitable. The website should be user friendly with simple and easy to understand instructions,” (PM13: Chief Assistant Director ICT).

**Employee Focus and Content Focus**
Participants from MASED agreed the CSFs MAS_CSF 11 – Employee focus, and MAS_CSF 5 – Content, their definitions and their classification under Theme 3 – Employee focus and Theme 4 – Content focus respectively. Regarding employee focus, one of the participants suggested that there is need for an online mechanism to facilitate establishing closer forms of direct feedback from the workforce. With regard to content, he further stated that the content on the website needed to be improved in terms of its structure and that its structure needed to be more closely aligned to the functions of the ministry. In addition, he stressed the importance of contact officers being informed of site updates, so that they might provide authoritative answers when asked.

“Regarding employee focus, government should have a standard form made available on the web for any comments from employees.” (PM14: Assistant ICT Officer)

“Regarding content, it should be organised in order to meet user requirements. For example content should be based on the ministry functionalities. There should be a site map.” (PM14: Assistant ICT Officer)

“All public servants must know what the latest information is, that has been updated on the website, to avoid conflict so that when a user asks them, they know how to answer” (PM14: Assistant ICT Officer).

**Technology Focus**

Participants from MASED agreed the CSFs MAS_CSF 6 – Accessibility, MAS_CSF 7 – ICT infrastructure: Availability and functionality, and MAS_CSF 12 – Interactive platform, their definitions and their classification under Theme 5 – Technology focus. In particular the importance of accessibility was asserted. The provider must ensure that knowledge resources are accessed via means that are easily located by users. The criticality of the platform being interactive was also stressed. The interactive platform facilitates citizen to government contact, so removing wasted time travelling to government offices. The importance of the website as a means by which citizens can provide feedback to government must be supported and encouraged.

“I agree regarding accessibility. Information should be located at a place where a user can easily find it” (PM12: Chief Assistant Director ICT)

“For interactive platform, I agree with the definition. The website should serve as a medium for all citizens to communicate and deal with government. This could reduce wasting time going to government offices as well as queuing.” (PM9: Senior Coordinator ICT)

“The website should be able to accept opinions or suggestions.” (PM9: Senior Coordinator ICT)

**Organisational Culture**

Participants from MASED agreed the CSFs MAS_CSF 13 – Attitude and change management, and MAS_CSF 14 – Security and their definitions. The participants were comfortable with the classification of MAS_CSF 13 under Theme 6 – Organisational culture, but questioned the classification of security as an organisational culture issue.
Instead, following debate it was agreed that while it was important to establish a security culture, the issue with using a website to achieve KT was substantially technical. It was essential to have in place secure technology that would encourage in users a sense of trust in the website. As such, it was decided that MAS_CSF 14 – Security should be classified instead under Theme 5 – Technology focus. With regard to attitude and change management, it was stressed that government must be proactive in providing and promoting activities that might positively shape and promote organisational attitudes that readily accept and embrace positive change as it might be promulgated via the website, so creating an environment that is conducive to KT via the web.

“In terms of the security factor, I think it should be included in the technology focus” (PM13: Chief Assistant Director ICT)

“Regarding attitude and change management, I think that government must establish ways of disseminating information regarding change to all levels of management. ... Government should promote awareness of training ... and others tools such as e-training management, web collaborative tools, and evaluation assessment” (PM9: Senior Coordinator ICT)

6.5.2: Final list of the CSFs at MASED

Consolidating the feedback from the MASED respondents reported above, the final list of CSFs at MASED is presented in Table 6.5.

<table>
<thead>
<tr>
<th>Theme 1: Management role</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAS_CSF 8 – Leadership</strong></td>
</tr>
<tr>
<td><strong>Definition:</strong> Management should proactively persuade and encourage usage of the website by supporting, explaining and creating awareness of the online services to users, especially government employees. This should be supported by documented policy, rules and regulations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 2: User focus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAS_CSF 1 – Awareness and notification</strong></td>
</tr>
<tr>
<td><strong>Definition:</strong> Promotion of the website and proactive communication should be undertaken to raise awareness and to inform users of the website, of its content, functionality, modifications and/or new developments affecting website operation and/or content.</td>
</tr>
</tbody>
</table>

| **MAS_CSF 2 – Usability: Functionality and navigation** |
| **Definition:** The website should contain hypertext links that connect users to the intended knowledge efficiently and effectively. The links should be meaningful and easy for users to operate to access knowledge. |

| **MAS_CSF 3 - User focus: Understand needs of recipient** |
| **Definition:** The website content should be prepared with the recipient in mind, including the choice of meaningful and simple language. The content should be relevant to users and easy to understand. |
MAS_CSF 4 – Presentation of knowledge
Definition: The website content should be presented in a format that takes advantage of the variety of available presentation options including colour, font and the opportunity to include multimedia.

MAS_CSF 9 – User ICT literacy: Awareness
Definition: Developers must be aware of users’ different level of ICT literacy in order to prepare the content and to present knowledge.

MAS_CSF 10 – Education, training and knowledge sharing
Definition: Additional support such as education and training should be provided to users to assist them retrieving and applying knowledge. Support management can be provided via face-to-face sessions, telephone, e-mail or other channels. Instruction manuals can also be provided on the website. Users should be encouraged to share the knowledge that they have learned from the training session.

Theme 3: Employee focus

MAS_CSF 11 – Employee focus
Definition: Management should understand the processes involved in administering the website. This should address staffing levels, awareness and understanding of users’ job tasks.

Theme 4: Content focus

MAS_CSF 5 – Content
Definition: The website should contain content that is accurate, relevant, regularly updated and which meets user requirements. The content should include the name of the content author and their division. It should also contain advice on update schedules so that users can organise their revisit times.

Theme 5: Technology focus

MAS_CSF 6 – Accessibility
Definition: The website should be developed and designed to provide users with easy and fast access to downloadable knowledge.

MAS_CSF 7 – ICT infrastructure: Availability and functionality
Definition: Basic ICT infrastructure should be available to users. It should function properly and respond quickly to support users to access and use the knowledge.

MAS_CSF 12 – Interactive platform
Definition: The website should be developed to provide users with a platform that can enable users to actively interact with the department, by giving opinions and suggestions for improvement.

MAS_CSF 14 – Security
Definition: The website should provide users with a secure environment that makes users feel confident to use the website.

Theme 6: Organisational culture

MAS_CSF 13 – Attitude and change management
Definition: The website should be developed for the purpose of dissemination of government knowledge resources to users. Therefore, the whole organisation should be keen to learn and adopt the new work practices and new ways of processing and performing tasks.

Azizan, Smith and Cooper (2011a)
6.5.3: Confirmation of the CSFs at AUSED

In the course of substantial discussion, the respondents at AUSED largely agreed the CSFs and their definitions, with some specific changes as highlighted in the report of the focus group below. Specific matters raised during the focus group discussion of the CSFs are highlighted as follows:

**User Focus**

Participants from AUSED commenced by agreeing the CSFs *AUS_CSF 1 – Awareness and notification*, *AUS_CSF 2 - Usability: Functionality and navigation* and *AUS_CSF 3 – User focus: Understand needs of recipient*, their definitions and their classification to Theme 2 – User focus. With regard to awareness and notification it was observed that while the website must be promoted to users, and changes to website structure and content must be notified to the user, a degree of stability in the configuration of the website must be maintained. Frequent change is unsettling to website users, dissuading them from returning to the website.

“Definitely you can’t get the message out if people are not aware of the website.” (PA7: Senior Online Communication Advisor)

“In terms of functionality, modification and new developments, I think it is more about not surprising the user constantly by changing things so that they constantly come back to a different environment. The environment needs to be stable - needs to be consistent - and when you are undertaking new development you need to plan effectively, based on what the user expectation are.” (PA7: Senior Online Communication Advisor)

Respondents agreed the CSF *AUS_CSF 4 – Presentation of knowledge*, its definition and categorisation in Theme 2 – User focus. According to AUSED respondents, one of the challenges for them is to unpack the content that is to be presented in a logical way, and then to present it so that efficient user access is achieved. To achieve this, the importance of writing style guides was stressed.

“One of challenges is to unpack the content for the user so that the user knows where to access the document quickly” (PA7: Senior Online Communication Advisor)

“We inform authors who write for the web to use the writing style guide. Most important information on top of the page, using bullet points, that sort of presentation, to give people who generally don’t want to spend lots of time reading the screen - keep them with the guide upfront, and lead them through the important points” (PA3: Online Communication Advisor)

AUSED respondents agreed CSF *AUS_CSF 8 – User positive experience*, its definition and categorisation in Theme 2 – User focus. According to the participants, achievement of a positive user experience is, in part at least, an outcome of meeting the first four CSFs i.e. an outcome of focusing on user needs, usability and presentation of
knowledge. When the user has a good initial and ongoing experience, they will return to use the website. This raises an interesting question – is this a CSF in its own right, or simply an indicator of achieving the other listed CSFs? Given that achievement of some of the other listed CSFs was discussed as contributing to the achievement of a positive user experience, but not as a guarantee, positive user experience was retained as a CSF in its own right.

“Combine all of the other CSFs - can’t have user positive experience if we don’t have the others. Certainly if they don’t have a positive experience then they won’t come back or may not come back” (PA5: Senior Communication Advisor)

“The failure to satisfy the first four CSFs has therefore led us to failure at number eight” (PA4: Web Specialist)

**Content Focus**

AUSED respondents agreed CSF *AUS_CSF 5 – Content*, and its categorisation in *Theme 4 – Content focus*. AUSED respondents, however, expressed concern at the explicit inclusion of references to update times in the definition. According to the AUSED respondents, advice on update times, so users can appreciate the currency of knowledge resources and schedule revisit times is not important in the AUSED context. Given that the content is clear and can be accessed quickly and accurately, the respondents argued users will trust the website and return to it. In addition, the website is not static. Most content regularly changes, in particular in the announcement area. Therefore, users are always aware that the website is being updated. Further, there is no need to update some content over extended periods of time – so in such cases references to past or future update times are meaningless. In summary, the user knows that the website is responsive to change, and so users trust the website and its content regardless of whether the page was updated one week or six months ago, or is scheduled for a future update. All that said, governmental procedure prescribes regular cycles of review and update. Following discussion, the reference to update times was deleted from the AUSED definition.

“As far as they [users] know we are being responsive to changes as they are happening so they have trust in the content, regardless of whether it was updated a week ago or six months ago. They know the way that we end up running and managing the website. We do keep things up to date and current and so they can trust that information” (PA5: Senior Communication Advisor).

**Technology Focus**

AUSED respondents agreed the CSFs and definitions of *AUS_CSF 6 – Accessibility*, *AUS_CSF 7 – ICT infrastructure: Awareness of users’ technology availability* and *AUS_CSF 10 – Search engine*, however, they suggested that *AUS_CSF 9 – Knowledge*
storage and retrieval: Architecture should be re-categorised to Theme 4 - Content focus. It was argued that the intent of AUS_CSF 9 – Knowledge storage and retrieval: Architecture is directed to the requirement for guidelines that content authors are required to follow when preparing content and procedures to ensure compliance. The guidelines include website maps that specify locations for the storage of knowledge. The intent is content-focused, not a technology provision or appreciation matter. Following discussion, AUS_CSF 9 – Knowledge storage and retrieval: Architecture was re-categorised under Theme 4 – Content focus.

“I’m not clear here why it [knowledge storage and retrieval] is under technology focus - not under content focus. I guess that it comes back to content ... it’s going to impact on ... content because it is about offering guidelines and styles on content the best way possible - so that the user can have that positive first experience” (PA5: Senior Communication Advisor).

**Management Role**

The absence of CSFs related to Theme 1 – Management role at AUSED was noted in Section 6.4. Consideration of discussion surrounding this at the AUSED focus group is postponed to Section 6.5.5, as it relates to points of difference. Herein, however, it should be noted that in the course of that discussion a new CSF was recognised by the respondents, related to Theme 1 - Management role. It was observed by the respondents that leadership and top management support of e-government website development, and its role in promoting KT are taken as given at AUSED. What is important, however, in the AUSED context, is IT “Governance”, which in the AUSED focus group discussions included those aspects of corporate governance focused on IT systems and their performance. In particular AUSED respondents highlighted the importance of providing clear policy, from the top, on the structures and accesses appropriate to various user groups. This was seen not as a leadership or top management support role, but as a requirement to take responsibility for the formulation of key corporate policy and structures with important impact on the operation of an e-government website. Following discussion, an additional CSF was agreed - AUS_CSF 11 – Governance (Definition: Senior management must accept and exercise overall website governance responsibilities. Of particular importance, management must exercise control over the capabilities of, and interactions between, the multiple tools that are provided to users via the website. This includes, in particular, taking key decisions concerning which tools are available to the public and those which are restricted to users who are internal to the organisation).
“I don’t think that [leadership] is critical to us because they [senior management] are aware of the fundamental business tools of online communication, and see them as critical communication tools.”
(PA7: Senior Online Communication Advisor)

“Governance is the critical success issue – in particular decisions concerning the interaction between multiple tools. We have both public tools and internal tools. Talking to the same audiences - often we bring similar types of information but the governance structure is important so that we bring delivery together” (PA7: Senior Online Communication Advisor)

Reporting of focus group discussions of the absence of CSFs at AUSED related to employee focus and organisational culture, and insights as to why the situation may be different at MASED, are postponed to Section 6.5.5.

6.5.4: Final list of the CSFs at AUSED

Consolidating the feedback from the AUSED respondents reported above, the final list of CSFs at AUSED is presented in Table 6.6.

<table>
<thead>
<tr>
<th>Theme 1: Management role</th>
<th>CSFs AUSED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AUS_CSF 11 – Governance</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Definition:</strong> Senior management must accept and exercise overall website governance responsibilities. Of particular importance, management must exercise control over the capabilities of, and interactions between, the multiple tools that are provided to users via the website. This includes, in particular, taking key decisions concerning which tools are available to the public and those which are restricted to users who are internal to the organisation.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 2: User focus</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AUS_CSF 1 – Awareness and notification</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Definition:</strong> Promotion of the website and proactive communication should be undertaken to raise awareness and to inform current and potential users of the website regarding its content, functionality, modifications and new developments.</td>
<td></td>
</tr>
</tbody>
</table>

| **AUS_CSF 2 – Usability: Functionality and navigation** |  |
| **Definition:** The website should be developed to provide users with easy-to-use functionality that will support them with clear and unambiguous advice concerning their current location and navigation path options. Different categories of users should be supported when locating and retrieving required knowledge efficiently and effectively. |

| **AUS_CSF 3 – User focus: Understand needs of recipient** |  |
| **Definition:** The website should provide relevant knowledge to users in such a way that the content is easy to understand, and it is written in simple and meaningful language chosen with the recipient in mind. |

| **AUS_CSF 4 – Presentation of knowledge** |  |
| **Definition:** Website content should be presented with the recipient in mind. The content format should be concise, attractive, informative and available in multiple formats that take advantage of the variety of available presentation options, including colour, font and the opportunity to include multimedia. The formats need also to consider the size of the document. |

| **AUS_CSF 8 – User positive experience** |  |
**Definition:** The website should be viewed as a positive experience by users, by providing knowledge according to users’ requirements.

**Theme 3: Employee focus**

*This area was not raised by participants*

**Theme 4: Content focus**

**AUS_CSF 5 - Content**

**Definition:** The website should contain content that is regularly updated, accurate, and meets user requirements.

**AUS_CSF 9 - Knowledge storage and retrieval: Architecture**

**Definition:** Guidelines should exist that authors should follow when preparing content and procedures to ensure compliance. The guidelines include website maps that specify locations for the storage of knowledge.

**Theme 5: Technology focus**

**AUS_CSF 6 – Accessibility**

**Definition:** The website should be available, whenever it is needed, and provide alternative ways for users to access knowledge that is fast and easy for users to download.

**AUS_CSF 7 - ICT infrastructure: Awareness of users’ technology availability**

**Definition:** Users’ technology availability must be considered in order to decide how to prepare the content and present knowledge.

**AUS_CSF 10 - Search engine**

**Definition:** The website should provide users with efficient and effective search functionality, including search engine capabilities.

**Theme 6: Organisational culture**

*This area was not raised by participants*

Azizan, Smith & Cooper (2011b)

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### 6.5.5: Feedback – Points of Similarity and Difference: Malaysia and Australia

Time constraints on the focus groups (60 minutes, although the sessions ran to extra time), meant that the data collection that could be achieved related to respondents’ views on the origins of differences in the identified CSFs at the two organisations was limited. Some comments from the focus groups that provide insights into possible future research directions (see Section 6.6) are reported here.

**Management Role**

The absence of any CSFs at AUSED related to Theme 1 – Management role (although leadership and top management support were reported by MASED respondents), was discussed explicitly in the AUSED focus group. As reported in Section 6.5.3 this led to the identification of an additional CSF at AUSED under Theme 1 (i.e. AUS_CSF 11 – Governance). Emerging from the associated discussion was a view that AUSED respondents accept leadership and top management support as given (“I don’t think that [leadership] is critical to us because they [senior management] are aware of the fundamental business tools of online communication, and see them as critical communication tools” (PA7: Senior Online Communication Advisor - AUSED))

Instead, AUSED respondents identified IT Governance (which they viewed as including aspects of corporate governance focused on IT systems and their performance, in particular the importance of providing clear policy on the structures and accesses appropriate to various user groups) as critical. This highlights differences in the views of “management roles” held at the two organisations (AUSED - governance cf. MASED - leadership). Future research is recommended (Section 6.6) possibly accessing literatures related to culture and individual context. This would include reflection upon the different approaches to implementing e-government initiatives that have been taken in Malaysia and Australia (see some discussion in Chapters 4 and 5) together with development strategies and how these may have shaped expectations and views of the management role in e-government.

**Employee Focus**

The absence of any CSFs at AUSED related to Theme 3 – Employee focus (although an expectation that management should understand the processes involved in administering the website, addressing staffing levels, and demonstrating awareness and understanding of users’ job tasks was considered critical at MASED), was noted and discussed at the AUSED focus group.

At AUSED, appropriate staffing levels and skill sets are delegated to human resource management government functions, and are not seen as particularly problematic or critical. It was certainly noted that manpower is always a challenge to big organisations but that in the case of IT at AUSED, if dealing with a big online project, external contractors will be hired to supplement staffing. Again, possible future research is recommended (Section 6.6) possibly accessing literatures related to the different
approaches to implementing e-government initiatives that have been taken in Malaysia and Australia (see also Chapters 4 and 5).

“I think it is always a challenge in any large department,” (PA5: Senior Communication Advisor – AUSED).

“To some extent to be where you want something done and there is no staff - we get external contractors and they do the work” (PA3: Online Communication Advisor - AUSED)

**Organisational Culture**

The absence of any CSFs at AUSED related to Theme 6 – *Organisational culture* (whilst two related CSFs were reported by MASED respondents) was noted and discussed at the AUSED focus group. AUSED respondents did not view issues related to user attitude and change management as critical – user community behaviours are considered to already be attuned to turning to the Internet for government knowledge resources. The AUSED provider respondents instead saw as critical, issues to do with understanding user needs, developing/presenting content, and addressing technical issues – not shaping user attitudes or culture. Nevertheless, one AUSED respondent raised the prospect that AUSED should revisit this position and seek to take organisational culture to “the next level”. In particular this was seen as re-shaping the views of senior management – reconceptualising online communication within the wider range of communication technologies (television, radio, print, …) to establish an effective integrated communication strategy.

“I think we are aware users may not all have the same level of ICT, but generally in Australia people are familiar with using ICT” (PA7: Senior Online Communication Advisor – AUSED)

“I think we have been doing that for many years. …..I think our organisational culture should be about how we get to the next level ….Having management visualise online communication as a primary communication tool – it is not television, it is not newspapers - also … how do you link all these tools effectively together so you get your messages out” (PA7: Senior Online Communication Advisor – AUSED).

By way of contrast, MASED respondents stated that a user community culture of using ICT to search for knowledge resources in Malaysia is still under-developed. Further, ICT infrastructure in schools still needs to be upgraded - so building in the long term a culture of accessing the web to source knowledge resources.

“Our culture on using ICT to search information is still lacking. Search engines are only used to search certain things. Moreover, the ICT infrastructure in schools is not that good so the usage of search engines is less. For me all of these relate to culture. Maybe our culture of using the internet is still way behind. Nevertheless, we have to admit that it is progressing,” (PM12: Chief Assistant Director ICT – MASED)

Future research is recommended (Section 6.6) possibly accessing literatures related to culture and individual context.
6.6: Reflection on Identified Points of CSF Difference: Malaysia and Australia

Comments on identified points of CSF difference collected at the focus groups have been reported at Section 6.5.5 above.

To appropriately investigate these matters would require the conduct of an extensive additional interview program and possibly a series of dedicated focus groups, supported by a substantial additional literature review, probing literatures such as those associated with Malaysian and Australian culture, e-government initiatives and implementation strategies, and possibly the development histories of both countries. Although the final subsidiary question had indicated that the research would offer insights into how local context might shape views of criticality, reflection upon the initial responses collected at the focus groups confirmed that a comprehensive, rigorous investigation would demand additional time commitments beyond that which was feasible in the current research program. Nevertheless, the feedback from respondents reported above has been provided. In addition, the researcher offers some brief reflections, as a stimulus to possible extensive future research directions, as follows.

Future research in this area, stimulated by the responses collected during both the validation and differences discussions at the focus groups might embrace directions such as:

- **Culture and Individual Context:** Some elements of differences in the identified CSFs may be appreciated if situated against literature on culture and individual context. This interpretation might seek to characterise Malaysia as high on power distance and avoidance of uncertainty scales (Hofstede 1994). Malaysian organisations may be considered to adopt a top-down approach to business decision-making, in a society that is rule-oriented, with action substantially regulated by rules (cf. MAS_CSF 14 – Security). Significant power to set policy is invested in senior decision makers, to act as authorities to implement rules and regulations (cf. MAS_CSF – Leadership). Australia, however, may be broadly characterised on such scales as a society that supports high levels of
individuality, where individual privacy is considered a cultural norm and power distance is low. In government and organisations there is a sense of cooperative interaction across authority levels. In the area of leadership, emphasis is placed upon the legal responsibilities of governance (cf. AUS_CSF 11 – Governance), with top management support of government initiatives being taken as given, with delegated authorities to act.

- **E-government Initiatives and Implementation Strategies:** The different approaches to implementing e-government initiatives in Malaysia and Australia (see discussion in Chapters 4 and 5) may play a role in the perceptions of criticality of success factors. As has been discussed in Chapter 4, Malaysia has tended to implement e-government by stages, with initiatives at selected ministries. Implementation strategies and policies are centralised and driven centrally in those ministries (cf. MAS-CSF 8 – Leadership). There is also a clear intent to drive initiatives as a means of advancing the situation of citizens, with an extensive user focus evident in the identified CSFs (cf. MAS_CSFS 14 – Security, MAS_CSFS 12 – Interactive platform, MAS_CSFS 7 – ICT infrastructure: Availability and functionality, MAS_CSFS 9 – User ICT literacy: Awareness and MAS_CSFS 10 – Education, training and knowledge sharing). In Australia, each state has prepared guidelines for government agencies to follow, however each government agency has a degree of implementation autonomy, consistent with those guidelines and stated objectives (see discussion in Chapter 5). Victorian government guidelines focus on service delivery to citizens, reflected in a number of identified CSFs related to the user focus (cf. AUS_CSFS 7 – ICT infrastructure: Awareness of users’ technology availability, AUS_CSFS 8 – User positive experience, AUS_CSFS 9 – Knowledge storage and retrieval: Architecture and AUS_CSFS 10 – Search engine).

- **Development Strategies and History:** One might investigate if elements of the perceptions of criticality have been shaped by aspects of the countries’ development history and present status. Indeed in the responses captured at MASED and AUSED there is reference to the on-going drive to expand ICT adoption in Malaysia, and to establishing behavioural patterns where citizens
automatically turn to ICT. This strand of thought would require extensive research into how development histories may have differently shaped political systems, hierarchical structures of the administrations, and behavioural patterns in both countries.

It is stressed that these do not constitute research findings – only a reflection on what may be possibly research directions, prompted by the comments of respondents as expressed at the focus groups, and captured and reported at Section 6.5.5 above.

**6.7: Case Study Comparison: Other Dimensions**

In this section a brief commentary is presented on a comparison of other results related to CSFs that were investigated during the two case studies, specifically: Comparison of Identified Feedback Mechanisms (Section 6.7.1); and Comparison of Association of CSFs with KT Model Stages (Section 6.7.2).

**6.7.1: Comparison of Identified Feedback Mechanisms**

Table 6.7 reports a comparative listing of the association of CSFs with various feedback mechanisms as reported by respondents at MASED and AUSED (see Chapters 4 and 5 respectively). For each CSF, feedback mechanisms reported by the respondents are listed, with a legend at the base of the table naming the mechanisms. CSFs shared at the two organisations have been shaded. Feedback mechanisms have been described in Section 4.3.3 and Section 5.3.3 for MASED and AUSED respectively. A commentary on these results follows.

A direct comparison of the mechanisms identified, highlights a number of mechanisms adopted at both organisations: email and telephone feedback; self checks/link checking; site visits; surveys; compliance with guidelines/checklists; and content download and visit counters (web analytics). Of note is that at AUSED there is an observed move to comprehensive and sophisticated web analytics adoption. Highlighted particularly by respondents has been “Audience signal” tracking (AUSED staff can use web analytic tools to analyse the path that a user or user group follows while accessing a website) and “Video tracking” (AUSED staff can track video play, so determining whether a
video is being accessed, providing insight into the users’ assessment of the relevance of provided video materials).

At MASED, given a commitment to website user education, training sessions with users are exploited as a means of assembling feedback on the extent to which user expectations are being met. At AUSED a similar role is being met by the use of convened and moderated focus groups.

Two mechanisms reported only at AUSED have been identified – user testing and eye tracking:

- User testing involves AUSED inviting user stakeholder groups to test, evaluate and provide direct feedback on the website. For example, AUSED will invite a group of parents to evaluate a component of the website designed to be released as part of the parents’ section. The test subject group will be instructed to complete a task requiring access to the website, and will be observed undertaking that task, without any prior advice or associated hints. AUSED staff will observe the group completing the task, logging errors, false navigation paths and other activities. If the test group encounters problems in the completion of tasks, AUSED will undertake redesign/restructuring of the organisation, and can schedule retesting. Such sessions of user testing are held two to three times in a year, responding to the identified need for testing as significant new website areas are developed for release. MASED’s training feedback is, in part at least, a proxy for this.

- Eye tracking involves AUSED staff working with eye tracking technology, which allows them to determine where on a web page a user’s eyes are focused. Participants are given a task to complete on the website. Using the eye tracking software, a diagram is produced showing where on each page the user’s eyes focused/moved. Access to such technology facilitates taking decisions on the placement of key content, links and other features on each page, to maximise the likelihood that a user will notice such features, and to diagnose the misplacement of important content/features. As such, AUSED is able to improve website design. No equivalent approach was reported at MASED.
Arguably the most significant observation to be drawn from Table 6.7 is that many of the mechanisms highlighted by respondents focus heavily on technical aspects of website performance (web analytics, link checking, compliance with guidelines/checklists, eye tracking, ...). Whilst these have been recorded in Table 6.7 as providing some insight into matters related to a number of the CSFs identified, those matters are limited to technical performance of the website. Judgements concerning the extent to which these might also imply that the organisation is meeting various of the CSFs for KT to the user community are largely inferred/assumed. Further, feedback on matters related to CSFs such as leadership, and attitude and change management, is assumed to be obtained by “email and telephone feedback”. All this would suggest that future research might be appropriate, working for example with staff at an e-government case study organisation, possibly in action research mode, to design, test and validate targeted mechanisms tuned to assessing achievement of the full spread of the CSFs that have been identified, and all dimensions of the achievement of KT via an e-government website. Such investigations should seek to validate the mechanisms designed, by directly accessing feedback from website user populations – not limiting data collection to website provider staff alone.
### Cross-Case Analysis and Discussion

#### CSFs

<table>
<thead>
<tr>
<th>MAS_CSF 1 – Awareness and Notification</th>
<th>1</th>
<th>2</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAS_CSF 2 – Usability: Functionality and Navigation</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>MAS_CSF 3 - User Focus: Understand Needs of the Recipient</td>
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<tr>
<td>MAS_CSF 4 – Presentation of Knowledge</td>
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<tr>
<td>MAS_CSF 5 – Content</td>
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<tr>
<td>MAS_CSF 6 – Accessibility</td>
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<tr>
<td>MAS_CSF 7 - ICT Infrastructure: Availability and Functionality</td>
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<td>MAS_CSF 8 – Leadership</td>
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<td>MAS_CSF 9 – User ICT Literacy: Awareness</td>
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<tr>
<td>MAS_CSF 10 – Education, Training and Knowledge Sharing</td>
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<tr>
<td>MAS_CSF 11 – Employee Focus</td>
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<tr>
<td>MAS_CSF 12 – Interactive Platform</td>
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<tr>
<td>MAS_CSF 13 – Attitude and Change Management</td>
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**Feedback Mechanism:** 1. E-mail and Telephone Feedback; 2. Self-Checks; 3. Content Download Hits; 4. Training Feedback; 5. Visits; 6. Record Keeping; 7. Surveys; 8. Compliance with Guidelines; 9. Visit Counters

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<tr>
<th>CSFs</th>
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<tbody>
<tr>
<td>AUS_CSF 1 – Awareness and Notification</td>
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<tr>
<td>AUS_CSF 2 – Usability: Functionality and Navigation</td>
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<td>AUS_CSF 3 – User focus: Understand Needs of The Recipient</td>
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<td>AUS_CSF 4 – Presentation of Knowledge</td>
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<td>AUS_CSF 5 - Content</td>
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<td>AUS_CSF 7 - ICT infrastructure: Awareness of users’ technology availability</td>
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<td>AUS_CSF 8 – User positive experience</td>
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<tr>
<td>AUS_CSF 9 - Knowledge storage and retrieval: Architecture</td>
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<tr>
<td>AUS_CSF 10 - Search engine</td>
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</table>

**Feedback Mechanism:** 1. Web analytic tools; 2. User testing; 3. E-mail feedback; 4. Telephone feedback; 5. Checklist; 6. Site visits; 7. Focus groups; 8. Eye tracking; 9. Qualitative surveys; and 10: Links checking

Table 6.7: Comparative Listing of the Association of CSFs with Various Feedback Mechanisms as Reported by Respondents at MASED and AUSED (Shading highlights CSFs assessed as being shared at both sites)
6.7.2 Comparison of Association of CSFs with KT Model Stages

Table 6.8 reports a comparative listing of the association of CSFs with KT Model stages at MASED and AUSED (see Sections 4.3.4 and 5.3.4 respectively). For each KT stage the most frequently cited (in order of number of citations), and first cited CSFs at both MASED and AUSED are listed. A commentary on these results follows.

Consideration of Table 6.8 indicates that at **Initiation**, which involves the knowledge provider preparing knowledge content for the website and the potential user recognising a need for knowledge and commencing a search for that knowledge, the MASED respondents see as critical that website content should be prepared with the recipient in mind, including the choice of meaningful and simple language (MAS_CSF 3). The AUSED respondents, on the other hand, see as most critical that easy-to-use functionality that will support users with clear and unambiguous navigation options must be identified (AUS_CSF 2). While both acknowledge the primacy of the user, there is a difference in emphasis – at MASED the design of content is considered critical, whilst at AUSED the provision of website functionality is highlighted as critical to facilitating KT to the user. Szulanski (2000) identifies that barriers to KT during the initiation stage arise prior to the decision to transfer knowledge and are associated with the degree of difficulty experienced in finding an opportunity to transfer and deciding whether to pursue that opportunity. This is particularly problematic when website operations are not adequately understood by users. The knowledge provider too may lack the understanding or ability to appreciate the users’ practices when seeking to acquire knowledge. As such, the AUSED views of criticality align more closely with those of Szulanski (2000), than do those of the MASED respondents.

At **Implementation**, which begins with the decision of the knowledge recipient to proceed to acquire the knowledge, focus at MASED shifts to the basic ICT infrastructure which must be available to users. It should function properly and respond quickly to support users to access and use the knowledge (MAS_CSF 7). This position is shared by the AUSED respondents who also see as critical the ICT infrastructure which must support the website, that it is available, whenever it is needed, and must provide alternative ways for users to access knowledge that is fast and easy for users to download (AUS_CSF 6). According to Szulanski (2000), barriers to KT during implementation
## Table 6.8: Comparative Analysis of Association of CSFs with KT Model Stages – MASED and AUSED

<table>
<thead>
<tr>
<th>Stage</th>
<th>Most Frequently Cited CSFs MASED</th>
<th>First Cited CSF MASED</th>
<th>Most Frequently Cited CSFs AUSED</th>
<th>First Cited CSF AUSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Initiation</td>
<td><strong>MAS_CSF 3</strong> – <strong>User focus: Understand needs of recipient</strong> <strong>MAS_CSF 1</strong> – Awareness and Notification <strong>MAS_CSF 7</strong> – <strong>ICT infrastructure: Availability and functionality</strong></td>
<td><strong>MAS_CSF 3</strong> – <strong>User focus: Understand needs of recipient</strong></td>
<td><strong>AUS_CSF 2</strong> – <strong>Usability: Functionality and navigation</strong></td>
<td><strong>AUS_CSF 2</strong> – <strong>Usability: Functionality and navigation</strong></td>
</tr>
<tr>
<td>2 - Implementation</td>
<td><strong>MAS_CSF 7</strong> – <strong>ICT infrastructure: Availability and functionality</strong> <strong>MAS_CSF 9</strong> – <strong>User ICT literacy: Awareness</strong> <strong>MAS_CSF 6</strong> – <strong>Accessibility</strong></td>
<td><strong>MAS_CSF 7</strong> – <strong>ICT infrastructure: Availability and functionality</strong></td>
<td><strong>AUS_CSF 6</strong> – <strong>Accessibility</strong> <strong>AUS_CSF 2</strong> – <strong>Usability: Functionality and navigation</strong> <strong>AUS_CSF 3</strong> – <strong>User focus: Understand needs of recipient</strong></td>
<td><strong>AUS_CSF 6</strong> – <strong>Accessibility</strong></td>
</tr>
<tr>
<td>3 – Ramp-Up</td>
<td><strong>MAS_CSF 13</strong> – <strong>Attitude and change management</strong> <strong>MAS_CSF 9</strong> – <strong>User ICT literacy: Awareness</strong> <strong>MAS_CSF 10</strong> – <strong>Education, training and knowledge sharing</strong></td>
<td><strong>MAS_CSF 13</strong> – <strong>Attitude and change management</strong></td>
<td><strong>AUS_CSF 3</strong> – <strong>User focus: Understand needs of the recipient</strong></td>
<td><strong>AUS_CSF 3</strong> – <strong>User focus: Understand needs of recipient</strong></td>
</tr>
<tr>
<td>4 - Integration</td>
<td><strong>MAS_CSF 5</strong> – <strong>Content</strong></td>
<td><strong>MAS_CSF 5</strong> – <strong>Content</strong></td>
<td><strong>AUS_CSF 3</strong> – <strong>User focus: Understand needs of recipient and (equal)</strong> <strong>AUS_CSF 5</strong> – <strong>Content</strong></td>
<td><strong>AUS_CSF 5</strong> – <strong>Content</strong></td>
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</table>
Cross-Case Analysis and Discussion

involve the difficulties that can be experienced between the decision to transfer and the start of actual use of the knowledge. Of concern is how difficult it is to bridge the communication gap between the provider source and the user recipient. Of interest here is that at both the MASED and AUSED sites the respondents saw these difficulties as a consequence of ICT technology issues, and did not highlight possible additional communication gap issues, such as language or cultural conventions.

At Ramp-up, which begins when the knowledge recipient starts applying the received knowledge, the MASED respondents see as critical that the whole organisation should be keen to learn and adopt new work practices and new ways of processing and performing tasks (MAS_CSF 13). In this sense they emphasise a responsibility for the user community to be proactive in adopting new practices. At AUSED the respondents see as critical that the website should provide relevant knowledge to users in such a way that the content is easy to understand, and is written in simple and meaningful language chosen with the recipient in mind (AUS_CSF 3). While this may be seen as emphasising the primacy of content, examination of interview transcripts indicates that at AUSED it specifically encompasses matters of content and functionality related to ensuring that the user has a positive first, and ongoing experience of the website (“The number one success factor is to get people to come back is to give them a good experience to start with. If they arrive at our website and they wander around and they can’t get what they are after chances are that they leave the site” (PA3: Online Communication Advisor)). Szulanski (2000) identifies barriers during ramp-up with failures to respond expeditiously to unexpected problems from start of actual use until satisfactory performance is achieved. Users may apply the new knowledge in unexpected ways in their environment, their training may be insufficient, or the new practices involve significant changes to practice, or organisational norms in the user communities. At MASED this has been clearly recognised – there must be a focus on attitude and change management. At AUSED, a related but different dimension is recognised – that to lock in changed practice the initial and ongoing experience of the site must be viewed as positive. The achievement of a “positive experience” will be compromised by a failure to implement a new practice expeditiously and to support the emergence of new organisational norms in the user community.

Finally, at Integration, when the knowledge recipient has received the transferred knowledge and moves to integrate its use with their needs, the MASED respondents see that it is critical that the website should contain content that is accurate, relevant, regularly updated and which
meets user requirements. It should also contain advice on update schedules so that users can organise their revisit times (MAS_CSF 5). This position is shared by the AUSED respondents (AUS_CSF 5). At this stage the content itself is seen as critical – a lack of accuracy, relevance, currency and a failure to meet user requirements, will be exposed as the user seeks to integrate the acquired knowledge with their ongoing needs. Szulanski (2000) sees that barriers in the integration stage are associated with difficulties after satisfactory performance is achieved. Effort must be expended to remove obstacles and deal with the challenges of making new practices routine. The responses at both MASED and AUSED accord in part with Szulanski’s view, inasmuch as they see that once user adoption of practices arising from the transfer of knowledge is established, a key obstacle to the continuation of satisfactory performance will be content related – with a focus on accuracy, relevancy, and regular update.

While there is a degree of agreement between the outcomes reported above and the expectations of barriers to KT in the writings of Szulanski (2000), some caution should be exercised. If one focuses only at each stage on the first mentioned CSF, the most important CSFs at each stage are clearly differentiated, and there are some noted differences at the two organisations. It is stressed, however, that although this subset of the results may provide some insight into which CSFs were at the front of each respondent’s mind as they discussed each KT stage, so possibly providing a means of appreciating the priority placed by respondents on each identified CSF at each KT stage, caution should be exercised. Some authors (e.g., Davis 1979) highlight that the judgment of importance may be influenced by biasing factors, such as availability of data. Most recent events or those easily remembered may assume greater importance than those less recent or which are not easily remembered (see discussion related to Table 3.3). Future research is therefore recommended to probe in detail each KT stage, probably involving extensive one-on-one interviews focusing on specific stages, and involving both developer and user respondents.

6.8: Chapter Summary

In this chapter results have been reported and discussed for the cross case analysis conducted of the case studies undertaken in Malaysia (Chapter 4) and in Australia (Chapter 5), for each individual case study and specific observations emerging from the cross case analysis. In the
course of reporting this analysis, the focus groups conducted with respondents in Malaysia and in Australia have been reported.

The results presented include:

- The initial CSFs resulting from one-to-one interviews have been successfully categorised into themes (Section 6.2). Six themes have emerged, namely: management role, user focus, employee focus, content focus, technology focus and organisational culture.

- The CSFs have been aligned to the existing literature (Section 6.3), this being facilitated by associating the themes (as reported in Section 6.2) with the grouping of concepts. An extensive mapping to the existing literature has been reported (Table 6.2). All identified CSFs have been shown to have some level of support in the literature – indicating that the connection to these areas that was assumed when undertaking the initial literature review, was well founded. Further, this observation gives confidence that a number of apparently relevant ideas that appear in the wide range of ideas reported in the literature that may be relevant for achieving KT via e-government websites are being successfully appropriated by the e-government developer staff at the two organisations investigated.

- Outcomes of the comparative analysis as it applies to the CSFs identified for the two case study organisations have been reported (Section 6.4). Not only are some CSF definition differences noted, but most notably differences in the emerging CSF themes at the two organisations have been identified. Specifically, it has been highlighted that at AUSED, the CSFs identified are focussed in three themes: user focus, content focus and technology focus. The absence of CSFs related to the management role, employee focus and organisational culture was noted for exploration at the focus groups.

- Outcomes from the focus groups have been reported (Section 6.5), addressing initially discussions of the validation of the identified CSFs at MASED (Sections 6.5.1 and 6.5.2) and AUSED (Sections 6.5.3 and 6.5.4). Feedback collected from the respondents at both focus groups on their interpretation of points of similarity and difference in the CSFs identified at the two organisations have also been captured. In summary, MASED respondents agreed all CSFs and definitions, however suggested that the thrust of MAS_CSF 14 – Security suited it better to the Technology focus theme. Participants from MASED attributed the differences to those CSFs identified at AUSED, to “culture”. Although it was difficult to draw detailed insights from the
participants, some potential literature themes that might be explored in future research were noted (Section 6.6). Participants from AUSED also agreed the CSFs and the definitions but added an additional CSF under Theme 1: Management role (AUS_CSF 11 – Governance), suggested a minor change for the definition of AUS_CSF 5 – Content and moved AUS_CSF 9 – Knowledge Storage and Retrieval: Architecture to Theme 4: Content focus instead of its initial categorisation as a technological issue classified under Theme 5: Technology focus. Participants from AUSED suggested that differences in the CSFs at the two organisations related largely to issues to do with the Australian approach to e-government initiatives/implementation (Section 6.6).

• Comparison of the mechanisms for obtaining feedback, reported at MASED and AUSED were compared in Section 6.7.1, and showed considerable similarity, with only differences in local process implementation apparently emerging (Section 6.7.1). It was noted that the mechanisms in place for obtaining feedback at both organisations tend to focus heavily on technical aspects of website performance. Future research has been recommended.

• Finally, comparison of the association of CSFs with KT stages, as reported by respondents at the two case study organisations was reported in Section 6.7.2. These results were assessed to be inconclusive (Section 6.7.2). At each organisation, CSFs have been identified almost uniformly across the four stages, with many CSFs reported associated with multiple stages. If one focuses only at each stage on the first mentioned CSF (see Tables 4.6 and 5.7) the most important CSFs at each stage are clearly differentiated, and are different at the two organisations. It is noted, however, that although this subset of the results may provide some insight into which CSFs were at the front of each respondent’s mind as they discussed each KT stage, so possibly providing a means of appreciating the priority placed by respondents on each identified CSF at that KT stage, caution should be exercised (see discussion in Section 6.7.2). Future research has been recommended.

In the following chapter the thesis concludes, reflecting on the research completed and offering some observations on possible future research directions.
Chapter 7: Conclusion and Future Research Directions

7.1: Introduction

This chapter concludes the thesis, reflecting on the research completed and offering some observations on possible future research directions.

Figure 7.1 depicts the structure of the chapter. The chapter begins with a summary of the research and thesis (Section 7.2). The following section, Section 7.3, answers the primary research question and the four subsidiary research questions that were presented in Chapter 1 (Section 1.6). Section 7.4 then summarises the key theoretical, practical and methodological contributions of this research as appropriate to the research audience that was identified in Chapter 1 (Section 1.3) (i.e. information technology (IT) practitioners and researchers in the field of information systems (IS)). The next section (Section 7.5), considers research limitations. The penultimate section (Section 7.6) canvasses some suggestions for potentially valuable future research paths. Finally, Section 7.7 offers some concluding thoughts.
Conclusion and Future Research Directions

Figure 7.1: Structure of Chapter 7

7.2: Summary of the Research

This thesis has explored the way Australian and Malaysian government education website providers use websites to transfer knowledge from government to users. The audiences of this research are:

- IT practitioners involved in developing and managing organisational websites, particularly government websites. This audience is concerned with identifying and exploiting the critical factors that contribute to making a website a successful channel for the delivery of government knowledge resources (information and services) to users; and
- IS researchers (including those interested in knowledge management (KM)), who are concerned with understanding the processes and factors affecting successful knowledge transfer (KT).
Conclusion and Future Research Directions

The research has investigated critical success factors (CSFs) for KT from the perspective of government website providers. The two case studies reported in this research have been conducted at two education-based government agencies, one in Melbourne Australia (referred to in this research as AUSED) and one in Putrajaya Malaysia (referred to in this research as MASED). The organisational contexts, the KT processes, CSFs, mechanisms for gaining feedback, and the association of CSFs with various stages of an underlying KT process model were identified at the organisations. Subsequently various results from the two organisations were compared. Identified CSF differences were presented to practitioners at the two case study organisations, seeking validation of the CSFs identified from their responses and their insights into possible reasons for points of similarity and difference across the two organisations.

The key research activities and associated reported achievements include:

- The research has presented a review of research in the area of e-government services and e-government delivery in terms of the technologies used and the primary features of websites (Sections 2.2 and 2.3), establishing the concepts and terminologies adopted in this research to discuss the activities of providers of government operated websites at the case study organisations. Further, in the course of this review it has been identified that, although there have been many studies of CSFs in related areas (including for example those for IT-related WSS (Cooper, Lichtenstein & Smith 2006), which took a KT focus, CSFs for e-government implementation (Gil-Garcia & Pardo 2005) and CSFs for technology adoption for e-government (Kamal 2006)), none, have focussed explicitly on CSFs for facilitating KT via government websites (see Section 2.10). This research has sought to fill this literature/research gap.

- A review has been conducted of the directions and approaches adopted by the governments of Malaysia and Australia (Sections 2.4 and 2.5) to the emergence of e-government in their countries. In particular, it has been recognised that e-government is of particular relevance to developing nations, such as Malaysia, which is working towards achieving Vision 2020, the year when it will become a developed country. The Malaysia Plan (MP), released every five years provides a framework aimed at achieving this vision, with information communication and technology (ICT) being one of the key areas highlighted in the Plan, including the Multimedia Super Corridor (MSC), which has been developed to implement, integrate and enhance a number of multimedia applications. E-government is one of these applications, tied to an
objective to enhance public delivery systems through integrated and efficient ICT solutions (Economic Planning Unit 2006). Australia, on the other hand, has launched its 2006 e-Government Strategy, “Responsive Government: A New Service Agenda”, which seeks to provide everyone with a consistent experience when engaging with government electronically (Zhun 2007). The Australian Government set 2010, as its goal to become a connected and responsive government (Australian Government Information Management Office (AGIMO) 2006). This review established that both countries are demonstrably having success (eg, United Nations (UN) (2010) recognises both nations as being in the top 20 for e-participation – Australia 2, and Malaysia 12). As such, a case has been made for the relevance of case studies in these two countries, and that the results of the present research may enable these two countries to learn from each other’s experiences implementing e-government, in particular in establishing, operating and managing government websites to achieve KT. Further, while there have been a number of studies of both Australian and Malaysian e-government, there are no comparative studies of CSFs for KT via Australian and Malaysian government websites (Section 2.10). This research has filled this gap.

- A literature review has been conducted of three associated areas relevant to KT via e-government websites - KM, customer service and WSS (Sections 2.6, 2.7 and 2.8). Building upon that review, a conceptual framework has been generated of six potential groupings (management, site user, development employee, content/presentation, technology and organisational culture) and associated concepts that may be relevant to the study of CSFs for KT via e-government websites, both in this research, and possibly as a basis for the work of future researchers in this area (Section 2.9).

- A justification has been provided for the research method to be employed - interpretive exploratory multiple qualitative case studies (Sections 3.2, 3.3, 3.4 and 3.6).

- A research design has been developed building upon Rockart’s (1979) CSF method (see also Cooper 2009). Research instruments have been designed to support data collection via introductory workshops, interviews and focus groups (Sections 3.7 and 3.8, and associated Appendices). Qualitative content analysis supporting an inductive approach has been chosen as the supporting data analysis technique (Section 3.9).

- A case study at an education-based government agency in Putrajaya Malaysia (MASED) has been completed, accessing insights from 15 respondents, selected as
advised by senior Malaysian government staff to span the relevant development roles (Section 4.3.1 and Table 4.2). Relevant user stakeholder groups have been identified. In building an appreciation of the government agency and its website, the four stages of an e-government development and maturity model (Informative, Interactive, Transactional and Integration (Table 2.4)) derived from extant literature was used, with the website being assessed as Interactive, with some components displaying functionality characteristic of the higher levels. The KT processes as perceived by the Malaysian respondents have been mapped against the 4 stages of Szulanski’s (1996, 2000) KT model (Section 4.3.1). Fourteen (14) CSFs have been identified (Section 4.3.2) which can be grouped according to six themes (management role, user focus, employee focus, content focus, technology focus and organisational culture) which map to the identified groups of concepts in the literature review (Section 2.9). Alignment with the present literature in related areas (KM, customer service and WSS) has been reported. Nine mechanisms for determining website performance have been identified, that may be used to reflect upon aspects of the performance of the websites as vehicles for KT (Section 4.3.3). Finally, an analysis has been reported of the association of CSFs with KT stages as perceived by the Malaysian respondents (Section 4.3.4).

- A case study at an education-based government agency, in Melbourne Australia (AUSED) has been completed accessing insights from nine respondents, selected as advised by senior Australian government staff to span the relevant development roles (Section 5.3.1 and Table 5.2). Relevant user stakeholder groups have been identified. In building an appreciation of the government agency and its website, the four stages of an e-government development and maturity model (Informative, Interactive, Transactional and Integration (Table 2.4)) derived from extant literature was used, with the website being assessed as Interactive, with some components displaying functionality characteristic of the higher levels. The KT processes as perceived by the Australian respondents have been mapped against the four stages of Szulanski’s (1996, 2000) KT model (Section 5.3.1). Eleven (11) CSFs have been identified (Section 5.3.2) which can be grouped according to only four of the six themes (management role, user focus, content focus, and technology focus) which map to the identified groups of concepts in the literature review (Section 2.9). Alignment with the present literature in related areas (KM, customer service and WSS) has been reported. Ten mechanisms for determining website performance have been identified,
that may be used to reflect upon some aspects of the performance of the websites as vehicles for KT (Section 5.3.3). Finally, an analysis has been reported of the association of CSFs with KT stages as perceived by the Australian respondents (Section 5.3.4).

- The results from the two individual case study organisations have been compared on a number of dimensions (see Chapter 6): 
  - Six CSFs were identified to be essentially shared by both organisations (Sections 6.4 and 6.5). CSFs shared at both of these organisations provide a starting point for a set of CSFs that might have multiple website application. Eight additional CSFs were only identified by MASED staff, while five additional CSFs were only identified by AUSED staff (Sections 6.2 - Section 6.6). The absence of CSFs that would have been classified as part of the employee focus and organisational focus themes arising in the AUSED study were canvassed with the AUSED respondents and some tentative reasons for their absence were advanced, related largely to issues to do with the Australian approach to e-government initiatives/implementation (Section 6.6).
  - Comparison of the mechanisms for obtaining feedback showed considerable similarity, with only differences in local process implementation apparently emerging (Section 6.7).
  - It was noted that the mechanisms in place for obtaining feedback at both organisations tend to focus heavily on technical aspects of website performance. Future research has been recommended (Section 7.6).
  - Comparison of the association of CSFs with KT stages, as reported by respondents at the two case study organisations is inconclusive (Section 6.7). At each organisation, CSFs have been identified almost uniformly across the four stages, with many CSFs reported associated with multiple stages. If one focuses only at each stage on the first mentioned CSF (see Tables 4.6 and 5.7) the most important CSFs at each stage are clearly differentiated, and are different at the two websites. It is noted, however (Section 6.7), that although this subset of the results may provide some insight into which CSFs were at the front of each respondent’s mind as they discussed each KT stage, so possibly providing a means of appreciating the priority placed by respondents on each identified CSF at that KT stage, caution should be exercised. Some authors (eg, Davis 1979) highlight that the judgment of importance may be influenced
by biasing factors, such as availability of data. Most recent events or those easily remembered may assume greater importance than those less recent or which are not easily remembered (see discussion related to Table 3.3). Future research is recommended (Section 7.6).

7.3: Answering the Primary Research Question and Subsidiary Research Questions

In this section the original research questions are revisited to indicate how they have been addressed in this research. References to relevant sections of the thesis are used extensively, in this exercise.

In Section 1.6, the following research question was posed:

*How do Australian and Malaysian government providers use government education websites to transfer knowledge successfully to the users of those websites?*

In order to answer this principal research question, the following four subsidiary questions were posed:

7.3.1: Subsidiary Question One

*Who are the key stakeholders for government education websites in Australia and Malaysia?*

To situate the challenge of transferring knowledge successfully to website users, it was argued that an essential starting point is to identify those with a stake in the transfer process - the website providers and the user communities - in particular in the context of education websites.

The findings related to this question are reported as follows:

- Literature Review - Users of e-Government Services (Section 2.2.3)
- MASED Case Study - MASED Website Key Stakeholders (Section 4.3.1 and Table 4.3)
- AUSED Case Study - AUSED Website Key Stakeholders (Section 5.3.1 and Table 5.3)
Consideration of relevant stakeholders in this research has been structured around four stakeholder categories: Government-to-Citizen (G2C), Government-to-Employee (G2E), Government-to-Government (G2G) and Government-to-Business (G2B) (see Table 4.3 and Table 5.3). This is consistent with established literature, including studies of the identification of relationships between users and government by authors including Ndou (2004), Siau and Long (2005), and Weerakkody and Choudrie (2005) (see Section 2.2.3).

As this research is situated at education based government agencies, these categories map to specific stakeholder groups, as follows (see Table 4.3 and Table 5.3):

- G2C: Parents and students
- G2E: Educators and non-educators
- G2G: Other ministries
- G2B: Other private organisations

In the course of the case studies it has been confirmed that this mapping is consistent with the approaches to the management, development and presentation of website content taken at both organisations. At MASED, respondents have emphasised its mission, to place a priority on putting its clients at the centre of its provision of public services, as captured in its Client Charter (Table 4.1). At AUSED, this view of stakeholders completely underpins the design of the website, with the website being segmented according to five user categories: Parents – the website provides information and resources to parents about their child’s development, schooling and education from birth through to 18 years of age; Students and Children – the website provides a range of learning and research resources, information on school life, and games and activities; School Professionals (people who administer in schools, school psychologists, school nurses, school help nurses, and other staff who are working at the school beside teachers) – the website provides information and policies on all aspects of the school system, from curriculum resources, to management processes and wellbeing guidelines; Early Childhood Professionals (childhood nurses, child care workers, people who administer in schools) – the website provides a range of information and resources relating to the care and education of children 0–8 years of age; and Community and “Stakeholders” – the website provides information and resources on a range of policies, research, partnership opportunities and Department initiatives (Section 5.3.1).
In addition, at both organisations a clear focus emerged when considering CSFs – with a significant proportion of the CSFs identified being grouped under the theme User Focus (see the following section (Section 7.3.2)), indicative of a clear appreciation of the importance of understanding the diversity of stakeholders.

7.3.2: Subsidiary Question Two

What are the critical success factors for knowledge transfer for government education websites in Australia and Malaysia, as perceived by the website providers?

The researcher argues that it is possible to capture the factors crucial to achieving successful KT via government education websites from the perspective of one of the key stakeholder groups - web providers. A strategy of inviting the website providers to express their perceptions of the CSFs was employed. Further, given the focus on KT, a four stage KT process model was used to underpin the identification.

The findings related to this question are reported as follows:

- Literature Review - A Proposed Grouping of Concepts Relevant to Successful Knowledge Transfer via Websites (Section 2.9)
- MASED Case Study – Chapter 4
- AUUSED Case Study – Chapter 5
- Consolidation of CSFs – Sections 6.2 – 6.5

The respondents from MASED and AUUSED have identified 14 and 11 CSFs for KT via government websites respectively (Table 6.5 and Table 6.6). These CSFs have been grouped under six themes, namely, management role, user focus, employee focus, content focus, technology focus, and organisational culture. These themes have been aligned to the groupings of concepts identified in the literature review (Section 2.9), and aligned to the associated literature.

There is a clear priority expressed in the significant proportion of CSFs identified at both AUUSED and MASED with a user focus (i.e. understand needs of recipient, presentation of knowledge, levels of ICT literacy, need for training and education, perceptions of usability, need to have website awareness and to receive update notifications, and need for reinforcing positive experiences – both initial and ongoing). Five and six CSFs at AUUSED and MASED,
respectively, addressed these issues. Consistent with the results obtained when addressing Subsidiary Question One above (Section 7.3.1) the respondents from both organisations placed prime importance on knowledge of the needs of website users. Government websites can only achieve KT if the selection of content is predicated on a deep understanding of the user community. Specific CSFs related to user focus include: AUS & MAS_CSF 1 – Awareness and Notification; AUS & MAS_CSF 2 – Usability: Functionality and Navigation; AUS & MAS_CSF 3 – User Focus: Understand Needs of Recipient; and AUS & MAS_CSF 4 – Presentation of Knowledge. The respondents from AUSED also included AUS_CSF 8 – User Positive Experience as an important factor, while MASED included: MAS_CSF 9 – User ICT Literacy: Awareness; and MAS_CSF 10 – Education, Training and Knowledge Sharing.

The respondents from AUSED and MASED also identified a number of CSFs grouped together under a technology focus theme (i.e. associated with the required ICT infrastructure, interactive platform functionality, search engine functionality, and security requirements). In identifying this group of CSFs, the respondents have emphasised that a failure to meet various infrastructure provision needs can so degrade system performance that retrieval of government knowledge resources (information and service) is inefficient, compromising KT. The respondents from both AUSED and MASED identified AUS & MAS_CSF 6 – Accessibility as an important factor. Additionally, the respondents from AUSED identified: AUS_CSF 7 - ICT Infrastructure: Awareness of Users’ Technology Availability; and AUS_CSF 10 - Search Engine, while MASED respondents identified: MAS_CSF 7 - ICT Infrastructure: Availability and Functionality; MAS_CSF 12 – Interactive Platform; and MAS_CSF 14 – Security.

The respondents from AUSED and MASED both identified AUS & MAS_CSF 5 – Content, as an important factor under the content focus. In the preparation of web content, the importance of defined processes involving content authors, internal checking and quality assurance checking to assure the accuracy of content was stressed. Some respondents emphasised the importance of procedures and standards/guidelines to ensure that content on the website remains current and relevant. In particular, use of content ownership, approval and review standards promotes staff following a documented, traceable approach to content ownership, approval and review. AUSED respondents also reported AUS_CSF 9 - Knowledge Storage and Retrieval: Architecture, as an important factor which they saw as
linked to content. Specifically, AUSED respondents highlighted the importance of guidelines related to information architecture involving standards that require the development of documented information architecture (IA) strategy and capability that will facilitate content design and maintenance.

Finally some clear differences emerged (see discussion at Section 7.3.4 Subsidiary Question 4 below). Respondents from AUSED identified AUS_CSF 11 – Governance as an important factor under the management role, while MASED identified MAS_CSF 8 – Leadership. (Note: The distinction between these factors has been discussed in Section 6.6). On the other hand, respondents at MASED identified MAS_CSF 11 – Employee Focus; and MAS_CSF 13 – Attitude and Change as important factors, categorised under the themes of employee focus and organisational culture respectively. Respondents from AUSED did not raise any CSFs that would be classified under either of those themes (see discussion of this at Section 7.3.4 Subsidiary Question 4 below).

7.3.3: Subsidiary Question Three

*How might achievement of these critical success factors be measured? (i.e. What are the feedback mechanisms for the identified CSFs?)*

It was argued that identifying the feedback mechanisms for each CSF can assist the provider to ensure the CSFs are well implemented, so potentially increasing the effectiveness of KT in this context.

The findings related to this question are reported as follows:

- MASED Case Study – Feedback Mechanisms (Section 4.3.3 and Table 4.5)
- AUSED Case Study – Feedback Mechanisms (Section 5.3.3 and Table 5.5)
- Comparative Analysis – Case Study Comparison: Other Dimensions (Section 6.7)

The respondents from MASED and AUSED identified nine and ten feedback mechanisms respectively (Section 4.3.3 and Table 4.5, Section 5.3.3 and Table 5.5). Comparison of the mechanisms for obtaining feedback showed considerable similarity, with only differences in local process implementation apparently emerging (Section 6.7). Closer examination (Section 6.7), however, highlighted that the mechanisms in place for obtaining feedback at both organisations tend to focus heavily on technical aspects of website performance.
the achievement of a number of the CSFs identified in the course of this research may be a very complex process. This suggests that future research might be appropriate, working with staff at an e-government case study organisation, to design, test and validate mechanisms tuned to assessing achievement of the wide spread of identified CSFs (see discussion of future research at Section 7.6).

7.3.4: Subsidiary Question Four

How might one understand the source of differences, if any are observed, between the identified critical success factors identified by the providers in both countries?

It was argued that comparing, in particular, the CSFs that have been identified in the case studies conducted in both countries will serve to identify points of similarity and/or difference. Consideration of similarities and/or differences may provide enhanced understanding of how local context might shape perceptions of factors that are critical for the achievement of KT in the context of e-government websites.

The findings related to this question are reported as follows:

- Comparative Analysis – CSF Comparative Analysis (Section 6.4), Results: Validation of Critical Success Factors (Section 6.5), Discussion of Shared or Similar CSFs and Differences (Section 6.6).
- Comparative Analysis – Case Study Comparison: Other Dimensions (Section 6.7).

Comparison of the CSF sets at the two organisations (AUSED and MASED) indicated that six CSFs were shared, or addressed closely related matters (Table 6.4), namely: AUS & MAS_CSF 1 - Awareness and Notification; AUS & MAS_CSF 2 – Usability: Functionality and Navigation; AUS & MAS_CSF 3 – User Focus: Understand Needs of Recipient; AUS & MAS_CSF 4 – Presentation of Knowledge; AUS & MAS_CSF 5 – Content; and AUS & MAS_CSF 6 – Accessibility. It might be suggested that this shared set of CSFs represents, in a sense, a core set of CSFs that might be considered for application across multiple government websites. Five CSFs and eight CSFs were uniquely identified by AUSED and MASED respondents, respectively.

These similarities and differences were canvassed with respondents at the focus group sessions (Section 6.5), with the captured responses indicating that the perceived criticality of
various factors might be understood in terms of what might be broadly classified as cultural, political and/or social factors. These observations have been tentatively situated primarily against literatures surrounding the approaches adopted to e-government initiatives and implementations in each country. Some tentative associations with culture, and the way in which organisational environments have emerged and been structured, have also been identified in the discussions with respondents, and have been suggested as possible future research directions (Section 6.6).

Of particular note, has been the absence of CSFs that would have been classified as part of the employee focus (i.e. understanding, and establishing, as a developer, required employee roles and competencies) and organisational (i.e. establishing, at the organisational level (both developer and website user) a positive user attitude to the technology, and change management support processes) themes, arising from the AUSED study. This was canvassed directly with the AUSED respondents and some tentative reasons for their absence were advanced, related largely to issues to do with the Australian approach to e-government initiatives/implementation. E-government initiatives and implementation in Malaysia is being implemented by stages, with initiatives at selected ministries. The implementation strategies and policies are centralised and driven centrally in those ministries. In Australia on the other hand, each state has prepared guidelines for government agencies to follow, but each government agency has a degree of implementation autonomy, consistent with those guidelines and stated objectives. In accord with that autonomy, staff at AUSED indicated that matters related to the employee focus and organisation focus themes were being addressed using well established public service processes outside their areas of immediate responsibility, and so were not seen as problematic, in particular related to the achievement of KT to website users.

7.3.5: Primary Research Question

In light of the above, returning to the primary research question, the understanding built up in the course of addressing the four subsidiary questions, constitutes both an answer to the question of how Australian and Malaysian government providers use government education websites to transfer knowledge successfully to the users of those websites, and provides insights that might facilitate the achievement of successful KT into the future. A set of shared CSFs has been identified, however the number of additional CSFs identified that are specific
to individual organisation highlights that issues of criticality can undoubtedly be shaped by local factors. While the core set of CSFs provides a starting point for strategy considerations, the wider set of CSFs spanning the full CSF sets identified at both organisations should be considered by e-government website planners and managers.

7.4: Contributions of the Research

As foreshadowed in Section 1.8, the research reported has sought to make contributions in three areas: Theory; Practice; and Methodology. These are discussed in turn.

7.4.1: Contributions to IS Theory

Contributions to theory include:

- This research has demonstrated that Szulanski’s (1996, 2000) four stages of KT model, namely Initiation, Implementation, Ramp-up, and Integration (Section 2.6.5) can be applied in the e-government context to both understand the processes for KT via an e-government website, and as a theoretical lens to identify CSFs.

- Building upon a review of existing literature addressing three associated concepts relevant to KT via e-government websites - KM, customer service and WSS (Sections 2.6, 2.7 and 2.8) - a conceptual framework has been generated of six potential groupings (management, site user, development employee, content, technology and organisational culture) and associated concepts that may be relevant to the study of CSFs for KT via e-government websites, both in this research, and possibly as a basis for the work of future researchers in this area (Section 2.9).

- This research has identified CSFs overall, and for each stage of the KT model (Sections 4.3.2 and 4.3.4 and Sections 5.3.2 and 5.3.4), and has demonstrated that these can be consolidated across six themes: Management Role, User Focus, Employee Focus, Content Focus, Technology Focus, and Organisational Culture (Section 6.5.2 and Section 6.5.4), that map to the groupings referred to above.

In addition, there have been additional contributions arising as a by-product of the exploration of CSFs for KT, including:

- This research has contributed to the existing literature on the e-government maturity model by applying the four stages of e-government development and maturity, namely
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Informative, Interactive, Transactional and Integration (Table 2.3) to developing an appreciation of each government agency and its website.

- Some insights into the way local context can shape perceptions of the criticality of factors affecting KT have been presented. Specifically, the absence of CSFs that would have been classified as part of the employee focus and organisational focus themes arising from the AUSED study have been canvassed with the AUSED respondents and some tentative reasons for their absence have been advanced, related largely to issues to do with the Australian approach to e-government initiatives/implementation (Section 2.7 and Section 6.6).

7.4.2: Contributions to IS Practice

In identifying CSFs for KT via government education websites, IT practitioners involved in developing and managing organisational websites, particularly government websites, have been provided with insights that can contribute to making a website a successful channel for the delivery of government knowledge resources (information and services) to users. Specifically:

- The research has identified the stakeholder set in the transfer of knowledge via e-government educational websites. With this understanding, e-government entrants to this area may be better able to systematically plan the identification of various stakeholder requirements.

- In building an appreciation of the government agency and its website, the four stages of e-government development and maturity model (Informative, Interactive, Transactional and Integration (Table 2.4)) derived from extant literature has been applied. This highlights that this model may be of value to e-government development groups as a means of evaluating existing website functionality and stimulating consideration of possible future developmental directions.

- The research has identified CSFs for KT via e-government websites (Section 6.5.2 and Section 6.5.4), both those shared and those specific to the two organisations studied. The CSFs can be of practical value to practitioners as a planning tool prior to implementing an e-government website strategy for KT, and for established websites as a tool for review of an existing strategy. Further, other government agencies might learn from and use the findings to improve their own websites. Non-government organisations might also
consider these if seeking to emulate the practices of government agencies to enhance their websites to better support KT to users.

- The research has identified a number of feedback mechanisms currently in use at the organisations studied (Sections 4.3.3 and 5.3.3). This has highlighted, however, that the existing feedback mechanisms tend to focus heavily on technical aspects of website performance. Indeed, monitoring the achievement of a number of the CSFs identified in the course of this research may be a very complex process. This observation would suggest that e-government website planners and managers would do well to think afresh about the mechanisms in place and seek to design, test and validate mechanisms tuned to assessing achievement of the wider spread of CSFs for KT via an e-government website.

- The initial work reported on the association of CSFs with each KT stage (Section 4.3.4 and Section 5.3.4), may be helpful to e-government website planners and managers, when reviewing website strategies. It is noted however, that the first mentioned responses technique applied to identify individual CSFs associated with each stage should be treated with some caution (Section 6.7). As such, practitioners might better consider the wider range of CSFs identified as being associated with each of the various stages.

**7.4.3: Contributions to IS Methodology**

In addition to the above, this study provides a confirmatory example of aspects of the application of CSF research approaches. (Note: Methodological features have previously been explored by authors such as Cooper (2009).) Contributions include:

- This research has demonstrated that Rockart’s (1979) three steps CSF method (*Introduction Workshop, Interviews, and Focus Groups* (Section 3.8)), applied originally to single case studies, can be adapted to be applied to more than a single case study organisation, in a comparative case study. Specifically, it has been shown that it can be used in an e-government context at multiple case study organisations in different countries to elicit CSFs, which can then be examined as part of a comparative case study approach.

- The interviews conducted in Rockart’s original method were held with the managers of organisations. This present research has accessed respondents from multiple, different levels of the organisation, including the senior, middle and operations levels.

- The focus group proposed in Rockart’s original method was designed to confirm the CSFs identified from analysis of the interviews. In this research however, the focus groups have been used to both confirm the identified CSFs, and also to probe respondents concerning
points of difference between the CSFs identified at the comparative organisations. This has served to stimulate a rich discussion into elements of local context that have shaped perceptions of the criticality of factors affecting KT via government websites (Section 6.6).

- This research has demonstrated the use of a first-mentioned responses technique for determining responses that are front-of-mind, as a means of determining which CSF are associated by respondents with each particular KT stage (Section 3.9). It is noted, however (Section 6.7), that although this subset of the results may provide some insight into which CSFs were at the front of each respondent’s mind as they discussed each KT stage, so possibly providing a means of appreciating the priority placed by respondents on each identified CSF at that KT stage, caution should be exercised as the judgment of importance may be influenced by biasing factors (see discussion related to Table 3.3 and in Section 6.7).

- This research has demonstrated the application of content analysis techniques to extract CSFs, as part of both within-case analysis and cross-case or comparative analysis (Section 3.9).

**7.5: Research Limitations**

The research reported herein was conducted with attention to an appropriate research design and research protocols (Chapter 3), nevertheless a number of limitations that are inherent in the research should be acknowledged, as follows.

First, the case study approach has inherent limitations, notably an inability to provide results that can be generalised to larger populations. This research has addressed this limitation in several ways. First, a multiple (two) case study approach was taken. It was noted that previous CSF studies have focussed on generating results specific to specific case study areas (i.e. Park & Gretzel 2007; Terzis & Economides 2007; Chiou, Lin & Perng 2010), so providing limited insight into a set of critical factors that might be confidently applied across multiple organisations in multiple contexts. This study has addressed this concern, in part at least, by choosing two websites that reside in substantially different political, technical and social contexts (Australia and Malaysia), arguing that it should be possible to identify a limited set of shared CSFs. As such, it might be argued that the CSFs shared at both of these websites provide at least a starting point for a set of CSFs that might have multiple website application.
Certainly a set of shared CSFs has been identified; however the number of additional CSFs that are specific to individual websites sounds a note of warning concerning immediate assumptions of generalisability. However, confidence in the results is strengthened when it is noted that both countries are demonstrably having success (e.g., UN (2010) recognises both nations as being in the top 20 for e-participation – Australia 2, and Malaysia 12) recommending them as sources of e-governance expertise. Further, experienced and professional respondents have been accessed, drawing on the advice of senior staff in the relevant departments/ministries. Substantial data sets were collected and analysed. Finally, research quality approaches were adopted, as discussed in Section 3.10 (Triangulation, Authenticity, Reliability and Internal/External Validity).

Second, this research has explored KT only from the perspective of the website providers. It has been clearly established that there exists a rich selection of user stakeholders (see Sections 2.2.3, 4.3.1, 5.3.1 and 7.3.1). The decision to focus on the perspectives of website providers has been justified on the grounds that government website providers have substantial established processes (see Figure 4.4-4.7 and Figure 5.3-5.6) and infrastructure in place to assess user responses to the websites that they provide (see the Feedback Mechanisms on Section 4.3.3 and Section 5.3.3), and it has been possible to tap into these insights by focussing data collection upon the more readily accessible groups of government website providers. This assertion could be tested by explicitly researching the perspectives of the other stakeholder categories. (Note: Although requested it was not possible to obtain quantitative data concerning the extent of the use of the feedback mechanism referred to, from either site.)

Third, a number of additional decisions to scope the research limit the range of applicability of the research findings that can be claimed. In particular, in addition to the limitations of conducting case studies in only two countries, it is noted that the research identified CSFs for KT via education-based websites only. The findings may not applicable to different types of government agencies. Further, the applicability of the findings to KT via websites outside the e-government context cannot be assumed, although this has been tested in part by consideration of the alignment of CSFs with groupings and concepts identified in the KM, customer service and WSS literature (see Sections 2.9 and 6.3).

Fourth, CSF methods have a number of documented limitations (as have been presented and discussed in Table 3.3). It should be noted that Rockart’s CSF method involved interviewing
Conclusion and Future Research Directions

an identified group of individuals two to three times in extended sessions. This research on the other hand was conducted with a set of single interviews and a subsequent focus group. The researcher acknowledges that the method used may cause the outcome of the research to differ. Having said that, however, the method used this research has an established record of success, having been used by Cooper in a very substantial research program (see Cooper (2009), and references therein).

7.6: Future Research Directions

The findings of this research, and the discussion of research limitations above, suggest a number of possible directions for future investigations, including:

- This research has explored CSFs for KT via an e-government website only in the context of education organisations. While it may be tempting to generalise to other areas of government activity, such a step cannot be assumed. As such, there would be merit in replicating the research design herein, to identify CSFs for KT for other areas of government activity (eg, health, agriculture, finance, and other ministries).

- This research has investigated the issues surrounding KT from the perspective of the website provider only. As discussed above, this has been justified on the grounds that government website providers have substantial established processes and infrastructure in place to assess user responses to the websites that they provide, and so the results obtained encompass perspectives of the user community. In future studies there would be merit in testing this assumption, identifying CSFs directly from the users’ perspectives, either one type of user only (i.e. citizens or employees or business entities or government bodies) or spanning all types of user and comparing the CSFs. The present study design could be replicated, accessing representative respondent sets from other stakeholder user groups, to achieve this research outcome.

- The choice of a multiple case study approach has been discussed as a possible limitation, notably an inability to generalise findings to larger populations. While, as discussed above when considering limitations of this method, care has been taken to follow appropriate research protocols, differences between the CSFs at the two websites investigated highlight that certainly some of the identified CSFs may be appropriate only to particular websites. A possible future research direction could be to employ quantitative methods (eg, survey or other methods) that facilitate collecting data across a large number of e-government activity areas to test the applicability of the core CSFs shared across the two
study organisations accessed in this research, to a wider population. The population surveyed could extend to e-government website providers in both different areas of government activity and in many different countries.

- The analysis of the reported CSFs as a whole has been scoped at a macro level. Any of the CSFs identified could be subjected to future detailed investigation.
- As discussed in the course of the research, several areas amenable to specific future research projects have been identified, including:
  - Comparison of the mechanisms in place for obtaining feedback (Section 6.7) shows that at both websites providers tend to focus heavily on technical aspects of website performance. Indeed, monitoring the achievement of a number of the CSFs identified in the course of this research may be a very complex process. This suggests that future research might be appropriate, working with staff at an e-government case study organisation possibly in action research mode, to design, test and validate mechanisms tuned to assessing achievement of the wide spread of CSFs for KT via an e-government website;
  - Comparison of the association of CSFs with KT stages, as reported by respondents at the two case study organisations is inconclusive (Section 6.7). At each organisation, multiple CSFs have been identified almost uniformly across the four stages, with many CSFs reported associated with multiple stages. Further detailed studies focussed on specific individual stages, may clarify this outcome.
  - The absence of CSFs that would have been classified as part of the employee focus and organisational focus themes arising from the AUSED study were canvassed with the AUSED respondents and some tentative reasons for their absence were advanced, related largely to issues to do with the Australian approach to e-government initiatives/implementation. Further exploration of this, and its possible connection to some literatures that have been tentatively identified, could be usefully pursued.

**7.7: Concluding Remark**

To conclude, an investigation of the CSFs for KT via Australian and Malaysian government education websites from the perspective of providers has yielded a core set of shared CSFs, with additional CSFs specific to each organisation. Investigation of CSFs associated with specific KT stages and feedback mechanisms employed at the case study organisations, have
been reported, and respondent observations on the observed CSF differences at the two case study organisations have been captured. In all of this, it is important to note that application of the four stages of KT model proposed by Szulanski (1996, 2000) (initiation, implementation, ramp-up and integration) has successfully facilitated the investigation. Indeed, although not explicitly noted in the reporting of results, the ready flow of discussion during the conduct of interviews and focus groups would indicate that the staff at both case study organisations found the discipline of discussing and exploring their work through the lens of KT, very helpful.

This final observation would support an assertion that e-government strategies that embrace explicit consideration of the role and function of their websites as vehicles for KT, which is at the core of this thesis, sit very naturally with the website providers, and the exploitation of such strategies including consideration of the core CSFs identified herein, have much to recommend them. That said, the research has highlighted a need for significant further research: to explore CSFs for KT via e-government websites from the website user perspective; to explore further the association of CSFs with specific KT stages; and to explore feedback mechanisms that would more fully address management of the full spread of CSFs for KT via e-government websites than the mechanisms currently being applied.
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Appendix A: E-Government – Stages of Development and Maturity


At Stage 1, all researchers agree that the government website must display basic information to the public (Layne & Lee 2001; Papantoniou et al. 2001; Huang & Bwoma 2003; Janssen & Veenstra 2005; Siau & Long 2005; Belanger & Hiller 2006), and that this information is limited and static (United Nations and American Society for Public Administration 2001; Siau & Long 2005) and delivered via a one-way communication (Deloitte Consulting and Deloitte & Touche 2000; Siau & Long 2005). In this regard, Wescott (2000) suggests that during this stage governments might benefit from developing a personnel information system to facilitate government administrative tasks and use e-mail to speed up internal communications.

Stage 2 offers two-way communication between users and the government (Layne & Lee 2001; Huang & Bwoma 2003; Janssen & Veenstra 2005; Siau & Long 2005; Belanger & Hiller 2006). Deloitte Consulting and Deloitte and Touch (2000) assert that websites that enable users to renew television licences and pay parking tickets are at Stage 3, while Papantoniou et al. (2001) suggest that websites that enable the legal system integration and enterprice resource planning (ERP) deployment are at this stage of development. Wescott (2000), on the other hand, is more focused on the development of internal government administrative tasks at Stage 2, recommending the implementation of a system to manage internal government workflows and that two-way communication should not be implemented until Stage 3. Similarly, the United Nations and American Society for Public Administration (2001) is more concerned with internal matters at this stage, suggesting that the website should be enhanced from static information to continually updated information and that two-way communication wait until Stage 3.

Stage 3 offers a variety of services through websites. Deloitte Consulting and Deloitte and Touche (2000) and Siau and Long (2005) argue for a single access point of government information and services, whereas Huang and Bwoma (2003), Janssen and Veenstra (2005), and Belanger and Hiller (2006) all propose development of a single-point government website.
at Stage 4. Other researchers recommend the provision of certain services through the website such as information sharing (Papantoniou et al. 2001), launch of a customer relationship management (CRM) system (Papantoniou et al. 2001), the development of business strategies (Papantoniou et al. 2001), full legacy systems integration (Layne & Lee 2001; Papantoniou et al. 2001), renewal of driver’s licences (Huang & Bwoma 2003; Siau & Long 2005; Belanger & Hiller 2006), payment of fines (Huang & Bwoma 2003; Belanger & Hiller 2006), and applications for financial aid (Huang & Bwoma 2003; Belanger & Hiller 2006). Likewise, the United Nations and American Society for Public Administration (2001) propose the development of services such as applications for visas, licences, passports, birth and death certificates or similar at Stage 4. Janssen and Veenstra (2005) recommend a multi-channel approach to government information and services.

Most researchers describe high levels of fully integrated services on government websites by Stages 4, 5 and 6 (Layne & Lee 2001; Papantoniou et al. 2001; United Nations and American Society for Public Administration 2001; Janssen & Veenstra 2005; Siau & Long 2005). Deloitte Consulting and Deloitte and Touche (2000) propose that a website should enable users to customise it according to their needs. Wescott (2000), Siau and Long (2005) and Belanger and Hiller (2006), on the other hand, recommend the delivery of e-democracy where the citizen is able to participate in the decision-making processes through government websites.

Table A.1 summarises the various models of the stages of e-government and their descriptions.
## Table A.1: Models of the stages of e-government

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>Author</th>
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<tr>
<td><strong>Stage 1: Information publishing</strong>&lt;br&gt;Stage 2: Official two-way transactions&lt;br&gt;Stage 3: Multi-purpose portals&lt;br&gt;Stage 4: Portal personalisation&lt;br&gt;Stage 5: Clustering of common services&lt;br&gt;Stage 6: Full integration and enterprise transformation</td>
<td>1) Create websites for departments and agencies. One-way communication.&lt;br&gt;2) Enable customers to have electronic interaction with government services such as renewing television licences and paying parking tickets.&lt;br&gt;3) Enable customers to obtain government services and information from a single point.&lt;br&gt;4) Provide customers with opportunities to customise portals according to their needs.&lt;br&gt;5) As portals improve, government departments may be merged, as the government will seek to gather common services to make the process of delivery faster and more efficient.&lt;br&gt;6) Some government departments will close while others emerge; some departments will keep their names but will undergo significant internal transformation.</td>
<td>(Deloitte Consulting and Deloitte &amp; Touche 2000)</td>
</tr>
<tr>
<td><strong>Stage 1: E-mail and internal network&lt;br&gt;Stage 2: Enable inter-organisational and public access to information&lt;br&gt;Stage 3: Two-way communication&lt;br&gt;Stage 4: Exchange of value&lt;br&gt;Stage 5: Digital democracy&lt;br&gt;Stage 6: Joined-up government</strong></td>
<td>1) Create a personnel information system to facilitate administrative tasks, and using e-mail to speed up the communication.&lt;br&gt;2) Develop systems that help to better manage workflows.&lt;br&gt;3) Post telephone or fax numbers or e-mail addresses on a website to encourage the public to send messages.&lt;br&gt;4) Enable citizens to conduct business with the government via more flexible and convenient means.&lt;br&gt;5) Allow citizens to vote, and establish ICT applications that can potentially support participatory and democratic processes.&lt;br&gt;6) A web-portal or smart card integrates information and services from various government agencies to help citizens and other stakeholders access seamless services without needing to know which government agencies are responsible.</td>
<td>(Wescott 2000)</td>
</tr>
<tr>
<td><strong>Stage 1: Cataloguing&lt;br&gt;Stage 2: Transaction&lt;br&gt;Stage 3: Vertical integration&lt;br&gt;Stage 4: Horizontal integration</strong></td>
<td>1) Create websites and make government information and services available online.&lt;br&gt;2) Enable citizens to interact with their government electronically.&lt;br&gt;3) Focus on integrating the scattered systems at different levels within the similar functional walls.&lt;br&gt;4) Focus on horizontally integrating government services across different functional walls.</td>
<td>(Layne &amp; Lee 2001)</td>
</tr>
<tr>
<td><strong>Stage 1: Static information&lt;br&gt;Stage 2: Citizen interaction&lt;br&gt;Stage 3: Knowledge of citizen transaction&lt;br&gt;Stage 4: Full e-government transformation</strong></td>
<td>1) Construct websites, allocate resources and people with appropriate skills, and launch Intranet development.&lt;br&gt;2) Legal system integration; full Intranet development that includes search, query and email and ERP deployment.&lt;br&gt;3) Information sharing, launches CRM system, develop business strategies and full legacy systems integration.&lt;br&gt;4) Develop communities, exploitation of CRM systems and KM systems deployment.</td>
<td>(Papantoniou et al. 2001)</td>
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<tr>
<th>Stage</th>
<th>Description</th>
<th>Author</th>
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<tbody>
<tr>
<td>Stage 1: Emerging</td>
<td>1) Create a government website with limited/static information.</td>
<td>(United Nations and American Society for Public Administration 2001)</td>
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<td>Stage 2: Enhanced</td>
<td>2) Update information regularly.</td>
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<tr>
<td>Stage 3: Interactive</td>
<td>3) Provide users with reasonable levels of interaction enabling them to download forms.</td>
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<tr>
<td>Stage 4: Transactional</td>
<td>4) Enable users to complete transactions online such as obtaining visas, licences, passports, birth and death certificates, or access other government services online, safely and securely.</td>
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<tr>
<td>Stage 5: Seamless or fully integrated</td>
<td>5) Provide services across administrative and departmental lines with the highest level of integration.</td>
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<tr>
<td>Stage 1: Information publishing</td>
<td>1) The most basic form of e-government merely posts information on a website for the public to read.</td>
<td>(Huang &amp; Bwoma 2003)</td>
</tr>
<tr>
<td>Stage 2: Two-way communication</td>
<td>2) Citizens communicate with the government and make simple requests and changes, mostly by e-mail.</td>
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<tr>
<td>Stage 3: Transaction</td>
<td>3) Websites have been developed to accommodate the processing of transactions that include renewing driver’s licences, paying fines and applying for financial aid.</td>
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<tr>
<td>Stage 4: Integration</td>
<td>4) Establishment of a single portal entry service where government services are integrated together.</td>
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<tr>
<td>Stage 1: No integration</td>
<td>1) Develop online services by creating a website that contains useful information.</td>
<td>(Janssen &amp; Veenstra 2005)</td>
</tr>
<tr>
<td>Stage 2: One-to-one integration architecture</td>
<td>2) Communicating with citizens through e-mail.</td>
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<tr>
<td>Stage 3: Warehouse architecture</td>
<td>3) Creating multi-channel approaches.</td>
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<tr>
<td>Stage 4: Broker architecture</td>
<td>4) Developing a one-stop shop for all connections with information systems, both inside and outside the organisation.</td>
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<td>Stage 5: Orchestrated broker architecture</td>
<td>5) Developing high levels of standardisation of interfaces, business rules and protocols.</td>
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<tr>
<td>Stage 1: Web presence</td>
<td>1) Provide the most basic form of e-government with no interactions.</td>
<td>(Siau &amp; Long 2005)</td>
</tr>
<tr>
<td>Stage 2: Interaction</td>
<td>2) Provide simple interaction between the governments and the users.</td>
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<tr>
<td>Stage 3: Transaction</td>
<td>3) Enable users to conduct complete online transactions.</td>
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<tr>
<td>Stage 4: Transformation</td>
<td>4) Provide integrated and seamless services horizontally and vertically across the organisation.</td>
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<tr>
<td>Stage 5: E-democracy</td>
<td>5) Offering tools such as online voting, polling and surveys, governments attempt to improve political participation, citizen involvement, and politics transparencies.</td>
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<tr>
<td>Stage 1: Information</td>
<td>1) Government posts information on website for citizens.</td>
<td>(Belanger &amp; Hiller 2006)</td>
</tr>
<tr>
<td>Stage 2: Two-way communication</td>
<td>2) Government sites allow citizens to communicate with the government and make simple requests and changes through e-mail.</td>
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<tr>
<td>Stage 3: Transaction</td>
<td>3) Government has sites available for actual transactions with citizens: for example, renewing licences, paying fines and applying for financial aid.</td>
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<tr>
<td>Stage 4: Integration</td>
<td>4) All government services are integrated into a single portal that citizens can use to access services they need no matter which agencies or departments offer them.</td>
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<tr>
<td>Stage 5: Participation</td>
<td>5) These government sites can provide facilities for the public to vote online, enrol to vote online or post comments online.</td>
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Appendix B: E-Government – The Challenges

E-government delivery can add value to users by providing information and services online. Nevertheless, the process of providing such services is neither easy nor straightforward. There are many challenges involved, as highlighted in the literature.

The challenges can be addressed by the readiness of leadership to deal with obstacles specifically through strategic thinking (Heeks 2002; Jaeger & Thompson 2003; Ndou 2004; Traunmuller & Wimmer 2004; Luna-Reyes, Gil-Garcia & Cruz 2007). Management must assume a strong leadership role in developing clear strategies on e-government, especially by determining both the underlying vision and the mission of e-government (Heeks 2002; Jaeger & Thompson 2003; Ndou 2004). The objectives of e-government must be customer driven, service oriented, must meet customer needs and aim to improve the overall quality of life (Ndou 2004). The leaders should empower their team members to perform their tasks to achieve such goals (Traunmuller & Wimmer 2004), while the leaders themselves should concentrate on planning the marketing of e-government through a range of media, in partnership with other agencies (especially private agencies) to provide more services to users (Luna-Reyes, Gil-Garcia & Cruz 2007). Leaders also need to establish methods and performance indicators to assess the services and standards of e-government for future improvement (Jaeger & Thompson 2003).

Another challenge involved in e-government is the readiness of human infrastructure (Heeks 2002; Edmiston 2003; Jaeger & Thompson 2003). An information communication and technology (ICT) division or unit needs to be established to manage, guide and drive e-governance (Heeks 2002), for which the government requires staff trained in information technology (IT) to operate the tasks (Heeks 2002; Edmiston 2003; Jaeger & Thompson 2003). Jaeger and Thompson (2003) recommend the employment of people with disabilities in the area of e-government, to help the government better understand the needs of people with disabilities. They also argue that government officers need to clearly explain to customers that e-government will not lessen the responsiveness or the responsibility of government officials, but will improve service delivery to users.

E-government also needs to deal with certain legal matters such as the laws and regulations to permit and to support e-government (Heeks 2002), the interoperability, and standards of e-government such as those related to data quality and security (Heeks 2002; Jaeger &
Thompson 2003; Ndou 2004; Traumuller & Wimmer 2004; Luna-Reyes, Gil-Garcia & Cruz 2007). In this regard, Jaeger and Thompson (2003) claim that the biggest concern in relation to e-government is not the technological issues but the policy issues.

The capacity of the institutional infrastructure is also one of the challenges faced when implementing e-government. Governments need to improve the process by integrating the front and back ends of their offices (Jaeger & Thompson 2003; Traumuller & Wimmer 2004; Davison, Wagner & Ma 2005; Luna-Reyes, Gil-Garcia & Cruz 2007), and the organisation will need to change its management processes (Ndou 2004; Traumuller & Wimmer 2004). The whole government organisation will need to adapt and learn the new methods of completing tasks and fulfilling responsibilities necessitated by e-government.

Another challenge involves the readiness of technological infrastructure. Governments must develop portals for service provision (Jaeger & Thompson 2003; Traumuller & Wimmer 2004). Since these portals can be accessed anywhere, they also need to address the issues of usability (Traumuller & Wimmer 2004), and language and communication (Jaeger & Thompson 2003). The government must also ensure that users have access to Internet facilities (Heeks 2002; Jaeger & Thompson 2003; Ndou 2004).

In developing e-government services, governments also need to address privacy issues, by maintaining electronic records properly to protect the privacy of users (Heeks 2002; Edminston 2003; Jaeger & Thompson 2003; Bolivar, Perez & Hernandez 2007). Government must also deal with identity management and security issues (Jaeger & Thompson 2003; Traumuller & Wimmer 2004; Davison, Wagner & Ma 2005).

The government needs to address the digital divide between internal and external users. Not all users possess the same level of ICT knowledge, which can be a significant obstacle to providing government services online (Jaeger & Thompson 2003; Ndou 2004; Traumuller & Wimmer 2004; Davison, Wagner & Ma 2005). Governments must also ensure the network is stable and has a broad coverage, and should educate users about the value of e-government (Jaeger & Thompson 2003). Users need to be informed about the availability of online public services and the benefits of using such resources.

Finally, governments face financial challenges in implementing e-government (Edminston 2003), which can inhibit innovation when seeking to improve e-government performance.
(Scherlis & Eisenberg 2003). The following (Table B.1) summarises the challenges of e-government as outlined above.

Table B.1: E-government Challenges

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<th>Challenges</th>
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<tr>
<td><strong>Leadership and strategic thinking readiness</strong></td>
<td>(Heeks 2002; Jaeger &amp; Thompson 2003; Ndou 2004)</td>
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<tr>
<td>- Leadership and clear strategy about vision and mission</td>
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<tr>
<td>- Empowerment</td>
<td>(Traunmuller &amp; Wimmer 2004)</td>
</tr>
<tr>
<td>- Partnership and collaboration via multimedia</td>
<td>(Ndou 2004; Traunmuller &amp; Wimmer 2004; Luna-Reyes, Gil-Garcia &amp; Cruz 2007)</td>
</tr>
<tr>
<td>- Developing methods and performance indicators to assess the services and standards of e-government</td>
<td>(Jaeger &amp; Thompson 2003)</td>
</tr>
<tr>
<td><strong>Human infrastructure readiness</strong></td>
<td>(Heeks 2002)</td>
</tr>
<tr>
<td>- A division or unit to manage, guide and drive e-government</td>
<td>(Heeks 2002; Edmiston 2003; Jaeger &amp; Thompson 2003)</td>
</tr>
<tr>
<td>- IT human capital</td>
<td>(Jaeger &amp; Thompson 2003)</td>
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<tr>
<td>- Including individuals with disabilities in e-government and preventing e-government from lessening the responsiveness of government officials</td>
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</tr>
<tr>
<td><strong>Legal infrastructure readiness</strong></td>
<td>(Heeks 2002; Jaeger &amp; Thompson 2003; Ndou 2004; Traunmuller &amp; Wimmer 2004; Luna-Reyes, Gil-Garcia &amp; Cruz 2007)</td>
</tr>
<tr>
<td>- Interoperability and standards</td>
<td>(Jaeger &amp; Thompson 2003)</td>
</tr>
<tr>
<td>- Policy</td>
<td></td>
</tr>
<tr>
<td><strong>Institutional infrastructure readiness</strong></td>
<td>(Jaeger &amp; Thompson 2003; Ndou 2004; Traunmuller &amp; Wimmer 2004; Davison, Wagner &amp; Ma 2005; Luna-Reyes, Gil-Garcia &amp; Cruz 2007)</td>
</tr>
<tr>
<td>- Integrating government processes</td>
<td></td>
</tr>
<tr>
<td>- Change management</td>
<td>(Ndou 2004; Traunmuller &amp; Wimmer 2004)</td>
</tr>
<tr>
<td><strong>Privacy issues</strong></td>
<td>(Edmiston 2003; Jaeger &amp; Thompson 2003)</td>
</tr>
<tr>
<td>- Privacy</td>
<td>(Jaeger &amp; Thompson 2003; Ndou 2004; Traunmuller &amp; Wimmer 2004; Davison, Wagner &amp; Ma 2005)</td>
</tr>
<tr>
<td>- Identity management and security</td>
<td></td>
</tr>
<tr>
<td>- Maintaining electronic records</td>
<td>(Heeks 2002; Jaeger &amp; Thompson 2003; Bolivar, Perez &amp; Hernandez 2007)</td>
</tr>
<tr>
<td><strong>Digital divide</strong></td>
<td>(Jaeger &amp; Thompson 2003; Ndou 2004; Traunmuller &amp; Wimmer 2004; Davison, Wagner &amp; Ma 2005)</td>
</tr>
<tr>
<td>- Knowledge of users</td>
<td></td>
</tr>
<tr>
<td>- Educating users about the value of e-government</td>
<td>(Jaeger &amp; Thompson 2003)</td>
</tr>
</tbody>
</table>
Table B.1: E-government Challenges - (Continued)

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Author</th>
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</thead>
<tbody>
<tr>
<td><strong>Technological infrastructure readiness</strong></td>
<td>(Jaeger &amp; Thompson 2003; Traunmuller &amp; Wimmer 2004)</td>
</tr>
<tr>
<td>- Portals for service provision</td>
<td></td>
</tr>
<tr>
<td>- Usability</td>
<td>(Traunmuller &amp; Wimmer 2004)</td>
</tr>
<tr>
<td>- Language and communication issues</td>
<td>(Jaeger &amp; Thompson 2003)</td>
</tr>
<tr>
<td>- Internet accessibility</td>
<td>(Heeks 2002; Jaeger &amp; Thompson 2003; Ndou 2004)</td>
</tr>
<tr>
<td><strong>Financing e-government</strong></td>
<td></td>
</tr>
<tr>
<td>- Financing or cost</td>
<td>(Edmiston 2003)</td>
</tr>
<tr>
<td>- Acquisition and innovation</td>
<td>(Scherlis &amp; Eisenberg 2003)</td>
</tr>
</tbody>
</table>
Appendix C: E-Government Websites - Features

Current research into websites features takes a number of forms: literature related to website evaluation (e.g. design, accessibility, usability, ease of operations, content and information quality); website development guidance (e.g. design, methods and modelling tools); and classifying user needs (e.g. services, content and information quality).

To delineate the features and associated terminologies that will emerge when seeking responses from the developers at the two case study organisations investigated in this research, a referenced synthesis of this literature has been developed and is presented in Table C.1, highlighting a set of ten key high level features. This is followed in Table C.2 by a summary of the findings of a selection of studies evaluating such features, with a focus on e-government websites.

Table C.1: Features used to evaluate Website Effectiveness

<table>
<thead>
<tr>
<th>Features</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) System quality</td>
<td></td>
</tr>
<tr>
<td>- Ease of use</td>
<td>(Misure &amp; Johnson 1999; Donthu 2001; Yang et al. 2005; Barnes &amp; Vidgen 2003a, 2003b, 2006; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>- Security</td>
<td></td>
</tr>
<tr>
<td>2) Trust</td>
<td>(Barnes &amp; Vidgen 2006; Parasuraman, Zeithamal &amp; Malharta 2005; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>3) Responsiveness</td>
<td></td>
</tr>
<tr>
<td>4) Design quality</td>
<td></td>
</tr>
<tr>
<td>- Navigation structure, search function, protected content, quality of structure, image, presentation style</td>
<td>(Huizingh 2000)</td>
</tr>
<tr>
<td>- Visual appeal</td>
<td></td>
</tr>
<tr>
<td>- Technical adequacy</td>
<td>(Huizingh 2000; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>5) Functionality</td>
<td></td>
</tr>
<tr>
<td>- Search and retrieval issues</td>
<td>(Huizingh 2000; Olsina, Lafuente &amp; Rossi 2001; West 2001a; West 2001b; Xue 2004; Yang et al. 2005; Huang &amp; Shyu 2008)</td>
</tr>
</tbody>
</table>
### Table C.1: Features used to evaluate Website Effectiveness – (continued)

<table>
<thead>
<tr>
<th>Features</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>6) Information quality</td>
<td>(Olsina, Lafuente &amp; Rossi 2001; Smith 2001; West 2001a; Barnes &amp; Vidgen 2003a, 2003b, 2006)</td>
</tr>
<tr>
<td>- Orientation to website: states purpose and mission of website; scope clearly stated; ‘What’s new’ section that frequently alerts users to changes in content and services; provides a liability and status statement warning users of the nature of information provided on the site; copyright statement provided.</td>
<td>(Misic &amp; Johnson 1999; Bauer &amp; Scharl 2000; Huizingh 2000; Olsina, Lafuente &amp; Rossi 2001; Smith 2001; Aladwani &amp; Palvia 2002; Lee et al. 2002; Cheung &amp; Huang 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006; Yang et al. 2005)</td>
</tr>
<tr>
<td>- Content</td>
<td>(Smith 2001; Lee et al. 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006)</td>
</tr>
<tr>
<td>- Currency</td>
<td>(Smith 2001; Lee et al. 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006)</td>
</tr>
<tr>
<td>- Services</td>
<td>(Huizingh 2000; Smith 2001; West 2001a; West 2001b; Aladwani &amp; Palvia 2002; Lee et al. 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006; West 2003; Hong 2007; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>- Accuracy</td>
<td>(Smith 2001; Lee et al. 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006; Yen, Hu &amp; Wang 2007)</td>
</tr>
<tr>
<td>- Privacy</td>
<td>(Smith 2001; West 2001a; West 2001b; Lee et al. 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006; Choudrie, Ghinea &amp; Weerakkody 2004; Parasuraman, Zeithaml &amp; Malhorta 2005; Yang et al. 2005)</td>
</tr>
<tr>
<td>- External recognition: Ways in which the value of the site is recognised by users and the wider Internet community.</td>
<td>(Smith 2001; Lee et al. 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006)</td>
</tr>
<tr>
<td>- Contact information: E-mail, people, phones and mail address.</td>
<td>(Misic &amp; Johnson 1999; Huizingh 2000; Smith 2001; West 2001a; West 2001b; Aladwani &amp; Palvia 2002; Lee et al. 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006; Negash, Ryan &amp; Igbaria 2003; Ho &amp; Ni 2004; Huang et al. 2006; Hong 2007)</td>
</tr>
</tbody>
</table>
Table C.1: Features used to evaluate Website Effectiveness – (continued)

<table>
<thead>
<tr>
<th>Features</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>7) Ease-of-use, interactivity, efficiency and reliability</td>
<td>(Smith 2001; West 2001b; Wolfinbarger &amp; Gilly 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006; Ceri et al. 2007; Loiacono, Watson &amp; Goodhue 2007; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>- Links</td>
<td>(Donthu 2001; Olsina, Lafuente &amp; Rossi 2001; Smith 2001; West 2001a; Wolfinbarger &amp; Gilly 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>- Feedback mechanisms: For users to provide comments, request clarification, and suggest improvements and corrections to the website.</td>
<td>(Donthu 2001; Olsina, Lafuente &amp; Rossi 2001; Smith 2001; West 2001a; Wolfinbarger &amp; Gilly 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>- Responsiveness</td>
<td>(Wolfinbarger &amp; Gilly 2002)</td>
</tr>
<tr>
<td>- Flexibility, processing speed</td>
<td>(Wolfinbarger &amp; Gilly 2002)</td>
</tr>
<tr>
<td>- Website aesthetics</td>
<td>(Donthu 2001; Olsina, Lafuente &amp; Rossi 2001; Wolfinbarger &amp; Gilly 2002; Negash, Ryan &amp; Igbaria 2003; Parasuraman, Zeithamal &amp; Malhotta 2005)</td>
</tr>
<tr>
<td>- Empathy</td>
<td>(Wolfinbarger &amp; Gilly 2002; Parasuraman, Zeithamal &amp; Malhotta 2005)</td>
</tr>
<tr>
<td>- Reliability</td>
<td>(Parasuraman, Zeithamal &amp; Malhotta 2005; Wolfinbarger &amp; Gilly 2002)</td>
</tr>
<tr>
<td>- Assurance</td>
<td>(Parasuraman, Zeithamal &amp; Malhotta 2005)</td>
</tr>
<tr>
<td>Features</td>
<td>Authors</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>- Ease of use</td>
<td>(Yen, Hu &amp; Wang 2005, 2007)</td>
</tr>
<tr>
<td>- System performance</td>
<td>(Olsina, Lafuente &amp; Rossi 2001; West 2001a; Barnes &amp; Vidgen 2006)</td>
</tr>
<tr>
<td>- Global website understandability, online feedback and help features, interface and aesthetic features</td>
<td>(Barnes &amp; Vidgen 2006)</td>
</tr>
<tr>
<td>10) Empathy</td>
<td>(Barnes &amp; Vidgen 2006)</td>
</tr>
<tr>
<td>- Communication with organisation, authentication, online help, notification, quality</td>
<td>(West 2001a; Barnes &amp; Vidgen 2006; Negash, Ryan &amp; Igbaria 2003; Parasuraman, Zeithamal &amp; Malhorta 2005; Loiacono, Watson &amp; Goodhue 2007; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>- Security</td>
<td>(Olsina, Lafuente &amp; Rossi 2001; West 2001a; Barnes &amp; Vidgen 2006)</td>
</tr>
<tr>
<td>- Feedback mechanism</td>
<td>(Parasuraman, Zeithamal &amp; Malhorta 2005; Barnes &amp; Vidgen 2006)</td>
</tr>
<tr>
<td>- Personalisation need</td>
<td>(Parasuraman, Zeithamal &amp; Malhorta 2005; Barnes &amp; Vidgen 2006)</td>
</tr>
</tbody>
</table>
### Table C.2: Findings from Previous Studies of E-Government Website Evaluation

<table>
<thead>
<tr>
<th>Findings</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Websites should provide orientation information, a statement of scope and purpose of the website, and information on the legal status of information on the website, and information on the legal status of information on the website.</td>
<td>(Bauer &amp; Scharl 2000; Olsina, Lafuente &amp; Rossi 2001; Smith 2001; Wolfinbarger &amp; Gilly 2002; Parasuraman, Zeithaml &amp; Malhorta 2005; Yang et al. 2005; Yen, Hu &amp; Wang 2005, 2007; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>2) Designers should be clear about the intended audience, such as lay members of the public, practitioners who have professional knowledge of the organisation’s activities, or members of the organisation’s own staff.</td>
<td></td>
</tr>
<tr>
<td>7) In view of the sensitivity of users’ interactions with government organisations, there should be a statement informing users of the organisation’s policy on the privacy and security of their interactions with the website.</td>
<td>(Bauer &amp; Scharl 2000; Olsina, Lafuente &amp; Rossi 2001; Smith 2001; West 2001a; West 2001b; Wolfinbarger &amp; Gilly 2002; Parasuraman, Zeithaml &amp; Malhorta 2005; Yang et al. 2005; Yen, Hu &amp; Wang 2005, 2007; Hong 2007; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>8) Links to parent organisations and overall government web locator websites should be made.</td>
<td>(Smith 2001; Yen, Hu &amp; Wang 2005, 2007; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>10) Larger websites tend to be more likely to have pages that can only be accessed with a password.</td>
<td>(Smith 2001; Wolfinbarger &amp; Gilly 2002; Negash, Ryan &amp; Igbaria 2003; Yang et al. 2005; Yen, Hu &amp; Wang 2007)</td>
</tr>
<tr>
<td>11) When information on the websites is converted from print publications, attention should be paid to reworking the information for the hypertext environment and to regular updating.</td>
<td>(West 2001a; West 2001b; Wolfinbarger &amp; Gilly 2002; Negash, Ryan &amp; Igbaria 2003; West 2003; Xue 2004; Yang et al. 2005; Hong 2007; Huang &amp; Shyu 2008)</td>
</tr>
</tbody>
</table>
Table C.2: Findings from Previous Studies of E-Government Website Evaluation - (continued)

<table>
<thead>
<tr>
<th>Findings</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>12) Organisations should coordinate their print and web communications so that they complement and refer to each other.</td>
<td>(West 2001a; West 2001b; Xue 2004; Hong 2007; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>13) A text-based option should be available on the main page (for people who are using a browser that does not support graphics or who prefer text-based navigation).</td>
<td></td>
</tr>
<tr>
<td>14) Contact details (electronic and conventional) for the organisation should be easy to find on the website.</td>
<td>(Smith 2001; West 2001a; West 2001b; Wolfinbarger &amp; Gilly 2002; Negash, Ryan &amp; Igbaria 2003; Xue 2004; Yang et al. 2005; Barnes &amp; Vidgen 2006; Hong 2007; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>15) A contact e-mail address for the organisation or at least for the webmasters who maintain the website should be included on the main page as well as the sub-pages.</td>
<td>(Smith 2001; Wolfinbarger &amp; Gilly 2002; Barnes &amp; Vidgen 2003a, 2003b, 2006; Yang et al. 2005)</td>
</tr>
<tr>
<td>16) Update and review dates should be clearly stated on all pages.</td>
<td>(Misin &amp; Johnson 1999; West 2003; Huang et al. 2006)</td>
</tr>
<tr>
<td>17) Metadata should be used effectively.</td>
<td></td>
</tr>
<tr>
<td>18) Names and subject keywords should be presented as text that can be indexed by search engine robots.</td>
<td>(Misin &amp; Johnson 1999; West 2001a; Negash, Ryan &amp; Igbaria 2003; West 2003; Ho &amp; Ni 2004; Huang et al. 2006)</td>
</tr>
<tr>
<td>19) Metadata should not be copied between pages without being edited.</td>
<td>(Smith 2001; West 2001a)</td>
</tr>
<tr>
<td>20) Government website designers should develop policies regarding external links from the website, and make it clear when users are leaving the organisation’s website.</td>
<td>(Smith 2001; West 2001a; West 2001b; Xue 2004; Yen, Hu &amp; Wang 2005, 2007; Hong 2007; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>21) To enhance usability, all pages should not contain more than 15 hyperlinks to other pages.</td>
<td>(Smith 2001; West 2001a; Yen, Hu &amp; Wang 2005, 2007; Huang, et al. 2006; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>22) Designers should take account of guidelines for making pages accessible to users with disabilities, particularly with respect to provision of &lt;alt = &gt; tags for images.</td>
<td>(Smith 2001; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>23) Where search engines are provided, specifically within the website, the database should be kept up-to-date and search syntax information provided for users.</td>
<td>(Misin &amp; Johnson 1999; Bauer &amp; Scharl 2000; Huizingh 2000; Olsina, Lafuente &amp; Rossi 2001; Smith 2001; Wolfinbarger &amp; Gilly 2002; Negash, Ryan &amp; Igbaria 2003; Parasuraman, Zeithaml &amp; Malhorta 2005; Yang et al. 2005; Yen, Hu &amp; Wang 2005, 2007; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>24) There is a strong correlation between the size of a website and whether or not a search function is available.</td>
<td>(Misin &amp; Johnson 1999; Smith 2001; Huang &amp; Shyu 2008)</td>
</tr>
<tr>
<td>26) Enable easy access to good information.</td>
<td></td>
</tr>
</tbody>
</table>
Table C.2: Findings from Previous Studies of E-Government Website Evaluation - (continued)

<table>
<thead>
<tr>
<th>Findings</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>29) Organisations build websites for different purposes.</td>
<td></td>
</tr>
<tr>
<td>30) The structure of an organisation is directly reflected in the website’s content.</td>
<td></td>
</tr>
<tr>
<td>32) Not all industries benefit from the Internet equally.</td>
<td></td>
</tr>
<tr>
<td>33) Website visitors from different countries behave differently.</td>
<td></td>
</tr>
<tr>
<td>34) A user-friendly design with appealing website appearance and visual design; intuitive layout and classification; high level of readability; and simple and easy to use search and easy navigation within the website often via a side frame that appears on all pages of the website.</td>
<td>(Misic &amp; Johnson 1999; Huizingh 2000; Olsina, Lafuente &amp; Rossi 2001; Riel, Liljander &amp; Jurriens 2001; Wolfinbarger &amp; Gilly 2002; Barnes &amp; Vidgen 2003a, 2003b; Parasuraman, Zeithaml &amp; Malhorta 2005; Yen, Hu &amp; Wang 2005, 2007; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>35) There is a strong correlation between the size and the structure of a website.</td>
<td></td>
</tr>
<tr>
<td>36) More complex structures are found in larger websites, while smaller websites have or need less complex structures.</td>
<td></td>
</tr>
<tr>
<td>37) The size of the website is negatively correlated with the perceived quality of the navigation structure.</td>
<td></td>
</tr>
<tr>
<td>38) The larger the website, the less uniform is its presentation style.</td>
<td></td>
</tr>
<tr>
<td>39) Use standardise colours and design throughout website.</td>
<td></td>
</tr>
<tr>
<td>40) Use graphics that enhance the website’s functionality without overdoing it and distracting from the overall design.</td>
<td></td>
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</tbody>
</table>
Table C.2: Findings from Previous Studies of E-Government Website Evaluation - (continued)

<table>
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<tr>
<th>Findings</th>
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</tr>
</thead>
<tbody>
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<td>34) A user-friendly design with appealing website appearance and visual design; intuitive layout and classification; high level of readability; and simple and easy to use search and easy navigation within the website often via a side frame that appears on all pages of the website.</td>
<td>(Misic &amp; Johnson 1999; Huizingh 2000; Olsina, Lafuente &amp; Rossi 2001; Riel, Liljander &amp; Jurriens 2001; Wolfinbarger &amp; Gilly 2002; Barnes &amp; Vidgen 2003a, 2003b; Parasuraman, Zeithaml &amp; Malhorta 2005; Yen, Hu &amp; Wang 2005, 2007; Loiacono, Watson &amp; Goodhue 2007)</td>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>39) Use standardise colours and design throughout website.</td>
<td></td>
</tr>
<tr>
<td>40) Use graphics that enhance the website’s functionality without overdoing it and distracting from the overall design.</td>
<td></td>
</tr>
<tr>
<td>41) The websites provide interactions: (1) between users and the website; and (2) among users.</td>
<td>(Parasuraman, Zeithaml &amp; Malhorta 2005; Yang et al. 2005; Loiacono, Watson &amp; Goodhue 2007)</td>
</tr>
<tr>
<td>42) Users can forward inquiries to the organisations via their websites.</td>
<td></td>
</tr>
<tr>
<td>43) Users can seek guidance, make suggestions, and read the testimonies of other users.</td>
<td></td>
</tr>
<tr>
<td>44) Facilities from the websites may include user chat rooms, message boards, customer reviews, customer ratings, discussion forums, virtual reading communities, wikis, and knowledge-based blogging.</td>
<td></td>
</tr>
<tr>
<td>45) Foreign language translation or English versions of the website.</td>
<td></td>
</tr>
<tr>
<td>46) Website content should be designed in a way so that users can access it from different channels using different web browsers.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix D: Criteria used to assess Website Service Quality

The following is a referenced summary of the criteria that have been used to assess the service quality of websites, as might be applied to government websites:

1) Information and content availability, accuracy, delivery quality and connectivity

These criteria are concerned with the availability, depth, quality, reliability and accuracy of information on a website (Zeithaml, Parasuraman & Malhorta 2002; Barnes & Vidgen 2003a, 2003b; DeLone & McLean 2003; Yang & Fang 2004; Yang et al. 2005; Collier & Bienstock 2006; Eschenfelder & Miller 2007; Huang & Shyu 2008). They relate to how easily users can obtain direct and adequate information from a website, and whether the website offers services such as real-time news, discussion rooms, virtual communities (Eschenfelder & Miller 2007; Huang & Shyu 2008), an online electronic dictionary to check the meaning of specialised terminology, and real-time key currency (Huang & Shyu 2008). To improve connectivity, the search function can be enhanced to enable users to search information by date, subject or country, and can offer search tips and search coverage categorised within this website, within related government sites, or other search engines (Huang & Shyu 2008). The loading time for information should be short; subtopics should appear when the mouse is merely pointed at a topic; information should be accurate and regularly updated; and the last update dates should be indicated, including future and previous update times, so that users can schedule their revisit times to access the latest information (Huang & Shyu 2008).

2) Privacy, security and policy

Privacy involves the protection of personal information, such that the personal information collected from users is not shared with other parties or misuse (Zeithaml 2002; Zeithaml, Parasuraman & Malhorta 2002; Wolfinbarger & Gilly 2003; Long & McMellon 2004; Ribbink et al. 2004; Parasuraman, Zeithaml & Malhorta 2005; Collier & Bienstock 2006). Security involves protecting users from fraud and financial loss when using credit cards or undertaking other financial transactions (Zeithaml 2002; Zeithaml, Parasuraman & Malhorta 2002; Wolfinbarger & Gilly 2003; Yang & Fang 2004) or from third parties obtaining information about users (Ribbink et al. 2004). Security also relates to log in procedures and protections, such as the system automatically logging off users if they do not respond within a specific period of time (Yang & Fang 2004). A website should also provide evidence or certification that demonstrates how secure the website is (Hu et al. 2009). The website should
inform users of its policy regarding document formats (such as PDF, HTML or other types of documents), have a disclaimer statement to protect both users and the provider, and a statement stipulating that users only use the materials on the website for their own purposes and not for illegal purposes (Kelly & Vidgen 2005; Yang et al. 2005). To meet users’ demand for reliable and up-to-date information, the provider needs to establish a formal policy of content development and information selection (Yang et al. 2005).

3) Reliability
Reliability is based on the proper functioning and availability of the website (Zeithaml 2002; Zeithaml, Parasuraman & Malhota 2002; Santos 2003; Long & Mc Mellon 2004; Yang & Fang 2004; Fassnacht & Koese 2006; Hu et al. 2009). It is also includes the accuracy of the services claimed to be provided to users (Zeithaml 2002; DeLone & McLean 2003; Yang & Fang 2004).

4) Accessibility
A website should provide a two-way interaction between the government and users by providing contact details such as mail and street addresses, e-mail addresses and telephone numbers for users to contact customer service agents (Zeithaml, Parasuraman & Malhota 2002; Yang & Fang 2004; Parasuraman, Zeithaml & Malhotra 2005; Hu et al. 2009), and knowledgeable online representatives should be available 24/7 or at least during a wide range of times (Yang et al. 2005; Hu et al. 2009). Websites should also be accessible to disabled users (West 2000), and provide online foreign language translation services (West 2000; Huang & Shyu 2008).

5) Responsiveness and service recovery
Responsiveness relates to the promptness of customer service agents in responding to customer e-mails (Zeithaml, Parasuraman & Malhota 2002; Long & Mc Mellon 2004; Parasuraman 2004; Ribbink et al. 2004; West 2004; Yang & Fang 2004), phone calls, services and confirmation (Long & Mc Mellon 2004; Yang & Fang 2004). The government website must be effective at handling queries and problems (Parasuraman, Zeithaml & Malhotra 2005; Yang et al. 2005). Service recovery relates to the capacity of the website to satisfy user requirements when a failure or problem occurs (Collier & Bienstock 2006).

6) Personalisation or customisation and customer service and support
Personalisation and customisation involves the provision of services and information to users based on their individual needs (Ribbink et al. 2004; Yang et al. 2005; Eschenfelder & Miller 2007), and customer service/support relates to the website’s capacity to offer relevant information and suggestions to users who are not frequent visitors (Yang et al. 2005). In this regard, a website might customise an e-newsletter service categorised by subject or country and offer a subscription to users (Huang & Shyu 2008). The website can also become a platform for users to exchange information pertaining to government services that may extend assistance by disseminating information among users (Eschenfelder & Miller 2007). Customer service agents need to be responsive, helpful and quickly respond to users’ inquiries (Wolfinbarger & Gilly 2003; West 2004).

7) Communication, announcement, marketing and users’ participation
A website needs to provide prompt warning and notification to users of any new services or information available on the website (Santos 2003; Yang & Fang 2004), including announcements on specific topics, hot news, events and seminars (Huang & Shyu 2008). Government agencies need to market or publicise their information and services to the public through both print and electronic media, collaborate with the private sector to include links to government websites on their corporate websites, and adopt other marketing tools or strategies (West 2004). The website can become a platform for users to participate in debate and decision-making to improve government services (Eschenfelder & Miller 2007), and to exchange information through user chat rooms, message boards and user reviews (Yang et al. 2005). Furthermore, the service quality of a government website can be improved by addressing user feedback, gathered through online surveys, e-mails, online communities and bulletin boards (Yang et al. 2005).

8) Website features, organisation and structure
The homepage must display a website map, topic menu and coverage overview (Huang & Shyu 2008). The website must be easy to use (Zeithaml, Parasuraman & Malhorta 2002; Santos 2003; Long & McMellon 2004; Yang & Fang 2004; Yang et al. 2005; Collier & Bienstock 2006) in terms of assisting users to accomplish their tasks (Zeithaml, Parasuraman & Malhorta 2002), the navigation of the website must function well (Wolfinbarger & Gilly 2003; Long & McMellon 2004; Ribbink et al. 2004; West 2004; Yang & Fang 2004; Yang et al. 2005) and the information and services available should be easy to access (Ribbink et al. 2004; Yang et al. 2005). The website should be efficient in terms of the speed of accessing, downloading and using the website (Yang & Fang 2004; Parasuraman, Zeithaml & Malhotra
The graphic style and design must be acceptable in terms of quality and clarity of the colour, layout, font size and type, number of photographs and graphics, and animation (Zeithaml, Parasuraman & Malhota 2002; Santos 2003; Yang et al. 2005; Collier & Bienstock 2006; Fassnacht & Koese 2006; Huang & Shyu 2008). The system of the website needs to be flexible in terms of correct technical functioning and will need to be compatible with certain operation systems so that users have options for accessing the site (Yang & Fang 2004; Parasuraman, Zeithaml & Malhotra 2005). The website should use a standardised web system that links all sites to the gateway, and include a menu, an index, and a search feature on the links; tool bars should be present on all pages, linking all services to one page; design should be consistent throughout the website and across all of the government’s websites (West 2000, 2004); the website should include multilingual facilities (Huang & Shyu 2008); and should be integrated with other agencies to provide information and services (West 2004).
Appendix E: Permission to Conduct Research in Australia

>>> AUSED 17/12/2007 4:33 pm >>>

Hi

Sorry about taking so long to respond to you - this request was only passed to me late last week.

If your doctoral student is still interested in looking at the education sites in her study we would be happy to assist. I am happy to have an initial discussion with her to establish what she needs to do and who she needs to meet with so that we can progress this work to meet her timelines.

I currently work Mondays & Tuesdays in the office.

Regards

Manager
Online & Corporate Communications
Communications Division
Melbourne, Victoria
Australia
Appendix F: Permission to Conduct Research in Malaysia

APPLICATION TO CONDUCT RESEARCH IN MALAYSIA

With reference to your application dated 19 May 2006, I am pleased to inform you that your application to conduct research in Malaysia has been approved by the Research Promotion and Co-Ordination Committee, Economic Planning Unit, Prime Minister’s Department. The details of the approval are as follows:

Researcher’s name: NURDIANA AZIZAN
Passport No. / I.C No.: 760331-14-5266
Nationality: MALAYSIAN
Title of Research: “CRITICAL SUCCESS FACTORS FOR AUSTRALIAN AND MALAYSIAN GOVERNMENT WEBSITES: A COMPARATIVE CASE STUDY”

Period of Research Approved: THREE MONTHS

2. Please collect your Research Pass in person from the Economic Planning Unit, Prime Minister’s Department, Parcel B, Level 4 Block B5, Federal Government Administrative Centre, 62502 Putrajaya and bring along two (2) passport size photographs. You are also required to comply with the rules and regulations stipulated from time to time by the agencies with which you have dealings in the conduct of your research.

Yours sincerely,

For Director General,
Macro Economic Section,
Economic Planning Unit.
Appendix G: Ethics Approval from RMIT University

RMIT PORTFOLIO HUMAN RESEARCH ETHICS SUB-COMMITTEE

Application for Approval of Research Project

SUMMARY & APPROVAL

Project Title: Critical Success Factors for Australian and Malaysian Government Websites: An Comparative Case Study

Name of Researcher: Nurdiana Azizan

Category of Research Project: 2

Degree for which research is undertaken as part of a degree (if applicable): PhD

School Name: School of Business Information Technology & Logistics

Contact Telephone Number: 9925 1469

Email Address: nurdiana.azizan@rmit.edu.au

BUSINESS HUMAN RESEARCH ETHICS SUB COMMITTEE USE ONLY:

Date Application Received: 12 May 2008

Portfolio Human Research Ethics Sub Committee Register No: 697

Period of Approval: 11 August 2008 to 26 February 2011

Comments / Provisos: N/A

The Business Human Research Ethics Sub Committee assessed the Project as Category 2

Signature:__________________________ Date: 11 August 2008

PHRESC Chair
Appendix H: Plain Language Statement

Project Title:
Critical Success Factors for Australian and Malaysian Government Websites: A Comparative Case Study

Investigators:
- Nurdiana Azizan (School of Business Information Technology, PhD student)
- Professor Ross Smith (Senior Supervisor: Professor of Information Systems, School of Business Information Technology, RMIT University, ross.smith@rmit.edu.au, +613-992-55412)
- Dr Vanessa Cooper (Second Supervisor: Lecturer, School of Business Information Technology, RMIT University, vanessa.cooper@rmit.edu.au, +613-992-55786)

Dear Participant

You are invited to participate in a research project being conducted by RMIT University. This information sheet describes the project in straightforward language, or ‘plain English’. Please read this sheet carefully and be confident that you understand its contents before deciding to participate. If you have any questions about the project, please contact one of the investigators.

This research is being conducted by Nurdiana Azizan, a Business Information Systems PhD student enrolled in the School of Business Information Technology & Logistics. The research is supervised by Professor Ross Smith and Dr Vanessa Cooper of the School of Business Information Technology & Logistics, RMIT University. The aim of this research is to identify the critical success factors (CSFs) for knowledge transfer by means of government websites in Australia and Malaysia. Knowledge transfer is a process that includes any exchange of knowledge between or among individuals, teams, groups, or organisations. This aim has been identified as there is little existing research into the comparative study of CSFs for knowledge transfer by means of government websites especially in Australia and Malaysia. This research project has been approved by the RMIT Human Research Ethics Sub-Committee (Ref: Ethics Appl. 697).

You have been approached to participate in this research project because you have been identified as having expertise into the development, operation and maintenance of government websites. Approximately 10-15 staff involved in the management and development of the Ministry’s websites will be invited to participate in this research. The main data collection methods for this research are interview and focus group. An option exists for there to be only note-taking at the interview and focus group. The questions to be asked cover issues related to important factors related to knowledge transfer for government websites. You are invited to participate in an interview and focus group that will take approximately 45-60 minutes and 1-2 hours respectively.

Your responses to the questions will be tape recorded and you have the right to request that taping cease at any time. All information gathered during the course of this research, including your responses will be securely stored for a period of 5 years in the School of Business Information Technology & Logistics (BITL), RMIT University and can only be accessed by the researchers. After
Appendix H

5 years the data will be destroyed. Results published in academic journals and conferences will not include information that can potentially identify either you or your organisation.

There are no foreseeable risks associated with your participation in this research project. Your participation will assist the researcher and the wider information systems community understanding the important factors for knowledge transfer by means of government websites. This information will assist in the production of guidelines that need to be addressed by other government agencies wishing to develop websites. You may elect to receive a summary of the results of the study. In order to receive this summary, you need to provide us with a contact address during the sessions. Addresses collected in such a manner will only be used for disseminating the results and will be destroyed afterwards.

Due to the nature of the data collection process, we are obtaining written informed consent from you. Please read this consent form carefully and be confident that you understand its contents before signing the consent form. If you have any questions about the project please feel free to contact one of the investigators. A copy of the signed consent form will be given to you for your records.

Your participation in this research is voluntary. As a participant, you have the right to withdraw your participation at any time; have any unprocessed data withdrawn and destroyed, provided that it can be reliably identified and provided that so doing does not increase your risk; and have any questions answered at any time. Any information that you provide can be disclosed only if (1) it is to protect you or others from harm, (2) a court order is produced, or (3) you provide the researchers with written permission.

If you have any questions regarding this research, please contact the researcher, Nurdiana Azizan, +613-992-51469, E-mail: nurdiana.azizan@rmit.edu.au or the supervisors listed above.

Thank you for your participation in this research.

Yours Sincerely,

Nurdiana Azizan

Any complaints about your participation in this project may be directed to the Secretary, Portfolio Human Research Ethics Sub Committee, Business Portfolio, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 5594 or email address rdu@rmit.edu.au. Details of the complaints procedure are available from http://www.rmit.edu.au/rd/hrec_complaints
Appendix I: Consent Form

RMIT HUMAN RESEARCH ETHICS COMMITTEE

Prescribed Consent Form for Persons Participating In Research Projects Involving Interviews, Questionnaires, Focus Groups or Disclosure of Personal Information

PORTFOLIO OF SCHOOL/CENTRE OF: Business

Name of Participant: 

Project Title: Critical Success Factors for Australian and Malaysian Government Websites: A Comparative Case Study

Name(s) of Investigators: 

(1) Nurdiana Azizan
(2) Professor Ross Smith
(3) Dr Vanessa Cooper

Phone: +613-992-51469
Phone: +613-992-55412
Phone: +613-992-55786

1. I have received a statement explaining the interview involved in this project.
2. I consent to participate in the above project, the particulars of which - including details of the interviews - have been explained to me.
3. I authorise the investigator or her assistant to interview me.
4. I give my permission to be audio taped: ☐ Yes ☐ No
5. I give my permission for my name or identity to be used: ☐ Yes ☐ No
6. I acknowledge that:
   (a) Having read the Plain Language Statement, I agree to the general purpose, methods and demands of the study.
   (b) I have been informed that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied.
   (c) The project is for the purpose of research and/or teaching. It may not be of direct benefit to me.
   (d) The privacy of the information I provide will be safeguarded. However should information of a private nature need to be disclosed for moral, clinical or legal reasons, I will be given an opportunity to negotiate the terms of this disclosure.
   (e) If I participate in a focus group I understand that whilst all participants will be asked to keep the conversation confidential, the researcher cannot guarantee that other participants will do this.
   (f) The security of the research data is assured during and after completion of the study. The data collected during the study may be published, and a report of the project outcomes will be provided to RMIT University and to the wider academic community. Any information which may be used to identify me will not be used unless I have given my permission (see point 5).

Participant’s Consent

Name: ___________________________ Date: ___________________________

(1) (Participant)

Name: ___________________________ Date: ___________________________

(Witness to signature)

Where participant is under 18 years of age:

I consent to the participation of ___________________________ in the above project.

Signature: (1) ___________________________ (2) ___________________________ Date: ___________________________

(Signatures of parents or guardians)

Name: ___________________________ Date: ___________________________

(Witness to signature)

Any complaints about your participation in this project may be directed to the Chair, Portfolio Human Research Ethics Sub-Committee, Business Portfolio, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 5594 or email address rdu@rmit.edu.au. Details of the complaints procedure are available from: http://www.rmit.edu.au/rd/hrec_complaints
Appendix J: Interview Schedule

1) Profile of interviewee
1.1) What is your position in the organisation?
1.2) How long have you been in your current position?
1.3) What are your job tasks?

2) Government website
2.1) What organisational objectives does the website seek to address?
2.2) What is your opinion of the current performance of the website with respect to the objectives?
2.3) Why do you think this is the case?
2.4) Who are the customers or users of the website?
   a) For what purpose(s) do external users access the website?
   b) For what purpose(s) do internal users access the website?
2.5) Does the website currently operate according to the usage that you have mentioned?
2.6) Why do you think this is the case?
2.7) This research will classify the maturity level of government website using a four stage model, encompassing Informative, Interactive, Transactional, and Integration stages. Please refer to Table 1 below. In your opinion, what is the current maturity level stage of the government website that you operate?
2.8) Why do you think this is the case?

Table 1: Level of e-government maturity

<table>
<thead>
<tr>
<th>Stages</th>
<th>Definition</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1: Informative</td>
<td>Static web page, one-way external communication. Launch Intranet development.</td>
<td>Web page; Online advertising; E-mail; Passive, catalogue-like information; Basic internal administrative processes such as payroll and accounts</td>
</tr>
<tr>
<td>Stage 2: Interactive</td>
<td>Bidirectional communication &amp; simple administrative tasks online. Allows for a starting e-democracy. Full Intranet development.</td>
<td>Forums and FAQs; Files and forms download; Links and search engines; ERP system deployment</td>
</tr>
<tr>
<td>Stage 3: Transactional</td>
<td>Bidirectional communication &amp; added value operations (money or sensitive information). Internal process re-engineering. Launch CRM system. Develop business strategies. Full legacy systems integration.</td>
<td>High security measures; E-vote; E-banking; Debts, taxes and licenses online; Official certificates; E-procurement</td>
</tr>
<tr>
<td>Stage 4: Integrational</td>
<td>Seamless administration &amp; interoperability in the provision of public services. Horizontal &amp; vertical cooperation. Develop communities. Exploitation of CRM systems. KM systems deployment</td>
<td>Intranet and extranet; Integrated IS between organisations; High security measures; Real-time file traceability; Secure information exchange devices</td>
</tr>
</tbody>
</table>
3) Critical Success Factors for Knowledge Transfer via a government website, based on knowledge transfer stages: Initiation, Implementation, Ramp-up and Integration

**Stage 1: Initiation**
3.1) Will you please tell me, in whatever order they come to mind, those things that you see as critical success factors for knowledge transfer by means of government websites in the initiation stage?
3.2) Why do you believe those factors are important?
3.3) What are the mechanisms used to ensure the identified CSFs are achieved?

**Stage 2: Implementation**
3.4) Will you please tell me, in whatever order they come to mind, those things that you see as critical success factors for knowledge transfer by means of government websites in the implementation stage?
3.5) Why do you believe those factors are important?
3.6) What are the mechanisms used to ensure the identified CSFs are achieved?

**Stage 3: Ramp-up**
3.7) Will you please tell me, in whatever order they come to mind, those things that you see as critical success factors for knowledge transfer by means of government websites in the ramp-up stage?
3.8) Why do you believe those factors are important?
3.9) What are the mechanisms used to ensure the identified CSFs are achieved?

**Stage 4: Integration**
3.10) Will you please tell me, in whatever order they come to mind, those things that you see as critical success factors for knowledge transfer by means of government websites in the integration stage?
3.11) Why do you believe those factors are important?
3.12) What are the mechanisms used to ensure the identified CSFs are achieved?

Thank you for your participation in this research.

If you have any questions regarding this research, please contact the researcher, Nurdiana Azizan

(nurdiana.azizan@rmit.edu.au).
Critical Success Factors for Australian and Malaysian Government Websites: A Comparative Case Study

Supervisors: Professor Ross Smith
Dr Vanessa Cooper
RESEARCH PROPOSAL

Project Title: Critical Success Factors for Australian and Malaysian Government Websites: A Comparative Case Study

Researcher: Nurdiana Azizan
Qualifications: Bachelor of Science (Management Information Systems), Clarkson University, Potsdam, New York, USA
Master of Science (Information Management), University Technology Mara, Shah Alam, Malaysia
School: Business Information Technology & Logistics, RMIT University, Building 108, Level 17, Melbourne, Victoria, 3000, Australia
Phone: +613-99251469
Fax: +613- 99255850
Mobile: +613-04-08593086 / +613-04-32251643
E-mail: nurdiana.azizan@rmit.edu.au

Aims and significance of the research:

This research aims to identify the critical success factors (CSFs) for achieving knowledge transfer by means of Australian and Malaysian government websites, from the perspective of the provider. CSFs are the factors which will ensure successful competitive performance for the organisation.

This research may provide an opportunity for the Australian and Malaysian governments to learn from each other’s experiences in e-government, especially operating an effective website. In addition, the output of this research may provide guidelines to governments wishing to develop government websites in the future, with respect to the critical factors to achieve knowledge transfer and issues that must be addressed, and ways of measuring the achievement of these factors. The outcome of the research could encourage other organisations to emulate the success of government websites. The comparison of the outcomes in Australia and Malaysia may also provide theoretical insight into factors which affect success, such as national priorities, culture and infrastructures.

The research questions:

Principal Research Question

How do the Australian and Malaysian government providers use government websites to transfer knowledge to the users of those sites?

Component sub-questions

1) Who are the key stakeholders for government websites in Australia and Malaysia?
2) What are the critical success factors for knowledge transfer for government websites in Australia and Malaysia, as perceived by the providers?
3) What are the mechanisms used to ensure the identified CSFs are achieved?
4) What are the sources of differences, if any, between the identified critical success factors as perceived by the providers, in both countries?

Proposed methodology:

This is an interpretive qualitative study. Interpretive studies generally attempt to understand phenomena through the meanings that people assign to them. This study will identify the critical success factors (CSFs) for knowledge transfer for two government websites, one in Australia and
Appendix K

one in Malaysia, from the perspective of providers followed by a period of critical comparison of the CSFs identified. As such, this research will involve two interpretive case studies, employing the CSF method.

The techniques for data collection within the case studies will include: collection and review of related public documents provided by the case study organisations, one-to-one interviews with providers at each of the sites, and focus group interview at each site. As such, a rich data set will be generated.

Research methods:

Type of research: This is an interpretive qualitative research project involving two case studies. The two sites will be the education based government agencies, one in Australia and one in Malaysia. Both sites will be analysed independently and then a cross-case comparison will be conducted to detect similarities and compare differences.

Data collection: This research will employ the CSF method. The CSF method involves various forms of interview, namely, one-to-one interviews and focus group interviews. These two forms of interview, one-to-one interviews and focus group interview, will be used to collect the data from the Information Communication Technology (ICT) staff in the government agencies in Australia and Malaysia. Please refer to Appendix 1 and 2 for the interview questions.

One-to-one interviews: The participants are asked to discuss the CSFs for knowledge transfer for government websites as they perceive them and measurement indicators of these success factors.

Focus group interview: The same participants who were involved in the one-to-one interviews will participate in the focus group interview to share experiences, clarify and determine a final list of CSFs of knowledge transfer for government websites.

Data analysis: The data will be analysed in two stages. The first stage will be the analysis within each site. The technique of analysis will be content analysis where the data are read and categorised into concepts or factors suggested by the data and by analyses of the extant literature. The data will then be analysed across the two sites in stage two, to detect similarities and compare differences.

Respondents: The respondents for both one-to-one interviews and focus group interviews will be the website management and development team in the government agencies in Australia and Malaysia. The participants will include the directors, managers and advisors of the website team, web content officers, web host management officers, web programming officers, web designers and other officers involved in the management and development of the website.

What participants will be required to do:

In one-to-one interviews, the participants will be required to list the critical success factors for knowledge transfer as they perceive them for the government website and to discuss their rationales for identifying these as critical. They will then be asked to rank the factors in order of most to least important. Participants will then be asked how the success factors are measured, or might be measured. Finally, in the focus group interview, the participants will share from each other’ experiences, clarify and determine which of the listed CSFs might be combined, eliminated, or restated to form a final list of CSFs for knowledge transfer by means of the government website.
Proposed research activities:

- **August – September 2008**: One-to-one interview sessions at the government agency in Malaysia and data analysis.
- **May 2009**: One-to-one interview sessions at the government agency in Australia and data analysis.
- **December 2009**: Focus group interview at the government agencies in Australia and Malaysia and data analysis.
- **January - December 2010**: Cross case analysis, write-up and submission.

Details of Participants:

1) **Number, type, age range, and any special characteristics of participants**

The number of the participants in this research will be a total of 20-30 participants from the website teams of the government agencies in Australia and Malaysia. The participants will include the managers, directors and advisors of the website team, web content officers, web host management officers, web programming officers, web designers and other officers involved in the management and development of the website. Their age range is most likely to be between 20 and 65.

2) **Risk level**

According to the RMIT Human Research Ethics Sub-Committee, this research is classified as minimal risk because of the following reasons:

- The research questions are concerned with the critical success factors of knowledge transfer by means of the government website. The questions asked do not reflect on participants’ personal performance, and will not cause any personal stress or anxiety to participants;
- The data collected will be kept in a secured file cabinet in the School of Business Information Technology & Logistics and the electronic data will be stored on a secure server (the RMIT University network systems where practicable). The data will only be accessed by the researchers;
- There will be one-to-one interaction between investigator and participants during the interviews;
- The interview sessions will be tape recorded with permission of the participants. An option will available for interview note-taking only;
- The participants will be given the schedule of questions to be asked prior to the interview session;
- The participants will be given a consent form to sign as an agreement to participate in this research;
- Participation in the research is entirely voluntary and this will be clearly stated in the plain language statement. Therefore, the participants will be informed that they can withdraw from the research at any point and may ask for their responses to be deleted; and
- The data will be analysed and the results published without including information that can potentially identify the respondents.

3) **Action that will be taken for tape-recorded interviews**

The participants will be notified earlier that the interview will be tape recorded. An option will be presented for interview note-taking only. Also, the participants will be given the list of questions that are going to be asked. A consent form will be given to the participant to sign as an agreement that the
participant is aware that the interview session is tape-recorded. The participants will be informed that they can withdraw from the research at any point and may ask for their responses to be deleted. The participants will not be named or identified in any outcomes of this research. Pseudonyms will be provided in order to maintain anonymity.

**Where will the project be conducted?**

This project will be carried out at RMIT University. Interviews will be conducted at the government agencies in Australia and Malaysia or at any other venue chosen by the interviewees. The data from Australia and Malaysia will be analysed at RMIT University.

**General issues**

**Number of records:** Approximately 20-30 participants

**Type of information:** Qualitative data

**Period of time the information be retained:** The data will be retained for 5 years upon completion of the project after which time paper records will be shredded and placed in a security recycle bin and electronic data will be deleted/destroyed in a secure manner.

**The security arrangements for storage of the information:** All hard data will be kept in a locked filing cabinet and soft data in a password protected computer in the office of the researcher in the School concerned, School of Business Information Technology & Logistics, at RMIT University. Data will be saved on the University Network System where practicable (as the system provides a high level of manageable security and data integrity, can provide secure remote access, and is backed up on a regular basis). Only the researcher will have access to the data.

**The privacy of individuals be respected in any publication:** The data will be published only in an aggregated manner, which will not include information that can potentially identify individuals and the organisations.

**Procedures to manage, monitor and report adverse and/or unforeseen events relating to the collection, use or disclosure of information:** The researcher will strictly follow relevant RMIT ethics standards in conducting research, and will continually stay in touch with her supervisors, Professor Ross Smith and Dr Vanessa Cooper, for their guidance. The researcher, with guidance from her supervisors, will monitor, manage, and report any adverse and/or unforeseen events relating to collection, use or disclosure of information.

In such situations, the participants themselves will also be able to contact the researcher's supervisors, and/or the RMIT Business Human Research Ethics Subcommittee Chair to lodge a question and/or complaint, and seek their advice on how to handle such events.

**Supervisors:**

1) **Senior Supervisor:** Professor Ross Smith  
   School of Business Information Technology & Logistics, RMIT University, Melbourne, Australia  
   E-mail: ross.smith@rmit.edu.au, Phone: +613-99255412

2) **Second Supervisor:** Dr Vanessa Cooper  
   School of Business Information Technology & Logistics, RMIT University, Melbourne, Australia  
   E-mail: vanessa.cooper@rmit.edu.au, Phone: +613-99255786

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One-to-one Interview Questions

Note:
Each of the highlighted terms will be carefully explained and introduced in the opening to each question during the interviews.

1) Profile of interviewee
1.1) What is your position in the organisation?
1.2) How long have you been in the current position?
1.3) What are your job tasks?

2) Government website
2.1) What organisational objectives does the website seek to address?
2.2) What is your opinion of the current performance of the website with respect to the objectives?
2.3) Why do you think this is the case?
2.4) Who are the customers or users of the website?
   a) For what purpose(s) do external users access the website?
   b) For what purpose(s) do internal users access the website?
2.5) Does the website currently operate according to the usage that you have mentioned?
2.6) Why do you think this is the case?
2.7) This research will classify the maturity level of e-government sites using a four stage model, encompassing, Informative, Interactive, Transactional, and Integration stages.
   In your opinion, what is the current stage of the e-government website that you operate?
2.8) Why do you think this is the case?

3) Critical Success Factors for Knowledge Transfer via the e-government website, based on knowledge transfer stages: Initiation, Implementation, Ramp-up and Integration

Stage 1: Initiation
3.1) Will you please tell me, in whatever order they come to mind, those things that you see as critical success factors for knowledge transfer by means of government websites in the initiation stage?
3.2) Why do you believe those factors are important?
3.3) What are the mechanisms used to ensure the identified CSFs are achieved?

Stage 2: Implementation
3.4) Will you please tell me, in whatever order they come to mind, those things that you see as critical success factors for knowledge transfer by means of government websites in the implementation stage?
3.5) Why do you believe those factors are important?
3.6) What are the mechanisms used to ensure the identified CSFs are achieved?

Stage 3: Ramp-up
3.7) Will you please tell me, in whatever order they come to mind, those things that you see as critical success factors for knowledge transfer by means of government websites in the ramp-up stage?
3.8) Why do you believe those factors are important?
3.9) What are the mechanisms used to ensure the identified CSFs are achieved?

Stage 4: Integration
3.10) Will you please tell me, in whatever order they come to mind, those things that you see as critical success factors for knowledge transfer by means of government websites in the integration stage?
3.11) Why do you believe those factors are important?
3.12) What are the mechanisms used to ensure the identified CSFs are achieved?
**Focus Group Interview Questions**

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda items</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 minutes</td>
<td><strong>Introduction</strong> – 5 minutes - Moderator</td>
</tr>
<tr>
<td></td>
<td>- Welcome participants. Introduce Researcher, Moderator, and participants.</td>
</tr>
<tr>
<td></td>
<td>Provide participants with handouts (Consent form, Agenda of Focus Group</td>
</tr>
<tr>
<td></td>
<td>and Topics for discussion in Focus Group).</td>
</tr>
<tr>
<td></td>
<td>- Briefly explain about this research and inform participants about the</td>
</tr>
<tr>
<td></td>
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<td>- Inform participants about general purpose of Focus Group: To confirm the</td>
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<td>CSFs that were derived from previous one-to-one interviews and to determine</td>
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<td>a final list of CSFs for knowledge transfer via Australian government</td>
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<td><strong>Explanation</strong> – 5 minutes – Moderator</td>
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<td>list and definitions and 2) To get opinion regarding shared or similar and</td>
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<td>differences of CSFs for Australia cf. Malaysia.</td>
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<td>25 minutes</td>
<td><strong>Topic 1</strong> - To discuss/confirm CSFs list and definitions</td>
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<td>25 minutes</td>
<td><strong>Topic 2</strong> - To seek opinion regarding shared or similar and differences of</td>
</tr>
<tr>
<td></td>
<td>CSFs (Australia cf. Malaysia)</td>
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Appendix L: Pre-Interview Preparation Schedule

Critical Success Factors for Knowledge Transfer via Government Websites

Constructing an Initial List of Critical Success Factors

The aim of the following questions is to prepare an initial list of Critical Success Factors (CSFs) for knowledge transfer via government websites. The questions will be based on four stages of knowledge transfer.

Please complete all questions, in English or Malay, and return your response via e-mail to the researcher (nurdiana.azizan@rmit.edu.au) two days prior to your scheduled one-to-one CSF interview. Please do not hesitate to contact the researcher at any stage during this process.

Critical Success Factors for Knowledge Transfer via Government Websites

Critical Success Factors (CSFs) are “the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation” (Rockart 1979, p.85). This research will identify the key factors that are important to the organisation to transfer knowledge to the users via the websites.

Knowledge transfer is a process that includes any exchange of knowledge between or among individuals, teams, groups or organisations (King 2006). The process of knowledge transfer involves four stages, namely initiation, implementation, ramp-up and integration (Szulanski 1996). This research will identify the CSFs for each of these stages.

This questionnaire booklet has four questions only. Please answer all questions, in English or Malay - use as much space as you need.

Thank you for your participation in this research.
Stage 1: Initiation
1) The initiation stage consists of all events that lead to the decision to transfer knowledge. The stage begins when the recipient has recognised a need for knowledge and starts a search for knowledge to fulfil that need. For example, audit forms are available on the public website for teachers to evaluate the curriculum of a particular program (Sebagai contoh, borang audit boleh didapati melalui laman web utama untuk guru menilai kurikulum sesuatu program di sekolah). Once the need for that information is identified, the feasibility of transferring that knowledge is explored.

In your experience as an IT practitioner, what do you consider the CSFs are, for the knowledge to transfer, from the Department to the users via the websites during the initiation stage?

Stage 2: Implementation
2) The implementation stage begins with the decision to proceed. During this stage, the knowledge resources flow between the source and the recipient. Social ties between the recipient and the source are established. For example, the audit form is downloaded from the public website (Sebagai contoh, borang audit dimuat turun daripada laman web utama). The implementation related activities come to an end after the recipient begins using the transferred knowledge.

In your experience as an IT practitioner, what do you consider the CSFs are, for the knowledge to transfer, from the Department to the users via the websites during the implementation stage?
Stage 3: Ramp-up

3) The ramp-up stage begins when the recipient starts using the received knowledge. During this stage, the recipient will be concerned with identifying and resolving unexpected problems that arise while using the new knowledge. For example, teachers are using the audit form to evaluate the current curriculum of a particular program for future curriculum planning (*Sebagai contoh, guru menggunakan borang audit tersebut untuk menilai kurikulum terkini bagi merancang kurikulum yang seterusnya*).

In your experience as an IT practitioner, what do you consider the CSFs are, for the knowledge to transfer, from the Department to the users via the websites during the ramp-up stage?

Stage 4: Integration

4) The integration stage begins after the recipient achieves satisfactory results with the transferred knowledge. The use of the transferred knowledge becomes routinised. Integration is complete when old knowledge is replaced by the new knowledge or practices. For example, teachers continue to refer to the public website for other needs (*Sebagai contoh, guru menggunakan laman web utama untuk keperluan yang lain*).

In your experience as an IT practitioner, what do you consider the CSFs are, for the knowledge to transfer, from the Department to the users via the websites during the integration stage?

Thank you for taking the time to complete these questions. Please return to the researcher, two days prior to your scheduled one-to-one CSF Interview with Nurdiana Azizan

(nurdiana.azizan@rmit.edu.au)
Appendix M: Excerpt of Note-taking during the Interview with Officer PM3

1. It affects
2. Station
3. Maintenance, monitoring, maintenance, monitoring, publication ICT-based schools, phased out recently

2) Website KM completes machine learning as a human and then sends it to KM.
   - Website BPK completes machine learning in the form of problems:
     - Cannot act as an idicator
     - Current performance: website help with teaching

   - Project name: 70-80% objective, machine learning machine might lose 75% of data with computer

   - Program internal guide is not just forum, but also:
     - Teacher training, guidance, content
     - Program external is not just forum, but also registration

Maturity: into stage 2 interactive -> by forum
Future plan: for accessible and mobile users
   - Plugins with accessibility for blind, easy to be used
   - Need more audio files, visual, accessible

CSF:
1. Equipment of schools: infrastructure ICT
2. Computer bi-privacy, data
   KPI: bug and follow-up, data privacy

3. Knowledge: build-in house, external
   KPI: knowledge base, if you build-in-house, base
Appendix N: Excerpt of Notes sent to Officer PM3 for Checking

OFFICER PM3

MASED

9th September 2008, Monday

Special Education Division (BPK)

Researcher: What is your position in the organisation?

Officer 3: I am working as an IT officer.

Researcher: How long have you been in your current position?

Officer 3: About 5 years.

Researcher: What are your job tasks?

Officer 3: My job tasks include planning, coordinating, managing, and distributing ICT equipment to 32 special schools in Malaysia.

Researcher: What organisational objectives does the website seek to address?

Officer 3: For the MASED website, it is mainly to disseminate general information to the public in terms of the Divisions that we have in the Ministry. As for Special Education Division (BPK) website, it is more to disseminate detailed information regarding the activities in our Division.

Researcher: What is your opinion of the current performance of the website with respect to the objectives?

Officer 3: Current performance of BPK website has already reached 70-80% of the objectives of disseminating information. We know this from the poll that we did on our website.

Researcher: Who are the customers or users of the website?

Officer 3: Internal users are the teachers. They use the forum to ask how to teach certain subjects, teaching technique for certain situations since our students are special students. Other teachers will share their experience with forum members. External users are parents. They are also involved in the forum. They will ask how to register their kids into a special school.

Researcher: Based on the levels of e-government maturity, in your opinion, what is the current stage of the e-government website that you operate?

Officer 3: We are on Stage 2: Interactive. We really make full use of the forum. Our future plan is to enhance our website to become more user friendly for disabled users. Current situation - our website has features for the blind, for example the font is big. We would like to enhance the features for other disabled users.
Appendix O

Appendix O: Excerpt of One Example of Transcription in Malay

OFFICER PM1

MASED

4 September 2008, Thursday

Bahagian Seni, Sukan & Kokurikulum (BSSK)

Researcher: Apa jawatan Cik di sini?

Officer 1: Saya di sini sebagai Penolong Pengarah, Unit Teknologi Maklumat dan Komunikasi.

Researcher: Sudah berapa lama kerja di sini?

Officer 1: Sejak dari Januari 2004.

Researcher: Apakah tugas-tugas Cik di sini?


Researcher: Banyaknya kerja, berapa orang tenaga kerja?

Appendix P: Excerpt of One Example of Translation in English

OFFICER PM1

Researcher: What is your position in the organisation?

Officer 1: My position here as an Assistant Director, Unit of ICT.

Researcher: How long have you been in the current position?

Officer 1: Since January 2004.

Researcher: What are your job tasks?

Officer 1: Our tasks here include everything about computers. We cover technical, system development, website and Teaching & Learning (P&P). We also have a role in P&P. Technical includes procurement, disposal, replacement, and maintenance. For these four tasks, for this unit, we cover by ourselves. We are the ones who do the procurement. We apply for an approval for that but not the disposal. For disposal we just coordinate the process. Meaning that we identify the assets that need to be disposed and to be replaced. Then we apply for disposal from the Asset Unit. This unit is the one that manages assets for disposal. These are the technical tasks in this Division. Our Division manages four schools. For these schools, we coordinate, manage procurement and maintenance. If the schools would like to purchase computers, the schools need to apply through our Division. We will process the application, compile all the paperwork and forward the application to our management for approval. Then only we forward the application to the Department of ICT Guideline (JPICT). We play the role as the secretariat. These four schools are under our Division including appointment and procurement of ICT. For example, maintenance, last year ICT Division has offered the central contract. ICT Division straight to the school and appoint companies to do the maintenance. Our task is to coordinate the activities and check the schools. We are involved in all the go to visit the schools to identify any problems. We become the middle person to the meetings.

Researcher: How large is the manpower?

Officer 1: There is only 2 of us here that are involved in ICT matters in this Division. Early this year somewhere in April, a new computer technician has joined us. But then, his job task is just to maintain the computers here. We have our own website. We also have a special website that is called Football League Website for this Division, I admit, it is not that updated due to lack of manpower. Only two of us to do everything, which is why the information on our Division’s website is not regularly update. Our website is small and not that happening. Last week, I prepared a working paper for application to upgrade the website. I would like to add more features to it.
Appendix Q: Focus Group Agenda - AUSED

AUSED Focus Group Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda items</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 minutes</td>
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</tr>
<tr>
<td></td>
<td>▪ Welcome participants. Introduce Researcher, Moderator, and Respondents. Provide participants with handouts (Consent form, Agenda of Focus Group and Topics for discussion in the Focus Group).</td>
</tr>
<tr>
<td></td>
<td>▪ Briefly explain this research and inform participants about the current stage of research.</td>
</tr>
<tr>
<td></td>
<td>▪ Inform participants about the general purpose of the Focus Group: To confirm the CSFs that were derived from previous one-to-one interviews and to determine a final list of CSFs for knowledge transfer via the Australian government website.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation</strong> – 5 minutes – Moderator</td>
</tr>
<tr>
<td></td>
<td>▪ Explain the format of Focus Group</td>
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<td>▪ Go through the agenda: There are 2 topics to discuss – 1) To confirm CSFs list and definitions and 2) To get opinion regarding shared or similar and differences of CSFs for Australia cf. Malaysia.</td>
</tr>
<tr>
<td>25 minutes</td>
<td><strong>Topic 1</strong> - To discuss/confirm CSFs list and definitions - Refer to Appendix A</td>
</tr>
<tr>
<td>25 minutes</td>
<td><strong>Topic 2</strong> - To seek opinions regarding shared or similar and differences of CSFs (Australia cf. Malaysia) - Refer to Appendix B</td>
</tr>
</tbody>
</table>

**Thank you and wrap-up**

Refreshment

Total: 60 minutes (1 hour)
Appendix A

Topic 1 - To confirm CSFs list and definitions

Based on previous one-to-one interviews, there are 10 Critical Success Factors (CSFs) for Knowledge Transfer via the Australian government website mentioned by respondents. The CSFs have been categorised into 6 themes, namely: management role; user focus; employee focus; content focus; technology focus; and organisational culture.

Question
1) What is your opinion about the CSFs list (eg. completeness, definitions, ..)?
   - Are there any factors that might be combined, eliminated or restated?
   - What is your opinion of the definitions of each factor?
   - Are there any definitions that should be restated?
   - Why are there no CSFs raised relevant to the themes - management role, employee focus or organisational structure?

Critical Success Factors (CSFs) - AUSED

Theme 1: Management role

This area was not raised by respondents

Theme 2: User focus

AUS_CSF 1 – Awareness and notification
Definition: Promotion of the site and proactive communication should be undertaken to raise awareness and to inform current and potential external users of the site regarding its content, functionality, modifications and new developments.

AUS_CSF 2 – Usability: Functionality and navigation
Definition: The website should be developed to provide users with easy to use functionality that will support them with clear and unambiguous advice concerning their current location and navigation path options. Different categories of users should be supported when locating and retrieving required knowledge efficiently and effectively.

AUS_CSF 3 – User focus: Understand needs of recipient
Definition: The website should provide relevant knowledge to users in such a way that the content is easy to understand, and it is written in simple and meaningful language chosen with the recipient in mind.

AUS_CSF 4 – Presentation of knowledge
Definition: Website content should be presented with the recipient in mind. The content format should be concise, attractive, informative and available in multiple formats that take advantage of the variety of available presentation options, including colour, font and the opportunity to include multimedia. The formats need also to consider the size of the document.

AUS_CSF 8 – User positive experience
**Definition:** The website should be viewed as a positive experience by users, by providing knowledge according to users’ requirements.

**Theme 3: Employee focus**

*This area was not raised by respondents*

**Theme 4: Content focus**

**AUS_CSF 5 - Content**  
**Definition:** The website should contain content that is regularly updated, accurate, meets user requirements and includes advice on update times so that users can schedule their revisit times.

**Theme 5: Technology focus**

**AUS_CSF 6 – Accessibility**  
**Definition:** The website should be available, whenever it is needed, and provide alternative ways for users to access knowledge that is fast and easy for users to download.

**AUS_CSF 7 - ICT infrastructure: Awareness of users’ technology availability**  
**Definition:** Users’ technology availability must be considered in order to decide how to prepare the content and present knowledge.

**AUS_CSF 9 - Knowledge storage and retrieval: Architecture**  
**Definition:** Guidelines should exist that authors should follow when preparing content and procedures to ensure compliance. The guidelines include site maps that specify locations for the storage of knowledge.

**AUS_CSF 10 - Search engine**  
**Definition:** The website should provide users with efficient and effective search functionality, including search engine capabilities.

**Theme 6: Organisational culture**

*This area was not raised by respondents*
Topic 2 - To seek opinions regarding shared or similar and differences of CSFs (Australia cf. Malaysia)

The following is the CSFs list extracted from interviews with respondents from Malaysia. The shared or similar and differences of CSFs are presented in Table 1 and shown graphically in Figure 1.

**Question**

1) What is your opinion about shared or similar CSFs between Australia and Malaysia?

2) Why might the following CSFs have been raised only by Australian respondents?
   i) AUS_CSF 7 – ICT infrastructure: Awareness of users’ technology availability
   ii) AUS_CSF 8 – User positive experience
   iii) AUS_CSF 9 - Knowledge storage and retrieval: Architecture
   iv) AUS_CSF 10 - Search engine

3) Why might the following CSFs have been raised only by Malaysian respondents?
   i) MAS_CSF 7 - ICT infrastructure: Availability and functionality
   ii) MAS_CSF 8 – Leadership
   iii) MAS_CSF 9 – User ICT literacy: Awareness
   iv) MAS_CSF 10 – Education, training and knowledge sharing
   v) MAS_CSF 11 – Employee focus
   vi) MAS_CSF 12 – Interactive platform
   vii) MAS_CSF 13 – Attitude and change management
   viii) MAS_CSF 14 – Security

**Critical Success Factors (CSFs) - MASED**

**Theme 1: Management role**

**MAS_CSF 8 – Leadership**

**Definition:** Management should proactively persuade and encourage usage of the website by supporting, explaining and creating awareness of the online services to users, especially government employees. This should be supported by documented policy, rules and regulations.

**Theme 2: User focus**

**MAS_CSF 1 – Awareness and notification**

**Definition:** Promotion of the site and proactive communication should be undertaken to raise awareness and to inform external users of the site, of its content, functionality, modifications and/or new developments affecting website operation and/or content.

**MAS_CSF 2 – Usability: Functionality and navigation**
**Definition:** The website should contain hypertext links that connect users to the intended knowledge efficiently and effectively. The links should be meaningful and easy for users to operate to access knowledge.

**MAS_CSF 3 - User focus: Understand needs of recipient**

**Definition:** The website content should be prepared with the recipient in mind, including the choice of meaningful and simple language. The content should be relevant to users and easy to understand.

**MAS_CSF 4 – Presentation of knowledge**

**Definition:** The website content should be presented in a format that takes advantage of the variety of available presentation options including colour, font and the opportunity to include multimedia.

**MAS_CSF 9 – User ICT literacy: Awareness**

**Definition:** Developers must be aware of users’ different levels of ICT literacy in order to prepare the content and to present knowledge.

**MAS_CSF 10 – Education, training and knowledge sharing**

**Definition:** Additional support such as education and training should be provided to users to assist them retrieving and applying knowledge. Support management can be provided via face-to-face sessions, telephone, e-mail or other channels. Instruction manuals can also be provided on the website. Users should be encouraged to share the knowledge that they have learned from the training session.

**Theme 3: Employee focus**

**MAS_CSF 11 – Employee focus**

**Definition:** Management should understand the processes involved in administering the website. This should address staffing levels, awareness and understanding of users’ job tasks.

**Theme 4: Content focus**

**MAS_CSF 5 – Content**

**Definition:** The website should contain content that is accurate, relevant, regularly updated and which meets user requirements. The content should include the name of the content author and their division. It should also contain advice on update schedules so that users can organise their revisit times.

**Theme 5: Technology focus**

**MAS_CSF 6 – Accessibility**

**Definition:** The website should be developed and designed to provide users with easy and fast access to downloadable knowledge.

**MAS_CSF 7 - ICT infrastructure: Availability and functionality**

**Definition:** Basic ICT infrastructure should be available to users. It should function properly and respond quickly to support users to access and use the knowledge.

**MAS_CSF 12 – Interactive platform**
**Definition:** The website should be developed to provide users with a platform that can enable users to actively interact with the department, by giving opinions and suggestions for improvement.

**Theme 6: Organisational culture**

**MAS_CSF 13 – Attitude and change management**

**Definition:** The website should be developed for the purpose of dissemination of government information and services to users. Therefore, the whole organisation should be keen to learn and adopt the new work practices and new ways of processing and performing tasks.

**MAS_CSF 14 – Security**

**Definition:** The website should provide users with a secure environment that makes users feel confident to use the website.

**Table 1**

<table>
<thead>
<tr>
<th>Malaysia – MASED only</th>
<th>Shared or similar CSFs</th>
<th>Australia – AUSED only</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) MAS_CSF 7 – ICT infrastructure: Availability and functionality</td>
<td>1) MAS &amp; AUS_CSF 1 – Awareness and notification</td>
<td>1) AUS_CSF 7 – ICT infrastructure: Awareness of users’ technology availability</td>
</tr>
<tr>
<td>2) MAS_CSF 8 – Leadership</td>
<td>2) MAS &amp; AUS_CSF 2 – Usability: Functionality and navigation</td>
<td>2) AUS_CSF 8 – User positive experience</td>
</tr>
<tr>
<td>4) MAS_CSF 10 – Education, training and knowledge sharing</td>
<td>4) MAS &amp; AUS_CSF 4 – Presentation of knowledge</td>
<td>4) AUS_CSF 10 - Search engine</td>
</tr>
<tr>
<td>5) MAS_CSF 11 – Employee focus</td>
<td>5) MAS &amp; AUS_CSF 5 – Content</td>
<td></td>
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<tr>
<td>6) MAS_CSF 12 – Interactive platform</td>
<td>6) MAS &amp; AUS_CSF 6 – Accessibility</td>
<td></td>
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<tr>
<td>7) MAS_CSF 13 – Attitude and change management</td>
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<td></td>
</tr>
<tr>
<td>8) MAS_CSF 14 – Security</td>
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Appendix Q

Figure 1

MAS_CSF 7
MAS_CSF 8
MAS_CSF 9
MAS_CSF 10
MAS_CSF 11
MAS_CSF 12
MAS_CSF 13
MAS_CSF 14

AUS_CSF 7
AUS_CSF 8
AUS_CSF 9
AUS_CSF 10
Appendix R: Focus Group Agenda - MASED

MASED Focus Group Agenda

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</tr>
</tbody>
</table>

**Thank you and wrap-up**

**Refreshment**

Total: 60 minutes (1 hour)
Appendix R

Appendix A

Topic 1 - To confirm CSFs list and definitions

Based on previous one-to-one interviews, there are 14 Critical Success Factors (CSFs) for Knowledge Transfer via Malaysian government website mentioned by respondents. The CSFs have been categorised into 6 themes, namely: management role; user focus; employee focus; content focus; technology focus; and organisational culture.

Question

1) What is your opinion about the CSFs list (eg. completeness, definitions, ..)?
   - Are there any factors that might be combined, eliminated or restated?
   - What is your opinion of the definitions of each factor?
   - Are there any definition that should be restated?

Critical Success Factors (CSFs) - MASED

Theme 1: Management role

MAS_CSF 8 – Leadership
Definition: Management should proactively persuade and encourage usage of the website by supporting, explaining and creating awareness of the online services to users, especially government employees. This should be supported by documented policy, rules and regulations.

Theme 2: User focus

MAS_CSF 1 – Awareness and notification
Definition: Promotion of the site and proactive communication should be undertaken to raise awareness and to inform external users of the site, of its content, functionality, modifications and/or new developments affecting website operation and/or content.

MAS_CSF 2 – Usability: Functionality and navigation
Definition: The website should contain hypertext links that connect users to the intended knowledge efficiently and effectively. The links should be meaningful and easy for users to operate to access knowledge.

MAS_CSF 3 - User focus: Understand needs of recipient
Definition: The website content should be prepared with the recipient in mind, including the choice of meaningful and simple language. The content should be relevant to users and easy to understand.

MAS_CSF 4 – Presentation of knowledge
Definition: The website content should be presented in a format that takes advantage of the variety of available presentation options including colour, font and the opportunity to include multimedia.

MAS_CSF 9 – User ICT literacy: Awareness
Definition: Developers must be aware of users’ different level of ICT literacy in order to prepare the content and to present knowledge.
Appendix R

MAS_CSF 10 – Education, training and knowledge sharing
Definition: Additional support such as education and training should be provided to users to assist them retrieving and applying knowledge. Support management can be provided via face-to-face sessions, telephone, e-mail or other channels. Instruction manuals can also be provided on the website. Users should be encouraged to share the knowledge that they have learned from the training session.

Theme 3: Employee focus

MAS_CSF 11 – Employee focus
Definition: Management should understand the processes involved in administering the website. This should address staffing levels, awareness and understanding of users’ job tasks.

Theme 4: Content focus

MAS_CSF 12 – Content
Definition: The website should contain content that is accurate, relevant, regularly updated and which meets user requirements. The content should include the name of the content author and their division. It should also contain advice on update schedules so that users can organise their revisit times.

Theme 5: Technology focus

MAS_CSF 6 – Accessibility
Definition: The website should be developed and designed to provide users with easy and fast access to downloadable knowledge.

MAS_CSF 7 - ICT infrastructure: Availability and functionality
Definition: Basic ICT infrastructure should be available to users. It should function properly and respond quickly to support users to access and use the knowledge.

MAS_CSF 12 – Interactive platform
Definition: The website should be developed to provide users with a platform that can enable users to actively interact with the department, by giving opinion and suggestions for improvement.

Theme 6: Organisational culture

MAS_CSF 13 – Attitude and change management
Definition: The website should be developed for the purpose of dissemination of government information and services to users. Therefore, the whole organisation should be keen to learn and adopt the new work practices and new ways of processing and performing tasks.

MAS_CSF 14 – Security
Definition: The website should provide users with a secure environment that makes users feel confident to use the website.
Appendix B

Topic 2 - To seek opinion regarding shared or similar and differences of CSFs (Malaysia cf. Australia)

The following is the CSFs list extracted from interviews with respondents from Australia. The shared or similar and differences of CSFs are presented in Table 1 and shown graphically in Figure 1.

**Question**
1) What is your opinion about shared or similar CSFs between Malaysia and Australia?

2) Why might the following CSFs have been raised only by Malaysian respondents?
   i) MAS_CSF 7 - ICT infrastructure: Availability and functionality
   ii) MAS_CSF 8 – Leadership
   iii) MAS_CSF 9 – User ICT literacy: Awareness
   iv) MAS_CSF 10 – Education, training and knowledge sharing
   v) MAS_CSF 11 – Employee focus
   vi) MAS_CSF 12 – Interactive platform
   vii) MAS_CSF 13 – Attitude and change management
   viii) MAS_CSF 14 – Security

3) Why might the following CSFs have been raised only by Australian respondents?
   i) AUS_CSF 7 – ICT infrastructure: Awareness of users’ technology availability
   ii) AUS_CSF 8 – User positive experience
   iii) AUS_CSF 9 - Knowledge storage and retrieval: Architecture
   iv) AUS_CSF 10 - Search engine

**Critical Success Factors (CSFs) - AUSED**

**Theme 1: Management role**

*This area was not raised by respondents*

**Theme 2: User focus**

**AUS_CSF 1 – Awareness and notification**
**Definition:** Promotion of the site and proactive communication should be undertaken to raise awareness and to inform current and potential external users of the site regarding its content, functionality, modifications and new developments.

**AUS_CSF 2 – Usability: Functionality and navigation**
**Definition:** The website should be developed to provide users with easy to use functionality that will support them with clear and unambiguous advice concerning their current location and navigation path options. Different categories of users should be supported when locating and retrieving required knowledge efficiently and effectively.

**AUS_CSF 3 – User focus: Understand needs of recipient**
Definition: The website should provide relevant knowledge to users in such a way that the content is easy to understand, and it is written in simple and meaningful language chosen with the recipient in mind.

**AUS_CSF 4 – Presentation of knowledge**

**Definition:** Website content should be presented with the recipient in mind. The content format should be concise, attractive, informative and available in multiple formats that take advantage of the variety of available presentation options, including colour, font and the opportunity to include multimedia. The formats need also to consider the size of the document.

**AUS_CSF 8 – User positive experience**

**Definition:** The website should be viewed as a positive experience by users, by providing knowledge according to users’ requirements.

**Theme 3: Employee focus**

*This area was not raised by respondents*

**Theme 4: Content focus**

**AUS_CSF 5 - Content**

**Definition:** The website should contain content that is regularly updated, accurate, meets user requirements and includes advice on update times so that users can schedule their revisit times.

**Theme 5: Technology focus**

**AUS_CSF 6 – Accessibility**

**Definition:** The website should be available, whenever it is needed, and provide alternative ways for users to access knowledge that is fast and easy for users to download.

**AUS_CSF 7 - ICT infrastructure: Awareness of users’ technology availability**

**Definition:** Users’ technology availability must be considered in order to decide how to prepare the content and present knowledge.

**AUS_CSF 9 - Knowledge storage and retrieval: Architecture**

**Definition:** Guidelines should exist that authors should follow when preparing content and procedures to ensure compliance. The guidelines include site maps that specify locations for the storage of knowledge.

**AUS_CSF 10 - Search engine**

**Definition:** The website should provide users with efficient and effective search functionality, including search engine capabilities.

**Theme 6: Organisational culture**

*This area was not raised by respondents*
### Table 1

<table>
<thead>
<tr>
<th>Malaysia – MASED only</th>
<th>Shared or similar CSFs</th>
<th>Australia – AUSED only</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) MAS_CSF 7 – ICT infrastructure: Availability and functionality</td>
<td>1) MAS &amp; AUS_CSF 1 – Awareness and notification</td>
<td>1) AUS_CSF 7 – ICT infrastructure: Awareness of users’ technology availability</td>
</tr>
<tr>
<td>2) MAS_CSF 8 – Leadership</td>
<td>2) MAS &amp; AUS_CSF 2 – Usability: Functionality and navigation</td>
<td>2) AUS_CSF 8 – User positive experience</td>
</tr>
<tr>
<td>4) MAS_CSF 10 – Education, Training and knowledge sharing</td>
<td>4) MAS &amp; AUS_CSF 4 – Presentation of knowledge</td>
<td>4) AUS_CSF 10 - Search engine</td>
</tr>
<tr>
<td>5) MAS_CSF 11 – Employee focus</td>
<td>5) MAS &amp; AUS_CSF 5 – Content</td>
<td></td>
</tr>
<tr>
<td>6) MAS_CSF 12 – Interactive platform</td>
<td>6) MAS &amp; AUS_CSF 6 – Accessibility</td>
<td></td>
</tr>
<tr>
<td>7) MAS_CSF 13 – Attitude and change management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) MAS_CSF 14 – Security</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix S: Excerpt of Malay Transcription of Focus Group at MASED

PM12 - Chief Assistant Director ICT: Pasal notification ni kita ada guna RSS atau makluman secara e-mail supaya melayari satu-satu maklumat menerusi link yang diberi. Boleh tambah kat definition or masa you tulis pasal factor ni. Should add another factor under user focus that is collaboration. Collaboration effort antara agensi-agensi kerajaan sebagai saluran pemberitahuan selain dari website sendiri. Maklumat dari satu agensi turut diwar - warkan dalam website agensi lain sebagai satu saluran pemberitahuan. Sebagai contoh, saya terima permohonan dari agensi-agensi lain untuk menyediakan link berhubung satu-satu maklumat yang hendak disampaikan selalunya yang ada kaitan dengan pendidikan. Faktor security, I think should include in technology focus.

Regarding leadership, it should come from the government itself through campaign, training and others. Maybe with the help of educational institutions too. I think by identifying types of users the usage of the website can be prepared towards each user. Different approaches for different user to increase awareness. I think before government endorse any policies, rules or regulations, government should improve the facilities or infrastructure. Make sure website and internet connection accessible in most government offices or any hotspot for free. Provide desktop or laptop kat immigration or kaunter JPJ untuk public guna and appoint staff untuk ajar and monitor public untuk menggunakan khidmat tersebut. Highly trained staff, not only low level staff but management level too. And the most important thing is to keep track of progress against target and take action on slippage.

I agree regarding the accessibility. User ambil masa lama untuk mencari di mana letaknya information di website. Mereka kena cari. Sepatutnya maklumat-maklumat tersebut diletakkan di tempat yang mudah untuk dicari.

Appendix T: Excerpt of English Translation of Focus Group at MASED

PM12 - Chief Assistant Director ICT: Regarding notification we are using RSS or notification through e-mail so that the user can browse the information through the given link. You can add to the definition about this or when you write about this factor. Should add another factor under user focus - that is collaboration. Collaboration effort between government agencies is a way of notification other than own website. Information from one agency also being advertised in another agency’s website as a way of notification. For example, I received application from other agencies to provide a link regarding a certain kind of information that is usually related to education. In terms of security factor, I think it should be included in technology focus.

Regarding leadership, it should come from the government itself through campaign, training and others. Maybe with the help of educational institutions too. I think by identifying types of users the usage of the website can be prepared towards each user. Different approaches for different user to increase awareness. I think before government endorses any policies, rules or regulations, government should improve the facilities or infrastructure. Make sure website and internet connection accessible in most government offices or any hotspot for free. Provide desktop or laptop at the immigration or JPJ counter for public use and appoint staff to teach and monitor public while using those facilities. Highly trained staff, not only low level staff but management level too. And the most important thing is to keep track of progress against target and take action on slippage.

I agree regarding the accessibility. Users take a longer time to search the information on the website. They have to search. The information should be located at the place where user can easily find.

In my opinion these 4 CSFs were not mentioned by us because of culture. Our culture on using the ICT to search information still lacking. Maybe because of our education system is more towards examination. Search engine only be used to search certain things only. Moreover, the ICT infrastructure in the school is not that good that is way in my opinion the usage of search engine is less. For storage usage, I think maybe the usage is more towards Google. Maybe we are still thinking that our data should be shared with others. For me all of these relate to culture. Maybe our culture of using the internet is still way behind. Nevertheless, we have to admit that it is progressing.
Appendix U: Agenda for the CSF Introductory Workshops

Requirements from the Department:

a) Recommendation for the names of officers to participate in this research - approximately 15-20 respondents. The respondents should include the directors, managers, advisors of the website team, web content officers, web host management officers, web programming officers, web designers and other officers involved in the management and development of the website.

b) Suggestions for the areas of the site that the researcher should examine. This will guide the researcher as to the information and services available on the department’s website.

c) Advice on the objective the department has set for the website - for example, is it seen as a service based website, a knowledge based website, ….?

d) Suggestions for key documents that are used by the department for the management and development of the website. These documents will assist the researcher to understand the policies and guidelines that have been used by the department to manage and develop the website.
Appendix V: Qualitative Data Analysis Processes

This section provides an overview of the data analysis processes employed in this research. Notes are presented outlining the analysis as conducted for: the CSF Introductory Workshops; the CSF Interviews (including a sample of the content analysis undertaken); CSF Focus Groups; and Document Analysis.

Analysis: CSF Introductory Workshops

As stated in Section 3.8.1, the introductory workshops were conducted to explain the research purpose and processes to the contact officials, and to establish initial contact with the case study sites. During the meetings, the researcher took detailed notes. The notes addressed matters related to arrangements with the case study site to meet the requirements of the researcher. The agenda of these introductory workshops is available as Appendix U. The notes were subsequently used by the researcher to contact the nominated respondents and to undertake preliminary reading, as suggested at the workshops, to prepare for the subsequent interview program.

Analysis: CSF Interviews

As described in Section 3.8.1, prior to the interviews the researcher e-mailed a pre-interview preparation schedule (Appendix L) to each respondent, to facilitate their preparation for the interview. The interview schedule is available as Appendix J. Interview recordings were transcribed and analysed according to the steps depicted in Figure 3.5 (reproduced herein as Figure V.1). The transcript content analysis is illustrated with some fragments taken from the analysis notes, as follows.

Step 1: Read through all transcripts

Following a reading of the transcripts, statements were identified as possibly being related to factors that are critical to KT success. Some samples include:

- “We do a lot of advertising as well to get our website out there. We mention it in virtually everything that we put out - our website is on there. So we’ve got high awareness of our website and the search engine.”
- “We have to make sure that information really is easily found.”
- “Being clear about what you want them to do. So I can tell you clearly, you need to do this, in order to get this, by this time.”
- “We advertise when there is new stuff and whenever we are talking about one thing and it is relevant we mention it again, face to face.”
Step 2: Code the data by assigning category names that emerge from the transcripts and provide descriptions

Table V.1 illustrates the recording of the identified transcript statements. The identified transcript statements are listed in Column 3. Each transcript is tagged for identification (see Column 1) using a coding system as follows: Example: ‘S1_PA1_CSF 2’

- ‘S1’ – The respondent cited this statement when discussing KT Stage 1 (Stage 1 – Initiation, Stage 2 – Implementation, Stage 3 – Ramp-up, Stage 4 – Integration).
- ‘PA1’ – The respondent offering this response was “Participant AUSED 1.”
- ‘CSF 2’- A sequential numbering system to facilitate unambiguous identification of transcript statements.

Drawing upon each of the respondent’s statements, the researcher generated an associated description/definition (Column 4). Finally, the researcher assigned a “Transcript Category”, drawing upon the concepts/groupings and associated literature, reported in Section 2.9, and including any specific literature references identified as explicitly relevant to the assigned transcript category (Column 2).
### Table V.1: CSF Analysis Excerpt – Assignment of Transcript Code, Transcript Category and Definition

<table>
<thead>
<tr>
<th>Transcript Code</th>
<th>Transcript Category</th>
<th>Transcript Statement</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1_PA1_CSF 2</td>
<td>Advertising and awareness (Cooper, Lichtenstein &amp; Smith 2006)</td>
<td>“We do a lot of advertising as well to get our website out there. We mention it in virtually everything that we put out - our website is on there. So we’ve got high awareness of our website and the search engine.”</td>
<td>Promotion should be undertaken to raise the awareness of potential users of the site, its content and functionality.</td>
</tr>
<tr>
<td>S2_PA1_CSF 24</td>
<td>Usability – Findability (Cooper, Lichtenstein &amp; Smith 2006)</td>
<td>“We have to make sure that information really is easily found.”</td>
<td>The website should be developed to provide users with functionality that will support them when locating required knowledge resources efficiently and effectively.</td>
</tr>
<tr>
<td>S3_PA1_CSF 40</td>
<td>Customer focus: Understand needs of recipient – Content quality (Cooper, Lichtenstein &amp; Smith 2006)</td>
<td>“Being clear about what you want them to do. So I can tell you clearly, you need to do this, in order to get this, by this time.”</td>
<td>The website content should be prepared with the recipient in mind, understandable, including the choice of meaningful language.</td>
</tr>
<tr>
<td>S4_PA2_CSF 53</td>
<td>Advertising and awareness (Cooper, Lichtenstein &amp; Smith 2006)</td>
<td>“We advertise when there is new stuff and whenever we are talking about one thing and it is relevant we mention it again, face to face.”</td>
<td>Promotion should be undertaken to raise the awareness of potential users of the site, its content and functionality.</td>
</tr>
</tbody>
</table>

**Step 3: Merge similar categories to form primary categories and provide descriptions**

Table V.2 illustrates the recording of the merging of transcript categories to form primary categories. Entries with identical, or nearly identical transcript categories in Table V.1 were grouped/merged, as illustrated in Table V.2 for transcript statements assigned the transcript category ‘Advertising and Awareness’. As shown in Table V.2 transcripts with Transcript Codes S1_PA1_CSF 2 and S4_PA2_CSF 53 were candidates for merging (Column 1). The association of these categories with KT stages are recorded in the rightmost columns. Finally, a new code and name were assigned to the merged category, as recorded in Column 3. The new code is specified as follows: ‘AUS_CSF 1’: ‘AUS = AUSED, ‘CSF 1, = a sequential numbering system to facilitate future CSF identification.'
Table V.2: CSF Analysis Excerpt – Merging Categories

<table>
<thead>
<tr>
<th>Transcript Code</th>
<th>Transcript Category</th>
<th>Definition</th>
<th>Participant</th>
<th>Transcript Statement</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1_CSF 2</td>
<td>Advertising and awareness</td>
<td>Promotion should be undertaken to raise the awareness of potential users of the site, its content and functionality.</td>
<td>Senior Online Editor</td>
<td>“We do a lot of advertising as well to get our website out there. We mention it in virtually everything that we put out - our website is on there. So we’ve got high awareness of our website and the search engine.”</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA2_CSF 53</td>
<td>Advertising and awareness</td>
<td>Promotion should be undertaken to raise the awareness of potential users of the site, its content and functionality.</td>
<td>Web Specialist</td>
<td>“We advertise when there is new stuff and whenever we are talking about one thing and it is relevant we mention it again, face to face.”</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step 4: Check categories against literature to support or challenge the categorisations**
The researcher reviewed the merged categories (Table V.2) against the extant literature, paying particular attention to the references noted Table V.1, to support or challenge the categorisations. If this review raised questions about the categorisation, a re-coding at Step 2 was attempted, until a satisfactory set of CSF categories was achieved.

**Step 5: Group the categories to form themes**
Each identified candidate CSF was considered against the groupings of concepts and associated literature, in the conceptual framework (Section 2.9) and assigned to a CSF theme (see detailed discussion of this in Section 6.2). The results of these considerations were recorded in tabular form, as illustrated in Table V.3.

Table V.3: CSF Analysis Excerpt – Forming Themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>AUSED code</th>
<th>AUSED Category</th>
<th>Transcript code</th>
<th>Transcript category</th>
</tr>
</thead>
<tbody>
<tr>
<td>2: User focus</td>
<td>AUS_CSF 1</td>
<td>AUS_CSF 1 – Awareness and notification</td>
<td>S1_PA1_CSF2</td>
<td>Advertising and awareness</td>
</tr>
<tr>
<td></td>
<td>AUS_CSF 8</td>
<td>User positive experience</td>
<td>S4_PA3_CSF54</td>
<td>Positive experience</td>
</tr>
<tr>
<td>5: Technology focus</td>
<td>AUS_CSF 7</td>
<td>ICT infrastructure: Awareness of users’ technology availability</td>
<td>S2_PA5_CSF32</td>
<td>Technology availability</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S2_PA7_CSF34</td>
<td>Technology functionality</td>
</tr>
</tbody>
</table>
Appendix V

Step 6: Review/Interpret themes
Finally, the themes recognised were reviewed, with a view to establishing that they accorded with the thrust of the original interview transcripts. If needed, earlier steps were retraced, to recategorise/redefine CSFs.

As an additional step, to establish the priority placed by each respondent on each CSF at each KT stage, the interview transcripts were reintegrated to identify, at each KT stage, the CSFs that were cited. A tabular form (Table V.4) was established to record these results. For example, Table V.4 records that respondent PA1 identified AUS_CSF 1 as important in Stage 1, AUS_CSF 2 and AUS_CSF 5 as important in Stage 2 and AUS_CSF 3 as important in Stage 3.

Table V.4: CSF Analysis Exerpt – Collation of the Association of CSFs with KT stages for PA1

<table>
<thead>
<tr>
<th>AUSED Code</th>
<th>AUSED Theme - Category</th>
<th>Transcript Code</th>
<th>Transcript Category</th>
<th>Transcript Statement</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS_CSF 1</td>
<td>User focus Awareness and notification</td>
<td>PA1_CSF 2</td>
<td>Advertising and awareness</td>
<td>“We do a lot of advertising as well to get our website out there. We mention it in virtually everything that we put out - our website is on there. So we’ve got high awareness of our website and the search engine.”</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUS_CSF 2</td>
<td>User focus Usability: Functionality and navigation</td>
<td>PA1_CSF 24</td>
<td>Usability – Findability</td>
<td>“We have to make sure that information really is easily found.”</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUS_CSF 5</td>
<td>Content focus Content</td>
<td>PA1_CSF 25</td>
<td>Knowledge content – Responsiveness/Update information</td>
<td>“If we are aware of things like that, we need to ensure that the website is up to date and easy for people to find.”</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUS_CSF 3</td>
<td>User focus User focus: Understand needs of recipient</td>
<td>PA1_CSF 40</td>
<td>Customer focus: Understand needs of recipient – Content quality</td>
<td>“Being clear about you want them to do. So I can tell you clearly, you need to do this, in order to get this, by this time.”</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Based upon the interview transcripts, the researcher also coded the answers to questions concerning feedback mechanisms used to assess the success of the website as a vehicle for KT. In this case, the researcher directly coded respondent statements to emerging groupings of feedback mechanism categories. To illustrate, of the transcript statements listed below, drawn from the interview with MASED respondent PM3 – ICT Officer, the first was coded as related to potential CSFs, whilst the second was identified to be related to an emerging feedback mechanism (‘Self-checks).
Respondents: PM3: ICT Officer
Transcript Statements:

“The interface has to be friendly. The links should be directed according to the title”
(MAS_CSF 2 – Usability: Functionality and Navigation).

For the website, there will be an officer to double check the website on a weekly basis and to
provide feedback on the condition of the website” (Feedback Mechanism: Self-checks).

Analysis: CSF Focus Groups

Audio recordings of the focus groups were transcribed. Analysis of the transcripts, applying
the content analysis techniques discussed above was undertaken. The focus group transcript
analysis was guided by reference to the focus group agenda (see Appendix Q and Appendix
R) to identify CSFs that should be combined, eliminated or restated.

Analysis: Documents

In addition to the extensive academic literature reviewed (see Chapter 2), documents related
to the operation of the case study sites include hardcopy related to site operation and direct
online access to the public education websites of AUSED (http://www.education.vic.gov.au)

The websites were analysed as sources of information, knowledge resources and services, for
each type of stakeholder (citizens, businesses, other government agencies, employees). Results of the analysis are reported in Table 4.3 for MASED and Table 5.3 for AUSED. Documents related to the operation of the case study sites were accessed to confirm statements on KT processes and other matters raised during the interviews and focus groups.
Appendix W: Analysis Sample – Derivation from Interview Transcripts of KT Flow Chart

The technique for deriving the flowchart for KT stages at each case study site (see Chapters 4 and 5) requires the researcher to match extracts from interview transcripts to processes that are undertaken at each KT stage, and the artefacts that are produced. This section outlines the analysis process that was used to derive the KT flowcharts at AUSED and MASED, including an illustrative example.

The analysis process involved the following steps:

- The transcripts were scanned by the researcher to identify statements deemed by the researcher as possibly related to each KT stage, at each case study site.
- The transcripts so identified were collected together, for each KT stage at each case study site, for detailed consideration.
- An iterative process involving the drafting of each KT stage flowchart with reference to the the collected statements from the transcripts, was then undertaken. In doing this, the researcher used a colour coding scheme to link elements of the flowchart to symbols in the set of statements (see sample below – Figure W.1).
- Following completion of the draft, the logic and completeness of the flowchart was checked. The transcripts were revisited to resolve any matters identified in that check.
Appendix W

Figure W.1 Sample of KT Stage Analysis

Part A - Identified Transcript Statements

PA1: Not the only one. This is team of people. If you are going to have a look at the education website - it is massive, quite a dense website. It’s huge …it’s absolutely huge. And what we’ve done is that we organise it into audience areas. So, we have an audience of “for parents”, so we have an entrance for parents. And that part of the website is my primary responsibility. So anything that’s in the parents’ section has to come through me or be written by me. And that includes things like: life at school; enrolling and choosing the school; what it means to be at kindergarten, you know how to find the best kindergarten for you; the benefit of going; having childcare …; all the way through to career options – what is next after school. And all the parents’ content is there. It is quite large but that’s only one part of the website. I am a writer and an editor and that’s my skill base, and I have particular skills and experience in writing web content and writing specifically for parents in a wider …. Engaging them, putting information that’s important for them first - not what’s important to the government or to the business area. So it’s about liaising with the rest of the departments. If they want to talk to parents they come and speak to me and then I - well there are two ways of doing it. They write it and I edit it or change it and get their approval, and then put it up on the website, or I write it and get their approval for it.

PA3: Our team basically is the final quality checker before materials goes live. We have lots of authors around the department - probably up to 100 authors of content … they have internal approvers. Within the business unit they would approve content, but the ultimate approval of what goes live is ours. …We basically … do the final check.

PA4: The publishing job could be up to 1 hour away. We [Support Agents] provide support to them … technical support to ensure that those sorts of things get done - as well as to do special requests. … communications are probably the main people that we do it for. As well as the end users [knowledge providers] who may need some help with using the web CMS tool. End users [knowledge providers] could be people from different divisions within the department - so they may have a half dozen pages on the website that they need to add content into. When they have entered the content in they can’t actually push it live - they need to put it workflow. That workflow then goes to the online communication unit - so Jeff’s team, someone within Jeff’s team … will approve the content from there. All the content … will go through communications. [We] leave it to them [knowledge providers] to find out - they are the ones who needs to find out if something is very critical - like swine flu … everything is done by date so it always says the last update … you know the last update was 11 am this morning. We just push the page live … there it has a date and time.

PA6: Users are able to solve their own problems without calling the service desk because we have online help as well.
Figure W.1 Sample of KT Stage Analysis (Continued)

Part B - Draft Flowchart

Stage 1: Initiation at AUSED

Knowledge provider

Prepare knowledge based on audience

Internal check

No

Yes

Quality assurance check

No

Yes

CMS

Website

Knowledge search

Yes

No

No

Yes

AUSED support agent

Troubleshoot

Knowledge recipient

Initiation stage complete. Continue to implementation stage.