FACTORS THAT INFLUENCE THE QUALITY OF VENDOR SUPPORT SERVICE IN ENTERPRISE RESOURCE PLANNING IMPLEMENTATION AND USE

Thesis submitted in fulfilment of the requirements for the degree of Masters of Business by Research (Business IT and Logistics)

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DECLARATION

I, Forough Fardipour, certify that except where the respective 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; and any editorial work, paid or unpaid, carried out by a third party is acknowledged. Ethics procedures and guidelines have been followed.

Signed:

…….Forough Fardipour……………………………………………..

Forough Fardipour

Date: 22 December, 2011
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
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<td>ERP ILC</td>
<td>ERP Implementation Life Cycle</td>
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<td>CSFs</td>
<td>Critical Success Factors</td>
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<td>CEs</td>
<td>Critical Elements</td>
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<td>SMEs Company</td>
<td>Small and Medium size Company</td>
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<td>CP</td>
<td>Critical People</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>IS</td>
<td>Information System</td>
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<td>SLA</td>
<td>Service Level Agreement</td>
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<td>UAT</td>
<td>User Acceptance Test</td>
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<td>VSS</td>
<td>Vendor Support Service</td>
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<td>VSSQ</td>
<td>Vendor Support Service Quality</td>
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<td>SDM</td>
<td>Service Delivery Manager</td>
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<td>ES</td>
<td>Enterprise System</td>
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<td>CRM</td>
<td>Customer Relationship Management</td>
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<td>M&amp;P</td>
<td>Manufacturing and Procurement</td>
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<td>HCM</td>
<td>Human Capital Management</td>
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<td>ALM</td>
<td>Asset Life Cycle Management</td>
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<td>Supply Chain Management</td>
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<td>PLM</td>
<td>Product Life Cycle Management</td>
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<td>AT</td>
<td>Advanced Technology</td>
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<tr>
<td>F&amp;A</td>
<td>Finance and Accounting</td>
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<td>PM</td>
<td>Project Management</td>
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<td>VP</td>
<td>Vice President</td>
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<td>ER</td>
<td>Enhancement Request</td>
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<td>SCT</td>
<td>SEV Collaboration Tool</td>
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<td>M&amp;S</td>
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ABSTRACT

The competitive nature of global markets has made it essential for many organisations to implement enterprise resource planning (ERP) applications to provide real-time and accurate services to their clients and to be able to compete in the market. Adopting ERP applications is a lifelong commitment for organisations. Several researchers have investigated the success and failure of ERP projects. They have identified a list of critical success factors (CSFs) and tested them against different successful and failed ERP projects. The previous studies have also identified ERP vendors as critical people (CP) and vendor support as one of the most important factors for ERP success. However, most ERP studies have focused more on ERP customers’ perspectives and less on ERP vendors’ perspectives. As such, there is no systematic research on the features of vendor support service in ERP implementation and the factors that influence the quality of the vendor support service.

This study specifically presents the vendor’s perspective. In this study, the vendor support service (VSS) and the factors that positively or negatively influence the vendor support service quality (VSSQ) were investigated. Literature was reviewed on the vendor–host relationship, CSFs and CP in ERP projects, and information systems outsourcing. Drawing from the “Process Theory” approach and the “Vendor Value Proposition” framework, an initial conceptual framework was developed to guide the case study. A qualitative research methodology with a single case study was used. The company investigated in the case study is one of the largest international ERP vendors. Data was collected from the Australian support centre of the vendor using a number of methods: semi-structured interviews; observation; diary; and archival records. Thematic codes were generated using the conceptual framework and template analysis were used to analyse the data.

The findings show that the most common support services that an ERP vendor provide are maintenance, critical repair packs, technical/functional updates, upgrade and enhancements packs, knowledge sharing, and assistance with various types of technical and functional service requests. ERP vendors measure the quality of their support service at both the process and outcome level. The process level covers the
timeliness of the service, the effectiveness of the solution and the content quality delivered during the service. The outcome level captures customer feedback and satisfaction with the service. The findings also show that the severity and priority of a service request, the knowledge of the vendor support engineers and the service level of the customer are critical enablers of VSSQ. The vendor knowledgebase and knowledge sharing, the customer’s technical competency, the relationship governance between vendor and customer and the life cycle of the ERP implementation are essential enablers of VSSQ. The vendor support governance, the customer vendor governance and product governance are identified as having a hygienic influence on VSSQ. Finally, the complexity of customer issues is an inhibitor of VSSQ.

Based on the findings, the initial conceptual framework was revised, and a new and integrated theoretical framework for VSSQ and a set of propositions were developed. The study bridges the gap in the existing ERP literature by including the vendor perspective. The new VSSQ framework and propositions can be used to guide future studies. ERP vendors and clients can benefit from the results of the study in identifying and managing factors that affect support quality.
CHAPTER 1      INTRODUCTION

1.1 OVERVIEW

In recent times, the competitive nature of global markets has made it essential for many enterprises to provide real-time, accurate and customised customer service to their clients. To satisfy such a requirement, in the ‘80s and the ‘90s major information technology (IT) vendors, such as SAP, Oracle, PeopleSoft, Baan, JD Edward, designed and developed integrated information systems (Markus & Tanis 2000). Enterprise Resource Planning (ERP) is one category of such enterprise systems. ERP systems are sets of integrated modules that cover all aspects of enterprises’ business processes and requirements including Human Resources, Manufacturing and Logistics, Finance and Accounting, Sales and Marketing, and Procurement (King & Burgess 2006; Ng & Gable 2010). ERP systems are built based on best practice business processes and are intended to improve resource planning and customer service at both strategic and operational levels (Chang 2004; Salmeron & Lopez 2010). They have become competitive requirements for industries with complex operations (Ng & Gable 2010). Mashari (2003, p. 354) refers to ERP systems as systems that are “built upon one database, one application, and a unified interface across the enterprise”.

The main benefits of ERP systems can be categorised as tangible and intangible (Mashari, Mudimigh & Zairi 2003). Tangible benefits include increasing the speed of production and delivery time, reducing HR costs, and reducing the time needed to complete tasks and processes by eliminating duplicate data entry (resulting in merging of common and redundant tasks between departments especially in the financial cycle and order management) (Mashari, Mudimigh & Zairi 2003; Salmeron & Lopez 2010). Reduction in time and improving resource utilisation can significantly improve customer satisfaction; these are critical ERP benefits (Muscatello, Small & Chen 2003). Intangible benefits include global accessibility of data and information, and communication improvements – internally by increasing the visibility of corporate data and externally by improving the response time to the customer (Mashari, Mudimigh & Zairi 2003; Teo, Singh & Cooper 2009).
ERP software is one of the most popular IT applications. The ERP applications market in licence, maintenance and subscription revenue was worth $30,575 billion in 2006, $32,873 billion in 2007, and reached $32,963 billion in 2008; however, in some cases ERP vendors experienced a shortfall of between 18% to 40% in licence sales, which was offset by stronger maintenance revenue (Pang 2009). Pang (2009) mentioned that the ERP market is expected to reach $38,318 billion in 2012 and $40,419 billion by 2014.

Despite the market demand and the benefits outlined above, some ERP implementations have failed either partially or totally, or have failed to yield expected benefits. According to Loh and Koh (2004), 70% of ERP implementations have failed to meet expectations and business goals. Chang (2004, p. 1) stated: “90% of ERP implementations end up late or over budget, and 67% of enterprise application initiatives could be considered negative or unsuccessful”. Drawing on the results of a survey of 1600 organisations that implemented ERP applications, Kanaracus (2010) mentioned that although 72% were fairly satisfied with ERP applications, more than half of ERP projects went over budget, 35% of respondents said that their projects took longer than expected, and more than half of the responding companies ended up gaining no more than 30% of the business benefits they expected.

Several researchers (King & Burgess 2006; Loh & Koh 2004; Mashari, Mudimigh & Zairi 2003; Nah, Lau & Kuang 2001; Zhang et al. 2003) have investigated the success and failure of ERP implementation. Some have defined ERP success criteria (Nah, Lau & Kuang 2001; Zhang et al. 2003); others have developed a long list of critical success factors (CSFs) (Akkermans & Helden 2002; Mashari, Mudimigh & Zairi 2003; Nelson, K & Somers 2001); and yet others have identified critical elements (CEs) (Loh & Koh 2004; Shiong & Molla 2006) in ERP implementation. The importance of CSFs in ERP success and failure has been tested (King & Burgess 2006), and the influence of CSFs and CEs in different phases of the ERP life cycle has been studied (Nah, Lau & Kuang 2001). There is also a significant volume of research regarding ERP in different cultural contexts (Hong & Kim 2002; Liang & Xue 2004; Markus & Tanis 2000) and on issues facing organisations, especially in Asian countries, in adapting to ERP systems (Liang & Xue 2004; Soh, Kien & Tay-Yap 2000). The common denominator is that a lack of clarity regarding the vendor’s
role and responsibilities, errors in the software configuration and system integration, and a lack of clarity about system maintenance have been identified as critical in increasing the risk of failure in ERP implementation.

Despite ERP vendors being mentioned as CEs in ERP implementations (Loh & Koh 2004; Shiong & Molla 2006), most of the literature has focused on host companies with little attention paid to the vendors’ perspective of the implementation (Soh, Kien & Tay-Yap 2000). Moon’s (2007) and Finney and Corbett’s (2007) extensive reviews of the ERP literature support this assertion. As such, there is a need for a detailed and systematic investigation regarding the nature of the vendor support service and the critical factors that influence the vendor support service in all phases of ERP implementation.

1.2 RESEARCH RATIONAL

Vendor support has been identified as one of the top 10 ERP critical success factors among the 22 CSFs that influence ERP projects in different phases of the ERP life cycle (Nelson, K & Somers 2001). The vendor’s role is critical in any ERP implementation and insufficient vendor support will have a significantly negative impact on ERP implementation (Tsai & Hung 2008). ERP vendors generally supply much of the ongoing maintenance and support service for the ERP applications and provide enhancements to keep the applications up to date with ongoing technical and business development (Ndubisi, Gupta & Massoud 2003). Hence, ERP customers become dependent on ERP vendors for assistance, repairs and upgrades (Wu & Wang 2006). Vendors are the companies who design and develop the ERP applications and know all aspects of the systems. They have the full knowledge of the systems’ setups and configurations, functionalities and integrations.

The vendor support service could influence the implementation of an ERP project either positively or negatively. (Plant & Willcocks 2007). For example, in the implementation phase, timely and accurate support from the vendor can prevent or fix several issues related to errors in setup and configuration (Loh & Koh 2004). The vendor’s troubleshooting capabilities are most critical when systems in the host companies go live. A lack of timely support at this stage can delay the work of different departments, and can lead to work disruptions and production shutdowns.
Therefore, identifying the factors that affect the vendor support service can help not only vendors but also host organisations that implement the ERP. Therefore, research is required to investigate the vendor support service from the vendor’s perspective and to identify the critical factors that can influence the quality of the support service provided by the vendor. For instance, the importance of using knowledgeable staff (Nah, Lau & Kuang 2001; Remus 2007; Wang et al. 2008; Zhang et al. 2003), good communication (Akkermans & Helden 2002; Muscatello, Small & Chen 2003; Nelson, K & Somers 2001), internal and external knowledge transfer (Ko, Kirsch & King 2005; Nelson, K & Somers 2001) and good staff training and education (Muscatello, Small & Chen 2003; Ngai, Law & Wat 2008; Tsai & Hung 2008) in ERP implementation has been discussed from the enterprise perspective. However, we need to identify how the above factors and other vendor-specific factors could influence vendor support service quality.

A good relationship between vendor and enterprise and also the vendor–host compatibility have also been identified as important in successful ERP implementation (Akkermans & Helden 2002; Nelson, K & Somers 2001). However, the nature of this relationship and its impact on the vendor support service has not been fully researched. Furthermore, while vendors are expanding their market worldwide, having localised and customisable ERP software is an important characteristic (Liang & Xue 2004) to meet country-specific factors (Soh, Kien & Tay-Yap 2000; Zhang et al. 2003) and to ensure organisational fit (Hong & Kim 2002; Krumbholz et al. 2000; Ngai, Law & Wat 2008). Therefore, the impact of customisation and organisational fit needs to be considered when studying the vendor support service in ERP implementation.

1.3 RESEARCH OBJECTIVE

The aim of this study is to investigate vendor support service quality (VSSQ) and the factors influencing VSSQ in ERP implementation, specifically from the vendor’s perspective.
1.4 RESEARCH QUESTION

The main research questions to be addressed in the study are: what factors influence the quality of support that ERP vendors provide to their clients, and how do these factors influence the quality of support. Specific questions include:

1. What is the vendor support service and how is it measured?
2. How do the ERP implementation phases influence the vendor support service quality?
3. What are the vendor-specific factors and how do they influence the vendor support service quality?
4. What are the host-specific factors and how do they influence the vendor support service quality?
5. What are the factors specific to the relationship between vendor and host and how do they influence the vendor support service quality?

1.5 SCOPE OF THE RESEARCH

The research is primarily based on the literature on ERP implementation and successes and failures of ERP projects, and CSFs and CEs in ERP projects. Due to the lack of literature on vendor support service (VSS) and vendor support service quality (VSSQ), related literature on information system (IS) and outsourcing was reviewed to help understand both the vendor and customer perspective on VSS and VSSQ. As part of the research, a conceptual framework was developed to examine the influence of factors that affect vendor support. This framework draws on the “Process Theory” approach introduced by Markus and Tanis (2000) and “Vendor Value Proposition” framework introduced by Levina and Ross (2003). The research is based on the ERP vendor’s perspective and does not cover the client perspective.

1.6 RESEARCH METHODOLOGY

A qualitative research method using the case study approach was adopted for this study. One of the main ERP players that supplies many ERP customers globally was selected as a single case for the purpose of the research. The data were collected through semi-structured interviews conducted in Australia. Data were analysed using the conceptual framework as a guide for template analysis, and new code and dimensions were added where required.
1.7 CONTRIBUTION OF THE STUDY

The study makes the following original contributions. First it specifically presents the *vendor perspective* to explore the vendor support service quality in ERP projects, and therefore bridges a gap in previous studies. Second, the findings of the case study extend the current ERP literatures and deliver systematic research to illustrate the definition of the vendor support service, the measurement of support service quality and the factors that positively or negatively influence the support service quality. Third, it delivers an integrated theoretical framework, *vendor support service quality* – *VSSQ*, along with thirteen propositions.

1.8 OUTLINE OF THE RESEARCH

The rest of the thesis is organised as follows:

Chapter 2 offers a review of literature on ERP implementation and successes and failures in ERP projects, critical success factors and critical elements in ERP projects, and related literature on IS and outsourcing. In Chapter 3 the research design is presented, including the conceptual framework, and the methodology, methods and analysis strategy used in this research. In Chapter 4 the background of the selected case is described, followed by the findings of the research. Chapter 5 comprises the analysis and discussion of the findings of the case study with reference to the literature. Finally, Chapter 6 comprises the summary and conclusions. In this chapter, the research questions are revisited, the theoretical and practical implications are discussed, and limitations and areas for further research are highlighted.
CHAPTER 2   LITERATURE REVIEW

2.1 INTRODUCTION

In Enterprise Resource Planning (ERP) projects, a good fit between the ERP software and the adopting organisation is essential in order to successfully implement the ERP applications and achieve the benefits that ERP vendors promise. However, such a goal cannot be accomplished unless both ERP adopting organisations and ERP vendors take responsibility to establish the good fit between the ERP system’s functionalities and an organisation’s business requirements (Soh, Kien & Tay-Yap 2000). Implementing an ERP application can be a lifelong commitment for companies (Nelson, K & Somers 2001). Companies experience different challenges during phases of ERP implementation life cycle, and the way they manage and govern the conflict and issues may lead the project to success or failure (Soh, Kien & Tay-Yap 2000).

ERP vendors design and develop the ERP applications and are expected to have full knowledge of the system setup and configuration as well as the system’s internal integration (Koh, Ang & Straub 2004). Therefore, they can play an instrumental role in the host organisation having a smooth implementation (Akkermans & Helden 2002). The consistency of vendor support and a strong vendor–host relationship is not only necessary to successfully implement ERP applications (Loh & Koh 2004; Markus & Tanis 2000) but is also essential to ensure extended technical assistance, timely maintenance and updates, service responsiveness, and reliability (Nelson, K & Somers 2001; Remus 2007; Wang et al. 2008). Furthermore, it facilitates the transfer of ERP knowledge to the host company (Plant & Willcocks 2007; Wang et al. 2008). Thus, ongoing and consistent vendor support is very important both in the project and implementation phases of the ERP life cycle and after successful implementation of ERP systems (Nelson, K & Somers 2001). The quality of the vendor support service could affect ERP projects in either positive or negative ways (Markus & Tanis 2000). Therefore, not only are ERP vendors regarded as the critical elements in any ERP project (Loh & Koh 2004; Shiong & Molla 2006), but also vendor support is recognised as one of the critical success factor in the life cycle of ERP projects (Nah, Lau & Kuang 2001; Nelson, K & Somers 2001).
There might be different factors that could influence the vendor support service delivery and its quality in ERP implementation. In any information systems (IS) project, the capabilities and characteristics of both vendors and customers contribute to the relationship between them (Goles 2001; Koh, Ang & Straub 2004; Levina & Ross 2003). Vendor and host capabilities and characteristics, and the vendor–host relationship can affect the quality of the service and influence the success of the project and the services (Goles 2001; Koh, Ang & Straub 2004). In ERP projects, vendor support can be understood in the context of the ERP implementation life cycle (ERP ILC). Therefore, the key activities and key players in different phases of the project can determine the customer requirements and the interaction between vendor and client (Markus & Tanis 2000).

The remaining part of this chapter is organised as follows. First section 2.2 clarifies the concept of vendor support service and discusses vendor support success. In section 2.3, a review of the life cycle of ERP projects, the key activities and the key players in different phases is undertaken to delineate the impact of the ERP ILC on the host requirements and on the interaction between vendor and host. Section 2.4 discusses the impact of the capabilities and characteristics of both vendor and host, and the vendor–host relationship on the vendor support service. The last section summarises the key findings of the literature review.

2.2 VENDOR SUPPORT SERVICE

To understand the factors that influence vendor support service, this section clarifies the definition and quality indicators of the ERP vendor support service. This review draws from ERP, IS development and IT outsourcing literature in order to understand the notion of vendor support and its quality indicators.

2.2.1 Definition

In ERP projects, according to Wang (2008), vendor support covers technical assistance during and after ERP implementation, building relationships with other parties involved throughout the ERP project, and providing customer training. Vendor support also includes technical assistance, emergency maintenance, repair pack and technical upgrades (Law, Chen & Wu 2010; Somers & Nelson 2004), and appropriate user training during the post-implementation stage (Somers & Nelson 2004). Some
researchers, however, consider vendor support as a help desk service to fix bugs in applications and develop new functionalities. For example, Brehm and Markus (2001, p. 3) wrote that: “the vendor is responsible for correcting bugs in the source code”. Zhang (2003, p. 7) highlighted three indications of vendor support as: “(1) Service response time of the software vendor; (2) Allocation of qualified consultants with knowledge in both enterprises’ business processes and information technology including vendors’ ERP systems; and (3) Participation of vendor in ERP implementation”. Qualified and merited vendors are capable of providing different types of training to the host organisation (Nelson, RR & Cheney 1987; Ngai, Law & Wat 2008). According to Ng and Gable (2010), ERP vendors deliver the fix and solution to the issues that have been reported by the adopting organisation to continuously improve and maintain the ERP applications.

In IS projects and software outsourcing, vendor support is defined as vendor consultancy to select the appropriate software/hardware, assisting with the system laboriously and arduously, provision of adequate and detailed instruction on the software (Ndubisi, Gupta & Massoud 2003), and vendor readiness to provide substantial and tangible support (Lucas, Walton & Ginzberg 1988). Claybaugh and Srite (2009, p. 27) presented a client’s vision of vendor support as: “clients were looking for a quick turnaround time, effective answers, and a clear sense that the vendor wants to resolve their problems”. End users expect consistent, round-the-clock support availability, and responsiveness (Leinfuss 1994). However, the contract between vendor and client can determine the scope and specification of the coverage of vendors’ services (Gillespie 2005; Koh, Ang & Straub 2004; Lucas, Walton & Ginzberg 1988).

Hence, drawing from the ERP, IS and outsourcing literature, ERP vendors are expected to deliver the following services to ERP customers:

a) assist the host organisation in selecting the proper application;

b) educate the ERP customer and provide assistance in adapting to the ERP application;
c) respond to the requirements of the host organisations’ in the process of implementing and using an ERP system to assist them in meeting their project schedules and deadlines;

d) maintain the ERP application and deliver critical repair packs, technical/functional assistance, updates, upgrade and enhancements functionality.

2.2.2 Vendor Support Quality Measurement

The responsiveness and reliability of the service are highly ranked common dimensions when measuring the service quality (Landrum et al. 2009). Kettinger (2009, p. 335) and Landrum (2009, p. 30) defined responsiveness as “willingness to help customers and provide prompt service”; and reliability as “ability to perform the promised service dependably and accurately”. Claybaugh and Srite (2009) described effective support as involving effective communication (such as using phone, email and site visits), quick response and turnaround time and effective answers. They described a poor quality vendor support service as one where incomplete and even cryptic answers were provided, with inadequate support, lack of flexibility and a tendency to stick to the contract.

Bharatia and Berg (2005, p. 368) defined service quality as “the extent to which a service meets the expectations of customers”. For example, taking consideration of the customers’ feedback and needs enables IS outsourcing vendors to revise and improve in-house competencies and improve their service quality (Levina & Ross 2003). Goles (2001) regarded satisfaction as an overall measure of success. From the vendor’s perspective, Teo, Singh and Cooper (2009) stated that meeting and fulfilling all user requirements is one of the success factors for ERP vendors. Thus customer feedback and satisfaction can be an additional dimension for measuring the vendor support service quality.

The above discussion shows that responsiveness, effectiveness and customer satisfaction are important factors in evaluating the quality of the vendor support service. There could be a number of factors that could influence the vendor support quality. For example, the stage and phases of the ERP project can affect a host organisation’s support requirements and their perceptions of the quality of vendor
support. Therefore, the following section presents review of the literature on ERP implementation lifecycle.

2.3 ERP IMPLEMENTATION LIFE CYCLE

The life cycle of ERP implementation has always been important in studying and understanding ERP projects (Chang 2004). Various practitioners have divided the life cycle of an ERP project into various phases. One such categorisation divides the life cycle into pre-implementation, implementation and post-implementation phases (Chang 2004). Another divides it into initiation, adoption, adaptation, acceptance, reutilisation, and infusion phases (Nelson, K & Somers 2001). The most widely used grouping in the literature, however, is the process theory approach, incorporating chartering, project, shakedown, and onward and upward phases of ERP life cycle (Markus & Tanis 2000). This approach has been adopted in studies on critical success factors (CSFs) (Nah, Lau & Kuang 2001) and on critical elements (CEs) (Loh & Koh 2004; Shiong & Molla 2006) and is briefly reviewed next.

Markus and Tanis (2000) identified the key activities and key players during the ERP life cycle. The key activities are tasks that need to be completed step by step to progress ERP projects in each phase. The key players are the people who are involved in each phase of the ERP life cycle. Based on these key activities and players, Markus and Tanis (2000) grouped the ERP life cycle into four phases: chartering; project; shakedown; and onward / upward. Table 2.1 summarises the major key activities and key players in each phase. This is followed by a short discussion.
### ERP Life Cycle Pre-implementation

<table>
<thead>
<tr>
<th>Key Activities</th>
<th>Implementation</th>
<th>Post-implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initiation, Adoption, Adaptation</strong></td>
<td><strong>Acceptance</strong></td>
<td><strong>Reutilisation</strong></td>
</tr>
<tr>
<td><strong>Chartering</strong></td>
<td><strong>Project</strong></td>
<td><strong>Shakedown</strong></td>
</tr>
<tr>
<td><strong>Onward/Upward</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Initiation of the idea to adopt ERP applications.
- Selection of the ERP software and the ERP vendor.
- Selection of the ERP implementation partner.
- Allocation of the required resource.
- Initiation of the project.
- Business process and reengineering or software customisation.
- Software configuration.
- System integration.
- Testing and troubleshooting.
- Data conversion.
- Training.
- Rollout.
- Bug Fixing and rework.
- System performance tuning.
- Re-training and staff up.
- Ongoing maintenance.
- Enhancement.

### Key Players

<table>
<thead>
<tr>
<th>Key Players</th>
<th>Pre-implementation</th>
<th>Implementation</th>
<th>Post-implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company executives.</strong></td>
<td><strong>Project team manager.</strong></td>
<td><strong>Operational managers.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IT specialists.</strong></td>
<td><strong>Project team members.</strong></td>
<td><strong>End users.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Consultants.</strong></td>
<td><strong>Internal/external IT specialist.</strong></td>
<td><strong>Project team manager.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ERP implementer companies.</strong></td>
<td><strong>Internal/external consultants.</strong></td>
<td><strong>Project team members.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ERP vendor.</strong></td>
<td><strong>ERP vendor.</strong></td>
<td><strong>Internal/external IT specialists.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ERP vendor.</strong></td>
<td><strong>End users.</strong></td>
<td><strong>Internal/external IT specialists.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>End users.</strong></td>
<td><strong>Internal/external IT specialists.</strong></td>
<td><strong>Internal or external consultants.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Project team members.</strong></td>
<td><strong>Internal or external consultants.</strong></td>
<td><strong>ERP vendor.</strong></td>
<td></td>
</tr>
</tbody>
</table>


The chartering phase starts as soon as the enterprise (a.k.a the “host”) decides to automate their business processes by implementing an ERP solution. In this phase, choosing the suitable vendor and the right ERP software is the most important decision for the enterprise (Muscatello & Chen 2008; Nelson, K & Somers 2001; Ngai, Law & Wat 2008). The suitable vendor can provide a range of software features and functionalities (Nelson, RR & Cheney 1987; Ngai, Law & Wat 2008). If an enterprise’s business requirements are very different to the best practices introduced in the ERP, then the enterprise has to either customise the package to meet its requirements or reengineer its business processes to match the ERP package. If the enterprise decides to customise the ERP package to meet its requirements, it might
face problems with keeping the application up to date (Law, Chen & Wu 2010; Mabert, Soni & Venkataramanan 2003) or in communicating with the vendor to resolve issues related to customisation (Law, Chen & Wu 2010; Nelson, K & Somers 2001).

In the project phase, ERP applications start running in one or a few organisation units. This is considered the rollout phase (Loh & Koh 2004; Markus & Tanis 2000). The ERP packages cannot simply start working after installation like other software, and therefore it is very important to set up and configure the ERP software properly to ensure seamless integration of functionalities (Markus & Tanis 2000). Global ERP vendors in particular have designed and developed their ERP packages using a top-down strategy to be able to meet different business requirements worldwide (Yeh, Miozzo & Vurdubakis 2006). Therefore, it is essential that the ERP team members work well with the vendor in order to learn about the package and be able to set up and configure the application to meet their business requirements. However, one of the challenges at this stage of the project may be the vendor’s inadequate software knowledge that could lead to a wrong setup and configuration (Markus & Tanis 2000). On the other hand, some of the enterprise requirements could be beyond the delivered functionalities within the ERP package and the enterprise might decide to customise the application to fit their requirements. In such a case, when they later upgrade the application to the higher version, they could lose their custom code (Mabert, Soni & Venkataramanan 2003; Nelson, K & Somers 2001).

The shakedown phase is the period from when the system “goes live” to the time that “normal operations” is achieved. It can be considered as the end of the project (Loh & Koh 2004; Markus & Tanis 2000). The knowledge of ERP should be transferred to the employees and managers of a host organisation to educate them on how the business will change, how every component in the business will be integrated and how they will be connected to the new system (Mashari, Mudimigh & Zairi 2003; Nelson, K & Somers 2001). In this phase, users of applications work with real data. The chances of data errors could increase if users are not educated to use the application and therefore mistakes are made frequently (Hakkinen & Hilmola 2007). Some users need basic support on how to use the software (Leinfuss 1994). Hence
appropriate knowledge transfer and minimisation of knowledge barriers between the ERP vendor and the host organisation are vital (Soh, Kien & Tay-Yap 2000).

**The onward/upward phase** involves ongoing system maintenance (Loh & Koh 2004; Markus & Tanis 2000). Maintenance and support is vital after the ERP goes live and normal operation starts (Mashari, Mudimigh & Zairi 2003) for three reasons. First, the end users work with the applications and therefore some issues could be reported, which need to be fixed by the vendor (Brehm, Heinzl & Markus 2001). Second, issues in this phase can have very serious impacts for the enterprise, can reduce production and can delay very important tasks such as payroll. Hence, engagement of vendor support is essential in order to fix issues and recover any potentially serious situations. Third, continual maintenance and investment in new modules, adding functionalities and upgrading to higher versions of the software application will keep the software up to date and enhance the fit between the business and the application (Somers & Nelson 2004; Wang et al. 2008).

The vendor support service is important in each phase of ERP implementation (Akkermans & Helden 2002). In an empirical study on CSFs in different phases of ERP life cycle, Somers and Nelson (2004) observed the importance of the vendor support service from host enterprises’ perspective. Table 2.2 shows the observed and expected values of the importance of vendor support service in different phase of ERP projects. The numbers indicate the percentage of respondents who consider the importance of the vendor involvement. From the table, it can be seen that there is a mismatch between clients’ expectations of support and vendors’ delivery of this support. While clients expect a lot more support in the post-implementation phases, vendors are not delivering such support. Instead, the vendors tend to focus on the pre-implementation and implementation phases. Such discrepancies between support expectancy and delivery are likely to lead to dissatisfaction and lower levels of perceived support quality.
<table>
<thead>
<tr>
<th>ERP Life Cycle</th>
<th>Vendor Involvement and Support</th>
<th>Expected</th>
<th>Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project</td>
<td>Initiation</td>
<td>10%</td>
<td>78%</td>
</tr>
<tr>
<td></td>
<td>Adoption</td>
<td>10%</td>
<td>71%</td>
</tr>
<tr>
<td></td>
<td>Adaptation</td>
<td>10%</td>
<td>68%</td>
</tr>
<tr>
<td>Shakedown</td>
<td>Acceptance</td>
<td>30%</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>Reutilisation</td>
<td>60%</td>
<td>35%</td>
</tr>
<tr>
<td>Onward/Upward</td>
<td>Infusion</td>
<td>60%</td>
<td>28%</td>
</tr>
</tbody>
</table>

*Table 2.2: Importance of Vendor Support in Different Phases of ERP ILC*
*(Source: Somers and Nelson (2004)).*

In summary, examining the key activities and required tasks in different phases of ERP project helps us to understand the impact of the ERP life cycle on the ‘host requirements’ and the vendor support service. The required key activities and required tasks in each phase of the ERP life cycle can determine the key players that are expected to be involved in different phases of ERP projects (Loh & Koh 2004; Markus & Tanis 2000). However, the involvement of key players varies from project to project, depending on different factors such as the availability or lack of in-house expertise and knowledgeable staff (Ko, Kirsch & King 2005; Mashari, Mudimigh & Zairi 2003; Wang et al. 2008) and the size of the company (Shiong & Molla 2006; Woo 2007). In the following section, the literature is reviewed on the influence of the vendor and host organisation and the relationship between them on vendor support and vendor support quality.

### 2.4 FACTORS THAT INFLUENCE VENDOR SUPPORT QUALITY

The review of the IS, outsourcing and ERP literature identifies that, in addition to the ERP lifecycle, three groups of factors can potentially influence the vendor support quality. These are:

In the following sections, the vendor and host competencies and capabilities, and the relationship between the two are discussed in order for us to understand the influence of these competences and capabilities on vendor support and vendor support quality.

2.4.1 Vendor Competency

Goles (2001) defined vendor technical competency as the ability to receive, process and analyse the customer’s requirements, and design and deliver the solution in a timely manner. From the review of the IT outsourcing, IS project and ERP project literatures, several capabilities and competencies related to the vendor were identified as influencing the vendor’s ability to assist customers, thereby affecting the success or failure of the IS and ERP projects. These are as follows: having dedicated IT personnel (Koh, Ang & Straub 2004); allocating skilled and knowledgeable staff to the project (Goles 2001; Koh, Ang & Straub 2004; Markus & Tanis 2000); the vendor’s business understanding (Liang et al. 2004); effective knowledge transfer (Koh, Ang & Straub 2004); IT personnel development and methodology development (Levina & Ross 2003); the vendor’s technical competencies and customer relationship management (Goles 2001; Levina & Ross 2003); and knowledge management (Leinfuss 1994; Motwani et al. 2002). These capabilities and competencies identified in the literature can be grouped into four: human resource capability; industry knowledge and experience; infrastructure and process; and support management. Table 2.3 summarises the literature that discussed vendor competencies in ERP, IS and IT outsourcing projects. Each area is reviewed in detail in the following subsections.
### Table 2.3 Summary of Literature on Vendor Competencies

<table>
<thead>
<tr>
<th>Source</th>
<th>Vendor Competencies</th>
<th>Domain of Literature</th>
<th>Research Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bharati &amp; Berg (2005)</td>
<td>*</td>
<td>IS Project</td>
<td>Case Study</td>
</tr>
<tr>
<td>Carmel &amp; Tjia (2005)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>NA</td>
</tr>
<tr>
<td>Claybaugh &amp; Srite (2009)</td>
<td>*</td>
<td>IS Project</td>
<td>Case Study</td>
</tr>
<tr>
<td>Dani et al. (2006)</td>
<td>*</td>
<td>IS Project</td>
<td>Literature Review</td>
</tr>
<tr>
<td>Goles (2001)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Survey</td>
</tr>
<tr>
<td>Grossman (2006); Jones (2006)</td>
<td>*</td>
<td>Knowledge Management</td>
<td>Case Study</td>
</tr>
<tr>
<td>Jones (2006)</td>
<td>*</td>
<td>Knowledge Management</td>
<td>Conceptual</td>
</tr>
<tr>
<td>Koh, Ang &amp; Straub (2004)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Case Study</td>
</tr>
<tr>
<td>Leinfuss (1994)</td>
<td>*</td>
<td>IS Project</td>
<td>NA</td>
</tr>
<tr>
<td>Levine &amp; Ross (2003)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Case Study</td>
</tr>
<tr>
<td>Liang et al. (2004)</td>
<td>*</td>
<td>ERP-Client</td>
<td>Case Study</td>
</tr>
<tr>
<td>Markus &amp; Tanis (2000)</td>
<td>*</td>
<td>ERP</td>
<td>NA</td>
</tr>
<tr>
<td>Motwani et al. (2002)</td>
<td>*</td>
<td>ERP Client</td>
<td>Case Study</td>
</tr>
<tr>
<td>Teo, Singh &amp; Cooper (2009)</td>
<td>*</td>
<td>ERP Vendor</td>
<td>Case Study</td>
</tr>
<tr>
<td>Xue et al. (2005)</td>
<td>*</td>
<td>ERP Client</td>
<td>Case Study</td>
</tr>
<tr>
<td>Zarb &amp; Kierstead (2008)</td>
<td>*</td>
<td>ERP Vendor and Client</td>
<td>Case Study</td>
</tr>
</tbody>
</table>

2.4.1.1 Human resource capabilities

The performance and knowledge of the vendor staff influence the responsiveness of the service they provide (Bharati & Berg 2005). Lack of knowledge and lack of dedicated resources from the vendor could negatively affect the delivery time in
providing the required support to the customers (Liang et al. 2004; Shiong & Molla 2006). For instance, a case study on an unsuccessful ERP project identified the lack of manpower from a local vendor as the main problem in providing adequate and timely technical and functional support to carry out the testing and troubleshooting during the implementation (Shiong & Molla 2006). This case study revealed that the allocation of an inexperienced vendor consultant to the project caused unnecessary “trial and error” and delayed the project. This adversely affected the validity of the service that the vendor provided (Shiong & Molla 2006).

Vendor staff are presumed to have a deep understanding of ERP implementation issues (Soh, Kien & Tay-Yap 2000) and they are expected to have content knowledge of the ERP applications (Koh, Ang & Straub 2004). While inadequate knowledge on the part of vendor personnel could adversely affect the validity of the delivered service and cause problems with the configuration and setup of the application (Markus & Tanis 2000), vendor technical staff who are experienced and have knowledge of the application can assist the customer to use the application in the proper way. Therefore they build trust and increase customer satisfaction (Gefen 2004). Claybaugh and Srite (2009) compared the experience of two different users in terms of the support service that they received from vendor staff. In the first case, the vendor personnel’s knowledge of the product, troubleshooting ability and communication skills enabled them to meet the customer’s expectations and achieve customer satisfaction. In the second case, lack of product knowledge on the part of vendor personnel led them to deliver inadequate or wrong answers to the user. According to Levina and Ross (2003), knowledge development and having knowledgeable staff assist the vendor in better understanding the customer’s needs and requirements, establishing the customer’s expectation and increasing customer satisfaction. In another example, Zarb and Kierstead (2008) mentioned that experience, technological skills, constructive communication and knowledge on the part of the vendor ensured that the offshore vendor successfully delivered the user’s requirements.

2.4.1.2 Industry knowledge and experience

The vendor’s business knowledge and understanding of the customer’s business (Goles 2001; Ngai, Law & Wat 2008), their consulting capabilities (Ngai, Law & Wat
2008), and the vendor’s industry experience (Koh, Ang & Straub 2004) have been identified as key aspects of the vendor’s industry competency that influence the IS and ERP vendor’s capability of supporting ERP customers.

Vendor staff should understand the host business requirements (Soh, Kien & Tay-Yap 2000) and have industry knowledge (Koh, Ang & Straub 2004). A deep, clear and accurate understanding of the project’s business requirements is very important for the vendor to successfully assist the host organisation (Zarb & Kierstead 2008). The vendor’s understanding of the customer’s business and work culture assists the vendor in better understanding the customer’s need and in delivering the solution based on the customer’s requirements, which would mean a more effective solution for the customer (Goles 2001; Teo, Singh & Cooper 2009).

A lack of understanding of the client’s processes can delay the service delivery as the vendor staff have to allocate time to learn about those business processes (Teo, Singh & Cooper 2009). A case study on UFSoft company, a successful local ERP vendor in China, revealed that a deep understanding and knowledge of Chinese business requirements was the key component of vendor success in the Chinese ERP market (Soh, Kien & Tay-Yap 2000). In another example, the vendor’s good understanding of the customer’s domain process helped the vendor to successfully deliver the complex code to the customer (Zarb & Kierstead 2008). One of the reasons that foreign ERP vendors fail to provide adequate support services to Chinese customers is the lack of knowledge about Chinese industries’ business requirements (Liang et al. 2004; Xue et al. 2005). Hence, Xue (2005) suggested that an ERP vendor should either work with a local service provider or become familiar with Chinese industries’ business requirements to be able to successfully deliver service to ERP customers in China.

2.4.1.3 Infrastructure and process

The ease of use and the flexibility of the system influence the responsiveness and effectiveness of the service (Bharati & Berg 2005). The tools and collaborative technology that vendors use influence the communication between customer and vendor (Carmel & Tjia 2005). Defined processes, such as developing a methodology for delivering a structured service to customers, has been shown to standardise the
professional support services, reduce the delivery time, ensure effective management of the service level agreement and regulate the communication and collaboration between the customer’s and vendor’s employees, thereby enhancing the quality of the support (Levina & Ross 2003). Using an appropriate methodology could sustain the customer relationship (Levina & Ross 2003). According to Claybaugh and Srite (2009), some processes that vendor use, such as escalation processes, can improve the service and increase customer satisfaction.

Another example of process and infrastructure is knowledge management tools, including the process of documenting old experiences to enable them to be used in similar situations (Dani et al. 2006; Jones 2006; Teo, Singh & Cooper 2009). Maintaining knowledge is a key factor in any organisation (Grossman 2006; Jones 2006). Adequate knowledge management increases the end user’s independence from support services (Leinfuss 1994) and increases the knowledge level in the company (Motwani et al. 2002).

2.4.1.4 Support management
Managing resources proactively (Zarb & Kierstead 2008) and allocating appropriate resources such as time, manpower and knowledge influences the vendor’s ability to work successfully with the customer (Shiong & Molla 2006; Teo, Singh & Cooper 2009). According to Koh and Ang (2004), allocating knowledgeable resources to the project is an obligation for the vendor. Zarb and Kierstead (2008), in their examination of a case study, mentioned that a vendor’s decision to allocate the complex code to onshore developers (where onshore developers had the opportunity to have face-to-face communication with the customer) and using the offshore developers to develop the simple code assisted the vendor in delivering better quality work to the customer. Teo, Singh and Cooper (2009) argued that a vendor’s decision to replace experienced staff with recent graduates during the peak period of a project negatively influenced the vendor’s ability to meet the customer’s expectations. However, in another example, when a vendor trained and upskilled junior and lower cost developers, they were more motivated to develop their career, and this assisted the vendor to deliver a better quality job (Levina & Ross 2003).
2.4.2 Host Competency

In IS and IT outsourcing, the host capabilities and competencies influence the relationship between the customer and vendor and affect the success of the project (Goles 2001). The influence of the host capabilities and competencies has also been extensively studied as CSFs in ERP implementation projects (Holland & Light 1999; Hong & Kim 2002; Motwani, Subramanian & Gopalakrishna 2005; Nah, Lau & Kuang 2001; Nelson, K & Somers 2001; Woo 2007). However, the existing literature on CSFs emphasised the influence of host capabilities and competencies on ERP projects’ success and failure, and were not specifically related to the vendor support service and the vendor support service quality. Hence in order to review the effect of host competencies and capabilities on the vendor support service and vendor support service quality, the related IS and software outsourcing literature has been reviewed. This review has identified four major factors: project management; technical competency; customisation of ERP applications; and vendor governance. Table 2.4 summarises the literature that discussed host competencies in ERP projects.
### Table 2.4: Summary of Literature on Host Competencies

<table>
<thead>
<tr>
<th>Source</th>
<th>Host Competencies</th>
<th>Domain of Literature</th>
<th>Research Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Akkermans &amp; Helden 2002)</td>
<td>*</td>
<td>ERP Client</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Chen, Law &amp; Yang 2009)</td>
<td>*</td>
<td>ERP-Client</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Goles 2001)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Survey</td>
</tr>
<tr>
<td>(Hakkinen &amp; Hilmola 2007)</td>
<td>*</td>
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<td>Case Study</td>
</tr>
<tr>
<td>(Koh, Ang &amp; Straub 2004)</td>
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<td>IT Outsourcing</td>
<td>Case Study</td>
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<td>(Law, Chen &amp; Wu 2010)</td>
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<td>Case Study</td>
</tr>
<tr>
<td>(Leinfuss 1994)</td>
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<td>IS Project</td>
<td>NA</td>
</tr>
<tr>
<td>(Levina &amp; Ross 2003)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Liang &amp; Xue 2004)</td>
<td>*</td>
<td>ERP Vendor</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Loh &amp; Koh 2004)</td>
<td>*</td>
<td>ERP-Client</td>
<td>Survey</td>
</tr>
<tr>
<td>(Mabert, Soni &amp; Venkataramanan 2003)</td>
<td>*</td>
<td>ERP-Client</td>
<td>Survey</td>
</tr>
<tr>
<td>(Markus &amp; Tanis 2000)</td>
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<td>ERP</td>
<td>NA</td>
</tr>
<tr>
<td>(Mayer 1995)</td>
<td>*</td>
<td>IS Project</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Nah, Lau &amp; Kuang 2001)</td>
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<td>ERP Client</td>
<td>Literature Review</td>
</tr>
<tr>
<td>(Nelson, K &amp; Somers 2001)</td>
<td>*</td>
<td>ERP-Client</td>
<td>Survey</td>
</tr>
<tr>
<td>(Ng &amp; Gable 2010)</td>
<td>*</td>
<td>ERP Vendor</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Plant &amp; Willcocks 2007)</td>
<td>*</td>
<td>ERP-Client</td>
<td>Case Study</td>
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<tr>
<td>(Soh, Kien &amp; Tay-Yap 2000)</td>
<td></td>
<td>ERP-Client</td>
<td>Survey</td>
</tr>
<tr>
<td>(Somers &amp; Nelson 2004)</td>
<td>*</td>
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<td>Survey</td>
</tr>
<tr>
<td>(Teo, Singh &amp; Cooper 2009)</td>
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<td>ERP Vendor</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Waheed &amp; Molla 2004)</td>
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<td>Case Study</td>
</tr>
<tr>
<td>(Zarb &amp; Kierstead 2008)</td>
<td>*</td>
<td>ERP Vendor and Client</td>
<td>Case Study</td>
</tr>
</tbody>
</table>

#### 2.4.2.1 Project management

Considering all project variables and having good project management are important for developing and progressing the ERP implementation (Teo, Singh & Cooper 2009)
as well as maintaining and supporting the applications (Chen, Law & Yang 2009; Law, Chen & Wu 2010; Ng & Gable 2010). Management approve and allocate resources to the project (Loh & Koh 2004; Somers & Nelson 2004). Access to the required resources can lead to on-time implementation (Plant & Willcocks 2007) and successful maintenance (Teo, Singh & Cooper 2009). Failure to commit sufficient resources, including dedicated human resources and infrastructure, has been found to be problematic in ERP projects (Nelson, K & Somers 2001; Teo, Singh & Cooper 2009). Equal distribution of workload between team members can motivate them and increase productivity (Teo, Singh & Cooper 2009). Allocating skilled people to the ERP project is an obligation for the ERP customer to enable them to work well with the vendor staff and to help the vendor staff to understand the enterprise business requirements (Koh, Ang & Straub 2004). Team members need to be assigned full time to the project with a manageable workload, where the ERP project is their only priority (Koh, Ang & Straub 2004; Nah, Lau & Kuang 2001). Koh and Ang (2004, p. 363) underlined the vendor’s perspective as follows: “The customer is supposed to be willing to commit people to the project. We typically negotiate with the customer for employees to give uninterrupted time dedicated to the project”.

2.4.2.2 Technical competency

Technical competency includes the skill set, knowledge, experience and technical/functional abilities of the project team manager and project team members (Koh, Ang & Straub 2004). The customer’s technical competency plays an important role in the success of the relationship between vendor and customer, and in the success of the project (Goles 2001). According the Koh, Ang and Straub (2004), customers provide the required information that has been requested by the vendor. Understanding the customer’s business requirements increases the validity and usefulness of the vendor support service and assists them to fit the ERP application with the business practices in the enterprise (Akkermans & Helden 2002; Levina & Ross 2003). Hence, customers should allocated staff with technical competency to the project so they can work effectively with the vendor (Koh, Ang & Straub 2004). ERP covers a wide range of functional areas; thus allocation of a cross-functional ERP core team is essential (Nah, Lau & Kuang 2001).
ERP applications are very complex packages and host organisations are not expected to know everything that the vendor knows; however, they are expected to retain enough expertise to understand where the knowledge is and how to bring aspects of that knowledge together to solve business issues (Mayer 1995). Having users who have been extensively trained to use the application can significantly help the end user to work properly with the application and can reduce the need for vendor support services (Hakkinen & Hilmola 2007). Knowledge, on the other hand, increases dependency on the vendor support service (Hakkinen & Hilmola 2007) and could negatively affect the information quality in the application, because unskilled users work the application on a ‘trial and error’ basis, which can lead to data reliability problems (Hakkinen & Hilmola 2007).

2.4.2.3 Customisation of ERP applications

The important task for the host organisation is to select the right package that suits the organisation’s strategic goals, business processes and requirements, and that fits the organisation’s information needs and data modelling to avoid the need for customisation (Nelson, K & Somers 2001). Customisation of the ERP package is usually associated with reduced ability to benefit from vendor software maintenance and upgrades (Law, Chen & Wu 2010; Mabert, Soni & Venkataramanan 2003; Nelson, K & Somers 2001; Ng & Gable 2010). Such customisation is expected to be minimised (Plant & Willcocks 2007). Maintenance and support services that are delivered by ERP vendors improve the quality and extend the life of the ERP application, and ERP customers should upgrade the application to a supported version to have access to the maintenance and support services (Law, Chen & Wu 2010).

Hence host organisations are assumed to be willing to change their business practices to adjust the applications and minimise customisation in order to reduce errors and also to take advantage of newer versions and releases of the application (Law, Chen & Wu 2010; Nah, Lau & Kuang 2001). However, if a company has a very specific requirement that cannot be modified to suit the ERP application, then customisation is required to make the necessary fit between the ERP module and the organisation’s business requirements (Soh, Kien & Tay-Yap 2000). Nevertheless, for country specific requirements, ERP applications are expected to be localised by the ERP vendor to suit different local contexts (Liang & Xue 2004).
2.4.2.4 Vendor governance

During the implementation and maintenance of the ERP application, different issues related to the implementation of ERP products could arise which need to be resolved by vendor engagement (Markus & Tanis 2000; Ng & Gable 2010). The degree of complexity of the implementation issue and the host business requirements determine the degree of required interaction and communication between the vendor and host (Zarb & Kierstead 2008). It is the customer’s responsibility to report any maintenance problems to the ERP vendor and to track the progress and solution (Chen, Law & Yang 2009; Ng & Gable 2010). A timely response from the vendor cannot be made unless there is an effective team working between the vendor, consultant and host company to resolve the software problems (Chen, Law & Yang 2009; Nah, Lau & Kuang 2001). Participation and joint action, coordination, and information sharing and communication quality are identified as dynamic factors in the relationship quality and the success of software outsourcing (Waheed & Molla 2004).

Success for the host organisation requires closely monitoring the progress of the project in weekly meetings and reporting concerns and critical issues to the supplier to avoid any disputes (Koh, Ang & Straub 2004). While close monitoring and follow up of issues with the vendor can speed the resolution time and enhance the communication between parties (Mayer 1995), delays in reporting issues could complicate these and make them difficult to fix (Leinfuss 1994).

2.4.3 Vendor–Host Relationship

A review of the ERP project and IS literatures shows that contractual clarity and relationship governance can influence the vendor’s ability to deliver support services to ERP customers. Contractual clarity includes management of expectations and conflict resolution based on the service level agreement between the ERP customer and the ERP vendor (Nah, Lau & Kuang 2001; Nelson, K & Somers 2001). Relationship governance includes communication management (Gillespie 2005; Nelson, K & Somers 2001; Zarb & Kierstead 2008), handling the time zone differences (Zarb & Kierstead 2008) and communication technology (Carmel & Tjia 2005; Motwani et al. 2002). Table 2.5 indicates which references discussed the above aspects of the vendor–host relationship in ERP projects.
Table 2.5: Summary of Literature on Host–Vendor Relationship.

<table>
<thead>
<tr>
<th>Source</th>
<th>Vendor-Host Relationship Competencies</th>
<th>Domain of Literature</th>
<th>Research Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contractual Clarity</td>
<td>Relationship Governance</td>
<td></td>
</tr>
<tr>
<td>(Akkermans &amp; Helden 2002)</td>
<td>*</td>
<td>ERP Client</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Carmel &amp; Tjia 2005)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>NA</td>
</tr>
<tr>
<td>(Gillespie 2005)</td>
<td>*</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>(Goles 2001)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Survey</td>
</tr>
<tr>
<td>(Koh, Ang &amp; Straub 2004)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Law, Chen &amp; Wu 2010)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Levina &amp; Ross 2003)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Mabert, Soni &amp; Venkataramanan 2003)</td>
<td>*</td>
<td>ERP Client</td>
<td>Survey</td>
</tr>
<tr>
<td>(Motwani et al. 2002)</td>
<td>*</td>
<td>ERP Client</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Muscatello &amp; Chen 2008)</td>
<td>*</td>
<td>ERP</td>
<td>Literature Review</td>
</tr>
<tr>
<td>(Nah, Lau &amp; Kuang 2001)</td>
<td>*</td>
<td>ERP</td>
<td>Literature Review</td>
</tr>
<tr>
<td>(Nelson, K &amp; Somers 2001)</td>
<td>*</td>
<td>ERP Client</td>
<td>Survey</td>
</tr>
<tr>
<td>(Ng &amp; Gable 2010)</td>
<td>*</td>
<td>ERP Vendor</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Ngai, Law &amp; Wat 2008)</td>
<td>*</td>
<td>ERP</td>
<td>Literature Review</td>
</tr>
<tr>
<td>(Plant &amp; Willcocks 2007)</td>
<td>*</td>
<td>ERP Client</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Teo, Singh &amp; Cooper 2009)</td>
<td>*</td>
<td>ERP Vendor</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Xue, Sankar &amp; Mearika 2004/2005)</td>
<td>*</td>
<td>IT Outsourcing</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Yeh, Miozzo &amp; Vurdubakis 2006)</td>
<td>*</td>
<td>ERP Vendor</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Zarb &amp; Kierstead 2008)</td>
<td>*</td>
<td>ERP Vendor and Client</td>
<td>Case Study</td>
</tr>
</tbody>
</table>

2.4.3.1 Contractual clarity

One factor that needs to be carefully handled is the users’ expectation of the ERP application and the vendor services. The expectation of the ERP application sometimes exceeds the capabilities of the system; hence management of expectations in ERP projects is very important (Nelson, K & Somers 2001). This influences all phases of the ERP implementation life cycle (Akkermans & Helden 2002; Nelson, K & Somers 2001) and should be communicated at every level (Nah, Lau & Kuang...
While inability to manage user expectations can cause the project to fail, good management of expectations can result in successful user acceptance (Mabert, Soni & Venkataramanan 2003; Nelson, K & Somers 2001; Ngai, Law & Wat 2008). According to Teo, Singh and Cooper (2009), the vendor is expected to meet customer expectations based on the agreed scope and specification of the contact, but clarity in the project scope reduces the time that the vendor requires to revisit the raised issues to determine the fix. Defining the scope for maintenance is also important to determine both the cost and which changes can be covered.

Nelson and Somers (2001) stated: “ERP systems may fail to meet expectations despite positive contributions to the organisation if the systems are oversold by the vendor”. Hence the scope and specification of the services covered by the vendor need to be well defined and clear enough to avoid any unmanageable workload for the vendor (Koh, Ang & Straub 2004). However, the scope of the service should not restrict the vendor strictly to the contract and take away flexibility in their service, because that can negatively influence the vendor–host relationship (Gillespie 2005). Clarifying the scope of the services could result in the user better appreciating the service provided by the vendor and increasing user satisfaction (Levina & Ross 2003).

2.4.3.2 Relationship governance

The relationship between the vendor and customer influences the vendor’s success as well as the success of the ERP project (Goles 2001; Teo, Singh & Cooper 2009). Ongoing communication during and after the implementation could sustain a strong partnership between the vendor and customer (Gillespie 2005; Teo, Singh & Cooper 2009). Managing the relationship is the responsibility of both the vendor and customer (Ng & Gable 2010). Gillespie (2005) described the customer’s perspective as “A strong relationship means we get great support”. Studies of IT outsourcing also highlighted the positive influence of a good vendor–customer relationship on vendor support quality and the success of the project (Goles 2001; Levina & Ross 2003).

Sharing of information within the company and particularly between the implementation partners, including the vendor and consultants, are vital (Nah, Lau & Kuang 2001). Effective teamwork between the vendor and customer enables the vendor to deliver effective maintenance and support services (Law, Chen & Wu
In a case study, Zarb and Kierstead (2008) outlined the effectiveness of close communication between vendor and host on the quality of vendor support and the speed of knowledge transfer. Good communication with vendor support can enhance the knowledge level of the host company (Muscatello & Chen 2008).

Communication technology seems to facilitate the performance of the virtual team (Xue, Sankar & Mearika 2004/2005). The availability of collaboration technology such as email, instant messaging, electronic meeting systems and communication media enhances the collaboration between the vendor and host organisation (Carmel & Tjia 2005; Xue, Sankar & Mearika 2004/2005) and improves knowledge development and knowledge sharing between parties (Motwani et al. 2002). Different factors can negatively affect communication and collaboration. Language barriers seem to cause issues for global/large ERP vendors in successfully delivering their services (Yeh, Miozzo & Vurdubakis 2006). Different time zones is another concern that needs to be considered (Carmel & Tjia 2005). Different time zones may result in miscommunication and wrong knowledge transfer between the vendor and host company (Plant & Willcocks 2007).

2.5 SUMMARY

In this chapter, the key areas of the literature on ERP implementation have been reviewed to enable a better understanding of vendor support services and vendor support service quality in ERP projects. To do so, the study has drawn heavily from the outsourcing literature. Existing literature suggests that the life cycle of the ERP project influences the host requirements. On the other hand, the competencies of the vendor and host, two critical organisations in ERP projects, could influence the vendor support quality. In addition, the relationship between the ERP vendor and the adopting organisation seems to affect the vendor support service quality.

The next chapter defines the conceptual framework and explains the adopted methodology used in the current study.
CHAPTER 3 RESEARCH DESIGN

3.1 INTRODUCTION

The objective of the current study is to explore from the vendor’s perspective the factors that influence the vendor support service (VSS) and vendor support service quality (VSSQ) during the ERP implementation life cycle. Therefore the emphasis in chapter 2 was on the key areas of the literature related to VSS, the ERP implementation life cycle, ERP vendors, host organisations and the vendor–host relationship in ERP projects.

In this chapter, the conceptual design for the present study is defined (section 3.2), and the methodology used to carry out the empirical data collection and analysis is introduced (section 3.3). The final section (3.4) comprises a summary of the discussion in this chapter.

3.2 CONCEPTUAL DESIGN

The research deals with the key concepts of vendor support service, vendor support service quality and the factors that might influence the two. The conceptual framework of this research draws from the literature review presented in chapter 2. In particular, Markus and Tanis’s (2000) process theory and Levina and Ross’s (2003) vendor value proposition lay the foundation for the conceptual framework.

3.2.1 Process Theory

Process theory discussed in chapter 2 (Section 2.3) implies that the nature, type and content of VSS that host organisations seek and vendors deliver are likely to vary depending on the phase of the ERP lifecycle. For example, in the chartering phase, the emphasis of the host organisation is on learning about the application and the way that business practices are implemented in the ERP application to compare and match these with the business requirements of the host company. Hence, at this stage the host requires mainly a functional knowledge of the application, which could be covered either by the vendor sales people or included in the ERP documentation. In the project phase, functional/technical knowledge transfer and functional/technical
troubleshooting are key issues. In the shakedown phase, the emphasis is more on troubleshooting of the application. In the onward and upward phase the focus is on knowledge transfer to sustain the ERP system.

Based on process theory and for the purposes of this research, vendor support service is divided into two major categories: **technical and functional support;** and **maintenance support.**

*Technical and functional support* refers to troubleshooting and knowledge transfer. Troubleshooting is assistance in investigating, diagnosing and troubleshooting any product related issues that either require access to the backend (code source and database) or that could be achieved through the user interface by setup and configuration of the application parameters and functionalities. Knowledge transfer refers to any technical knowledge which transfers to customers – either through the process of troubleshooting the issue or through any knowledge content – to explain the way that different functions work and to explain the required setup and configuration of the functionalities to meet the desired business requirements. However, some functional enquiries could turn into technical/functional issues if code repair is required.

*Maintenance support* is defined as support to sustain the continuous performance of the ERP application. It includes providing a fix for any code issue in the application, providing adequate information about new releases and functionalities of the application, and transferring the customer requirements to the vendor organisation to be considered for future releases.

### 3.2.2 Vendor Value Proposition

The vendor value proposition framework, introduced by Levina and Ross (2003), deals with the influence of vendors’ competencies on the success of the IT outsourcing. The theory proposes that vendors’ competencies have a positive impact on service quality. Levina and Ross (2003) argued that the development of the vendors’ competencies not only improves the level of service that vendors provide to their clients but also enhances the relationship between vendors and clients, which reinforces the quality of the service that vendors deliver to the customers. For
instance, lack of dedicated resources increases the delay in service delivery (Liang et al. 2004). Hence, IT personnel development and rotating personnel to learn multiple required skills helps vendors to maintain the work at a higher level through transferring skilled people to where their skills are required (Levina & Ross 2003). Developing methodology is a vendor competency, which significantly advances the overall performance of the vendor. Having a defined methodology specifically standardises the process and the service and enhances the efficiency of the delivered service. It also helps the vendor to gain more time (as a result of having efficient and standard processes), which the vendor can use in other ways to improve the service, such as upskilling employees (Levina & Ross 2003). Another example is advancing the customer relationship management and communication, which helps the customer to understand the level and limitations of the service and the effectiveness of the delivered service. This increases the overall customer satisfaction (Levina & Ross 2003).

In addition to studies on the vendor value proposition, the impact of host capabilities on the vendor–host relationship and on the success of IT outsourcing has been researched in different studies (Goles 2001; Koh, Ang & Straub 2004). Capabilities such as business understanding, IT technical capability and relationship management skills have been put forward as important host competencies to assist vendors in improving the quality of the service and successfully accomplishing the project.

The influence of vendor competency, host competency and the vendor–host relationship competency on the vendor service quality is discussed in chapter 2, sections 2.4. The definition of vendor support quality is likely to be perceived differently by ERP hosts and vendors. Since this study focuses on the vendors’ perspective, vendor support service quality is regarded as the vendor’s assessment of its responsiveness, the effectiveness of the services in meeting the host organisations’ requirements, and customer satisfaction. For the same reason, our exploration of host competencies and capabilities are based on the vendor’s assessment.

The above discussion leads to the initial conceptual framework shown in figure 3-1, which has been used to guide but not necessarily limit the data collection and analysis. As discussed earlier, the Figure (3.1) proposes that Vendor Support Service
Quality (VSSQ) can be evaluated using the effectiveness of the service rendered to ERP host organisations, the responsiveness of the vendor to ERP hosts’ requests and the satisfaction of ERP host organisations by the Vendor’s service. Based on the literature review and the discussion in 3.2, it is expected that factors related to a vendor competency, vendor-host relationship competency, host competency, and customer requirements/vendor delivered support could influence VSQ. Further, the ERP implementation lifecycle is proposed to influence the customer requirements. On the other hand, host competency and vendor-host relationship could either increase or decrease customers’ requirements of support service and a vendors’ ability to deliver these services. On the figure, the arrows indicate the direction of relationship and the sign (positive or negative) indicate whether a factor is a facilitator or inhibitor.

![Figure 3-1: Conceptual Framework.](image)

### 3.3 METHODOLOGY DESIGN

This study was conducted using a qualitative research methodology with a single case study approach. This section commences with a detailed description of the qualitative approaches taken to achieve the research objectives. The methods used in case
selection and data collection are described. Finally, the data analysis techniques used to carry out the current study are discussed.

3.3.1 Methodology

A qualitative research method was adopted for this study on how different factors influence the vendor support service and vendor support service quality in ERP implementation. Qualitative research methods are designed to assist the investigator to understand what people say and do, and the reasons behind their decisions and actions (Myers 2009). Page and Meyer (2003, p. 18) stated: “the qualitative approach can be conceptualised as a focus on words and feelings, the quality of an event or experience”. Hence qualitative research should be conducted under defined contexts to understand people’s motivations, their actions and reasons and their beliefs in depth within that context (Myers 2009). “Some decisions and actions could be understand in context – it is the context that helps to ‘explain’ why someone acted as they did” (Myers 2009, p. 5). Therefore, qualitative research is suitable because the focus of the present study is on organisational concerns rather than just on an information system or technology. Moreover, the emphasis on qualitative data such as interviews and participant observation is suitable to investigate a social phenomena (Myers & Avison 2002).

The study employed a case study approach. One reason for this is that case study research is particularly suitable for addressing problems in which research and theory are still developing (Collis & Hussey 2009). A second reason is that the role of vendor support in ERP projects is a contemporary phenomenon in its real-life context. The interaction between ERP vendor and host organisation is not clearly evident, and the investigator has little control over events. ‘How’ and ‘why’ questions may be posed to explore a contemporary phenomenon within a real-life context. Therefore a case study method is preferred (Yin 2003). Case study is a methodology that can be used to explore a single phenomenon (Collis & Hussey 2009), with the aim being to understand a certain phenomenon in a particular context (Collis & Hussey 2009). Yin (2003, p. 4) stated: “the case study is a method of choice when the phenomenon under study is not distinguishable from the context”. The case can be a particular business, group of workers, event, process or person (Collis & Hussey 2009).
3.3.2 Method

One of the biggest challenges in using a case study approach is finding a company or companies in which the research could take place, because case study research could represent a real story, especially if the selected case is a well known organisation (Myers 2009). In case study research, case selection and whether or not to use a single or multiple cases are important decisions (Yin 2003). Case study research should be completed in a manner that offers sufficient evidence to the theory or conceptual framework presented by the study and can contribute to knowledge. Hence, in case study research, the quality of the gathered data is much more important than the number of cases, because obtaining high quality data from even one single case could enhance the validity of the research more than increasing the number of cases (Myers 2009). Hence, the importance of the case could be a justified rationale for using a single case approach (Yin 2003).

For the current study a single case was selected. The main reasons for the single case selection are as follows. First, the focus of the current study is on an international ERP vendor, and there are few large ERP providers worldwide. According to international reports, the selected case is one of the main players in the ERP domain and covers many ERP customers globally; therefore the single case is strong enough to cover the required data. Second, the researcher was employed by the vendor as a support engineer during the research period and was directly involved in support provision to a large number of local and international ERP customers. Therefore there was access to examine the phenomena as an opportunistic case study (Collis & Hussey 2009). Thus, selecting this single case not only covered a large range of required data but also enabled a relatively ready access to the data required for this study. Third, a single case is also useful for exploration at the beginning of theory generation (Myers & Avison 2002). Since there has been little research on vendor support in ERP implementation, researching this single case could be a starting point to explore this area.

Because the selected case doesn’t want to be identified, it will be referred to as SEV Company (Support ERP vendor). SEV Company is one of the largest Enterprise Systems (ES) providers globally. SEV has structured itself into a number of organisational units, referred to as departments. These departments include the SEV
Sales Department, SEV Development Department, SEV Education Department, SEV Consultancy Department, SEV Service Delivery Management Department and SEV Support Department. Table 3.1 shows the main responsibilities of each department.

<table>
<thead>
<tr>
<th>Department</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEV Sales Department</td>
<td>Responsible for the marketing and sales of SEV’s products and related services such as software support service.</td>
</tr>
<tr>
<td>SEV Development Department</td>
<td>Responsible for the design, development and maintenance of the source code of SEV’s products. For instance, for SEV’s ES package, the SEV Development Department is responsible for the maintenance of different releases related to the ES package, keeping the ES package up to date with the latest market technology and developing and implementing new on-demand features and functionalities required for competing in the ES market.</td>
</tr>
<tr>
<td>SEV Education Department</td>
<td>Responsible for delivering internal and external training and education for SEV Company’s products.</td>
</tr>
<tr>
<td>SEV Consultancy Department</td>
<td>Responsible for delivering consultancy service to SEV Company’s customers. For example, customers who are implementing SEV’s ES package could buy consultancy services from SEV during implementation.</td>
</tr>
<tr>
<td>Service Delivery Management Department (SDM)</td>
<td>Responsible for accelerating and managing the delivery of the service to SEV’s customers. Within SEV Company, service refers to any type of service offered by SEV Company.</td>
</tr>
<tr>
<td>SEV Support Department</td>
<td>Responsible for delivering support service for SEV’s products including software support service for its ES package.</td>
</tr>
</tbody>
</table>

Table 3.1: Responsibilities of Various SEV Departments
(Source: From SEV Internal Documentation)

This research has primarily focused on the SEV Support Department as it is the main organisational unit responsible for delivering SEV’s technical, functional and maintenance services.

SEV Company has multiple support sites in different countries so it can cover all customers in different time zone and countries. All sites follow similar standards and policies, use the same support tools and technology, and provide support across the global – explained in more detail in chapter 4, section 4.2. Hence, similar results can be expected from different sites (Myers & Avison 2002), and the results of one site may be applicable to the other sites (Collis & Hussey 2009; Yin 2003). Therefore, as the selected case is very large, a multistage case selection was used (Collis & Hussey 2009), with the empirical study covering only one support centre, located in Australia. The reasons argued above to justify a single case apply to the multistage case selection decision (Myers & Avison 2002).
The selected site has more than 50 support staff assigned to different local and global teams in order to respond to customers, who are in different phases of the implementation of the ERP application. The teams cover the different modules of the business areas delivered by the ERP application.

3.3.3 Data Collection

The most important thing in case study research is gathering enough evidence. Data sources include interviews with key informants – the people who know the most about the research topic (Myers 2009). Collecting data from different types of sources adds value to the data (Yin 2003). An in-depth case study uses other sources such as documents, which are extremely valuable because they often provide evidence for things that people might omit in interviews (Myers 2009). Therefore in this research, data were gathered from three different sources: individual interviews; participant observations recorded in a diary; and documents.

3.3.3.1 Interviews

Interviewing is one of the most important methods of collecting data in qualitative research (Myers 2009). Interviewing is a method of understanding how people think and feel, and therefore it is important to ask enough questions to be confident that the required data has been gathered (Collis & Hussey 2009). There are three types of interviews: structured, unstructured and semi-structured (Myers 2009). In structured interviews, the questions are defined in advance as a questionnaire and the interviewee has limited options in answering the questions (Collis & Hussey 2009; Myers 2009). Unstructured interviews are the opposite: they use fewer predefined questions and more open-ended questions to explore interviewees’ opinions in more depth and to understand what people have in common, what their practices are, phenomena, and their attitudes (Collis & Hussey 2009; Myers 2009).

Unstructured interviews are usually time consuming, and controlling the range of discussion and analysing the responses is not easy. However, they are useful when the step-by-step logic of the situation is not clear, and the aim of the interview is to develop an understanding of the respondent’s world (Collis & Hussey 2009). Semi-structured interviews lie between structured and unstructured. There are predefined questions; however, the answers to the questions are not limited and other questions
could be raised during the interview time (Myers 2009). Thus, the participants could elaborate on their opinions and the interviewer has the option to ask more questions to clarify the participant’s initial answers and gain the maximum information (Collis & Hussey 2009). Nevertheless, to avoid a large volume of data, the saturation method is suggested as the gold standard (Guest, Bunce & Johnson 2006). Data saturation occurs when the interviews generate the majority of the codes for the data analysis, with additional interviews generating repetitive codes (Guest, Bunce & Johnson 2006).

For the purpose of the current research, three sets of semi-structured interviews based on the proposed conceptual framework described in section 3.2 were conducted. The first set of interviews (eight in total) was conducted in September and October 2008. The second set of interviews (nine in total) was conducted in September and October 2010 to cover gaps in the data identified following analysis of the first set of interviews. The third set of interviews (seven in total) was conducted in July 2011 to evaluate the findings. Appendix A, B and C contain the questions used in the interviews.

At the time of the interviews, the support teams located in the Australian support centre covered the following main product lines: Human Capital Management (HCM); Manufacturing and Procurement; Customer Relationship Management (CRM); Advance Technology; and Finance and Accounting (F&A). The data for this study was collected from a total of twenty-four interviews and fifteen participants. The participants’ roles were in delivering, managing or directing the support service to SEV customers across the global. The participants were aged from 25 to 48 years and had from 1.5 to over 10 years work experience as either a support engineer, manager or director in the SEV Company. Table 3.2 shows the profile of each interviewee.
<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Interview Date</th>
<th>Year of Service at First Interview</th>
<th>Level</th>
<th>Previous Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>INT1</td>
<td>*</td>
<td>8 years</td>
<td>First interview: Principle support engineer, second interview: manager</td>
<td>Worked in different support team.</td>
</tr>
<tr>
<td>INT2</td>
<td>*</td>
<td>7 years</td>
<td>Senior support engineer</td>
<td>Worked in different support team.</td>
</tr>
<tr>
<td>INT3</td>
<td>*</td>
<td>3 years</td>
<td>Support engineer</td>
<td>Worked in different industry.</td>
</tr>
<tr>
<td>INT4</td>
<td>*</td>
<td>3 years</td>
<td>Senior support engineer</td>
<td>Involved in ERP projects on customers’ side.</td>
</tr>
<tr>
<td>INT5</td>
<td>*</td>
<td>1.5 years</td>
<td>Support engineer</td>
<td>Worked in different industry.</td>
</tr>
<tr>
<td>INT6</td>
<td>*</td>
<td>2.5 years</td>
<td>Support engineer</td>
<td>Worked in different industry.</td>
</tr>
<tr>
<td>INT7</td>
<td>*</td>
<td>3 years</td>
<td>Senior support engineer</td>
<td>Support engineer for another ERP vendor</td>
</tr>
<tr>
<td>INT8</td>
<td>*</td>
<td>Over 10 years</td>
<td>First interview: Principle support engineer, second interview: manager</td>
<td>Worked in different support teams</td>
</tr>
<tr>
<td>INT9</td>
<td>*</td>
<td>13 years</td>
<td>Director</td>
<td>Support engineer</td>
</tr>
<tr>
<td>INT10</td>
<td></td>
<td>14 years</td>
<td>Director</td>
<td>Support engineer</td>
</tr>
<tr>
<td>INT11</td>
<td>*</td>
<td>11 years</td>
<td>Director</td>
<td>Support engineer</td>
</tr>
<tr>
<td>INT12</td>
<td>*</td>
<td>Over 3 years</td>
<td>Support engineer</td>
<td>Developer in another company</td>
</tr>
<tr>
<td>INT13</td>
<td>*</td>
<td>Over 3 years</td>
<td>Support engineer</td>
<td>Support engineers in another company</td>
</tr>
<tr>
<td>INT14</td>
<td>*</td>
<td>Over 3 years</td>
<td>Support engineer</td>
<td>Developer in another company</td>
</tr>
<tr>
<td>INT15</td>
<td>*</td>
<td>Over 5 years</td>
<td>Senior support engineer</td>
<td>Developer in another company</td>
</tr>
</tbody>
</table>

*Table 3.2: Profile of Interviewees.*

The duration of each interview was approximately one hour; however, in two cases the interview time was longer than an hour. The first and second sets of interviews were recorded with the agreement of the interviewees and were later transcribed for further analysis. In the third set, the interviewees completed the interview questions.
on paper with limited defined options for each question. One participant completed the interview on his own; and the rest completed it in pairs.

Although approval for the data collection was obtained in advance from the support director, a meeting was also organised with all support managers from different teams in the centre. These managers were given a short presentation to explain the purpose of the research, the aim of the interviews, the content of the interview questions and the ethics process. Managers agreed that interviews with their staff could be conducted during working hours, and they understood that the names of interviewees would not be disclosed in accordance with ethics guidelines and in order to maintain confidentiality of the information. Subsequently, a list of support engineers was prepared. The support engineers were from different teams. An invitation letters including the plain language statement (Appendix D) were emailed those who agreed to participate in the interview. The interview questions and the ‘Prescribed Consent Form’ (Appendix E) were also attached to emails. It was explained that participation in the interviews was voluntary and it would not affect their work reputation. This avoided any ethical issues (Collis & Hussey 2009).

At the beginning of each interview, the purpose of the research was explained to the interviewee and they were informed that they could refrain from answering any question during the interview and they could withdraw from the interview at any time (Page & Meyer 2003).

3.3.3.2 Participant observation and diary
The second type of data collection method used in this study was participant observation and a diary. The researcher was one of the support engineers who was directly involved in providing ERP support for the vendor’s customers. Qualitative research seeks to understand the meanings behind peoples’ action, and therefore participant observation is useful as it unravels social interaction (Myers 2009). The researcher’s observations and experience were part of the data gathered for this study. The use of diaries is a method of data collection that offers an individual perspective in business research projects (Collis & Hussey 2009). Information for the diary was gathered based on the researcher’s experience and observations, and in a manner that reflected the researcher’s own experience in regards to the research questions. The
researcher worked with three different managers with very different management styles, and worked in three different local and global teams, which offered different sites for observation. However, the diary was written in such a way that individual teams or persons cannot be identified.

3.3.3.3 Document review

Documents such as web pages, emails, records of what someone said or what happened – any information that can be recorded and retrieved for analysis – are sources of data that contribute to a richer picture than just interviews and can supplement data collected in interviews (Myers 2009). For the purposes of the current study, two types of electronic documentation were used. The first type were public electronic documents and files that are available through the SEV Company’s web site to educate the public about the services that SEV Company provides and the policies that they follow to provide the services. This type of documentation was used in the current study to familiarise the reader with the SEV Company background, services and policies (section 4.2).

The second type of documents were internal documents about support service procedures and best practices that are available to support engineers to educate them on how to use different tools and how to increase the efficiency of the service they provide to the SEV’s customers. These documents were used both in completing the case background (section 4.2) and in the findings (section 4.3).

3.3.3.4 Ethical processes

Data were collected after an ethics application was submitted to the Human Research Ethics Sub-committee in the Business College of RMIT University on July 17, 2008 and approved on August 11, 2008 with Ref: Ethics Appl. 710.

3.3.4 Data Validation

The validity of the data is very important in qualitative research (Collis & Hussey 2009). For example, in reviewing the documentation, the actual reviewed documents and the version of any documents were saved at the time of data collection for future reference in case there was further change to these documents later (Myers 2009). One of the challenges in diary data collection method is the subjective interpretation
and therefore the high risk of bias that could affect the validation of the data (Collis & Hussey 2009). In such cases, to keep the data collection clear from bias, the diary was reviewed with the researcher’s supervisors. Moreover, data from the diary was used mostly to supplement the data collected in the interviews.

Prior to each interview, basic concepts used in this research that related to the interview questions, such as ERP life cycle and the different types of vendor–host relationship were explained briefly to the interviewees. Although all interviewees were quite experienced employees and had supported ERP customers for several years, this review of concepts was undertaken to ensure the validity of data gathered in the interviews.

3.3.5 Data Analysis

In the qualitative approach, the researcher usually ends up with a large volume of data (Myers 2009) and therefore it is very hard to structure and summarise the collected data and all observations (Collis & Hussey 2003). A key concern in analysing qualitative data is how to organise, understand and manage the volume of the data (Holt 2008). One of the ways to analyse qualitative data is to define a priori concepts (Myers 2009). The defined concepts can be used in a template analysis to structure the data (Holt 2008). Template analysis is a valid approach when there is initial knowledge in the area of the research and a priori codes are defined based on literature review (Waring & Wainwright 2008).

In the current study, a template analysis was used. The conceptual framework (Figure 3-1) drawn from the literature was used as a guide for initial coding in a template analysis, and new code and dimensions were added where it was required. The initial identified codes were the ‘ERP lifecycle’, ‘customer requirements/vendor delivered support’, ‘vendor support quality’, ‘vendor competency’, ‘host competency’, and ‘vendor-host relationship competency’. From these, initial codebooks were generated. Then the transcribed interviews were carefully reviewed and each part of the text was mapped onto the codes. All the data then was structured based on the defined codes and placed in different files and tables.
Structuring the data helped to identify and reduce irrelevant and repetitive data. In a qualitative data analysis, data reduction is important when analysing and managing the data (Collis & Hussey 2009; Myers 2009) especially if non-quantitative methods are used to analyse the qualitative data (Collis & Hussey 2009). Eliminating unnecessary data helped to focus on important parts of the data and transform the data so they are meaningful and interesting for both the researcher and the reader (Myers 2009). Collis and Hussey (2009, p. 167) defined data reduction as “a form of data analysis that sharpens, sorts, focuses, discards and reorganises data in such a way that final conclusions can be drawn and verified”.

3.4 SUMMARY
In this chapter the scope of the current project was defined and the method to carry out the study was discussed. The conceptual design was introduced, and vendor support service and dimensions of evaluation of vendor support service quality were defined. Following this, a conceptual framework based on the literature review was introduced. The chapter continued with a discussion on the study design including the methodology used in the present study.

In the next chapter, the conceptual framework and the introduced method are used to analyse the collected data.
CHAPTER 4 FINDINGS

4.1 INTRODUCTION
This chapter presents the findings of the case study. Section 4.2 provides background to the case study; Section 4.3 provides the detailed findings; and Section 4.4 provides an overall summary.

4.2 CASE BACKGROUND
In this section, a brief background of the selected case is presented. However, as we are not permitted to disclose the name of the organisation, it will be referred to here as SEV Company or SEV. The information presented is intended to familiarise the reader with the background of the selected case (4.2.1), its support service categories (4.2.2) and service level categories (4.2.3) in a manner consistent with the confidentiality requirements.

4.2.1 General Background
SEV Company provides Enterprise Systems (ES) globally. The ES products include customer relationship management (CRM), manufacturing and procurement (M&P), enterprise resource planning (ERP, which covers human capital management [HCM], finance and accounting [F&A], and project management [PM]), asset life cycle management (Salmeron & Lopez), supply chain management (SCM), product life cycle management (PLM) and advanced technology (AT). SEV Company operates in both large and SMEs ES markets.

The SEV Support Department (which is the primary focus for the current study – see chapter 3, section 3.3.2) is a global department in SEV Company. The vice president (VP) of the SEV Support Department, senior directors, directors, line managers and support engineers are the employees who work in this department to deliver and manage support services for SEV’s global customers. The Vice president (VP) is responsible for the SEV Support Department. Senior directors are responsible for managing the support service of each of SEV’s product lines across the globe. Each product line is divided into several product line areas, and the directors who report to the senior directors manage the product line areas globally. Line managers report to
the directors and manage the support teams. Each support team is typically composed of 4 to 15 support engineers (although some teams have more than 15), who work directly with customers to deliver the support service.

To be able to cover all customers in different countries and time zones with different languages and legislations, the SEV Support Department has a distributed global workforce in five main support centres and some small centres. The support engineers, regardless of their location, are part of the global support teams and are managed by global line managers. For the purpose of the current study, the data is gathered from the employees who are located in the Australian support centre – one of SEV’s five main support centres.

At the time of data collection, the Australian support centre was organised into five units, comprising human capital management (HCM), manufacturing and procurement (M&P), customer relationship management (CRM), advance technology (AT), and finance and accounting (F&A) product lines. Figure 4-1 demonstrates the structure of SEV’s Australian support centre.
4.2.2 Support Service Categories

SEV Company offers three types of software support service called premier, advanced and gold. A software support service includes assistance on any SEV ES package related issue with the exception of issues caused by the customisation of SEV’s product source codes. Customisation of a code refers to when any function or piece of code has been added to the SEV ES package by the customer. Table 4.1 summarises the contents of the premier, advanced and gold support services.
Software Support Service

| Maintenance and delivery of major product and technology releases, which include general maintenance releases of the ES package, enhancement request (ER), functionality releases, and documentation updates (released yearly). | * | * | * |
| Critical repair packs and individual repair fixes. | * | * | * |
| Tax, legal, and regulatory updates based on country’s local requirements. | * | * | * |
| Access to all published SEV knowledge content. | * | * | * |
| Assistance with service requests (SRs). These SRs could refer to assistance and consultancy on the setup and configuration of the applications, enquiries on functionalities and documentation, request assistance on diagnosis, investigation and troubleshooting of customers’ SEV ERP package issues. | * | * | * |
| 24 hours x 7 days assistance for critical issues that could lead to a complete loss of service on a live environment. | * | * | * |
| Access to the SEV collaboration tool (SCT) to log and follow up the service requests (SRs) with the SEV support organisation and to download all the available technical and knowledge resources. | * | * | * |
| High-level management of the service with allocation of a SDM who can speak the customer’s local language and knows the customer’s major deadlines and milestones to accelerate the progress of the service request with the SEV Support Department. | * | * | * |
| Prioritising | Normal | High | Very high |
| Custom code | Not supported | Not supported | Not supported |

Table 4.1: Software Support Service.
(Source: SEV Company Website)

During the lifetime of a software support service agreement, customers can download any available maintenance and repair pack and published knowledge content from the SEV Collaboration Tool (SCT). They can also log service requests (SRs) to request technical or functional assistance, maintenance and repair packs, and knowledge. They can follow up their opened SRs using SCT.

4.2.3 Service Level Categories

Service requests logged by customers are grouped into four main severity categories. Severity 1 is considered the highest priority and severity 4 the lowest priority. The severity of the SR is identified automatically by the SCT based on the type of issue, its impact, and the answers that customers provide to questions when logging the
A customer may also contact the SEV Support Department to escalate and increase the severity of the SR. Table 4.2 shows the different severities, their definition, target response time and escalation status.

<table>
<thead>
<tr>
<th>Severity</th>
<th>Criteria</th>
<th>Target Response Time</th>
<th>Escalation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>New SRs</strong></td>
<td><strong>Existing SRs – Target</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Initial Target</strong></td>
<td><strong>Response Time</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Premier</strong></td>
<td><strong>Advanced /Gold</strong></td>
</tr>
<tr>
<td>Severity 1</td>
<td>Consider for a complete loss of service of the application or critical functionalities such as payroll run on a live environment. For severity 1 service requests 24x7 support service is provided to resolve the issue as soon as possible.</td>
<td>One hour</td>
<td>One hour</td>
</tr>
<tr>
<td>(sev1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity 2</td>
<td>Consider for loss of service. Important features are unavailable with no acceptable workaround; however, operations can continue in a restricted manner.</td>
<td>Six Business hours</td>
<td>Two and half Business hours</td>
</tr>
<tr>
<td>(sev2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity 3</td>
<td>Consider for a minor loss of service while operations can continue with some inconvenience.</td>
<td>One Business day</td>
<td>One Business day</td>
</tr>
<tr>
<td>(sev3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity 4</td>
<td>Not considered as loss of service and result might not affect the operation of any functionalities of the SEV ERP package. Sev4 includes requests for information, documentation clarification, and requests for enhancement functionalities.</td>
<td>One Business day</td>
<td>One Business day</td>
</tr>
<tr>
<td>(sev4) –</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the lowest priority</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2: Service Requests’ Severity and Criteria.
(Source: SEV Company Website)

A number of external and internal tools are used by the SEV Support Department. External tools facilitate communication and collaboration with customers. Internal tools are used for collaboration internally within the teams. Some of these tools are described in table 4.3.
<table>
<thead>
<tr>
<th>Tool name</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEV collaboration tool (SCT)</td>
<td>Internal/external</td>
<td>The SEV collaboration tool is WEB application software that is used for collaboration between the SEV customer and the SEV Support Department. Customers can use SCT to log service requests (SRs) with the SEV Support Department and to follow up the progress of the service requests. Customers could also use this web application to upload/download any information to the SRs and from the SRs.</td>
</tr>
<tr>
<td>Web Conference tool</td>
<td>Internal/external</td>
<td>The Web Conference tool is used for any online collaboration and knowledge sharing. Support engineers use Web Conference tool to collaborate and communicate with customers and connect to the customer’s environment in order to observe, record and troubleshoot issues online. This tool is also used for any internal online collaboration such as team meetings, internal knowledge sharing and collaboration with other teams where people are in different locations.</td>
</tr>
<tr>
<td>Internal Form</td>
<td>Internal</td>
<td>The Internal Form is used for internal offline communication between the SEV Support Department and the SEV Development Department.</td>
</tr>
<tr>
<td>Bug database</td>
<td>Internal</td>
<td>The Bug database is used to create any sort of bugs such as code issue bugs or data issue bugs. Support teams log bugs with the development team to request a code or data fix. The code fix is usually delivered as a patch, and the data fix as a script files.</td>
</tr>
<tr>
<td>Note creator</td>
<td>Internal</td>
<td>Note creator is a tool that support engineers use to create documents. These documents could be created based on customer issues and enquiries that have been resolved through an SR or could be any other technical/functional documents about SEV’s ES package. The created documents could be published and shared with customers.</td>
</tr>
<tr>
<td>Knowledgebase tool</td>
<td>Internal/external</td>
<td>The Knowledgebase tool is used to search available knowledge content in SEV Company.</td>
</tr>
<tr>
<td>Test application</td>
<td>Internal</td>
<td>Test applications are set up and configured for the SEV ES package for internal use to test the applications’ functionalities.</td>
</tr>
<tr>
<td>Education tools</td>
<td>Internal</td>
<td>Education tools are used by management to allocate online training to support engineers and monitor the completion of the training.</td>
</tr>
</tbody>
</table>

Table 4.3: Support Service Delivery Tools
(Source: Compiled from SEV Internal Documents and Personal Experience).

4.3 FINDINGS

The findings from the interviews are presented in this section in the following subsections. In 4.3.1 the findings on the support service quality, including support service quality indicators and SEV’s support service performance, are presented. The support service delivered/required is discussed in 4.3.2 and the ERP life cycle and
service quality in 4.3.3. The vendor competency, host competency and vendor–host relationship are discussed in 4.3.4 to 4.3.6 respectively.

4.3.1 Support Service Quality

4.3.1.1 Support service quality indicators

Timeliness, effectiveness of solution, content quality and customer satisfaction were identified as the four main indicators of the support service quality. The analysis of the interviews also resulted in specific indicators for some of these factors and those are captured as the dimensions for each. Each of the dimensions are defined with reference to the literature, interviews and SEV documentation.

Table 4.4 shows the dimensions, a summary of the definition and interview logs for each of these service quality dimensions. On the table, the category column represents some of the seed factors indicated on Figure 3.1 for evaluating vendor support service quality and additional themes emerged from the interviews which will be followed by a short discussion.
<table>
<thead>
<tr>
<th>Category</th>
<th>Dimensions</th>
<th>Definition</th>
<th>Interview Logs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timeliness</td>
<td>Resolution Time</td>
<td>Number of days elapsed until an open SR is closed with a solution.</td>
<td>“Obviously the resolution time: that would be a huge factor on how the quality is” [INT8].</td>
</tr>
<tr>
<td></td>
<td>Support Time</td>
<td>A subset of resolution time which refers to the overall time during the issue investigation process that the service request is waiting on the Support Department to act and respond.</td>
<td>“I think one of the measures I look at is time with support” [INT9].</td>
</tr>
<tr>
<td></td>
<td>Response Time</td>
<td>Response time is the time to return to the customer during the issue investigation and is based on each individual interaction.</td>
<td>“Probably the other measurement is time to respond; I think the actual time to respond is more important than resolution time” [INT3].</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>Effectiveness of Solution</td>
<td>Addressing the customer’s requirement and delivering the best solution.</td>
<td>“The solution is effective if the issue is resolved. I believe the solution has to be an agreed solution, you cannot have one party. This is the key attribute for resolved or not resolved” [INT4].</td>
</tr>
<tr>
<td>Content Quality</td>
<td>Technical Quality</td>
<td>Solving the issue with a clear explanation and directions.</td>
<td>“Technical quality, which is solving the issue with quality.” [INT8].</td>
</tr>
<tr>
<td></td>
<td>Interaction Quality</td>
<td>Effective and clear communication and constructive and professional interaction with customer.</td>
<td>“Clarity of communication and quality of the interaction. If there is evidence of fine conversation or evidence of what we have understood the customer’s issue is” [INT10].</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>Service Request Feedback</td>
<td>Customer comment and feedback that is reflected and communicated with support engineers either verbally or in writing in the SR.</td>
<td>“Customer feedback on the interaction and communication with customer which is reflected in the survey and comment posted in the service request” [INT7].</td>
</tr>
<tr>
<td></td>
<td>Transaction Satisfaction</td>
<td>Survey that is send to customers on individual service requests to capture the customers’ feedback and experience working on individual SRs.</td>
<td>“When the service request is closed we follow the result via a survey which is related to quality. So the surveys from the customers, which is based on the SRs” [INT6].</td>
</tr>
<tr>
<td></td>
<td>Relationship Satisfaction</td>
<td>Survey that is send to the customers twice a year to capture the customers’ overall experience.</td>
<td>“Looking at the customer experience at the bigger level, so looking at customer satisfaction with the relationship survey – we do that twice a year. That is a survey we send to customers, not on a SR, but on the whole experience” [INT9].</td>
</tr>
</tbody>
</table>

Table 4.4: Service Quality Dimensions in the SEV Support Department.
Time, as an indicator of quality, was not only discussed by almost all of the interview participants but is also highlighted in the SEV Support Department’s documentation as a metric to measure the performance of the delivered support service.

Response time, resolution time, and support time are the most important indicators in defining service quality. However, the relevance of each of these time dimensions varied from one interviewee to another. While a couple of interviewees emphasised response time, others emphasised resolution time. Two interviewees mentioned both response time and resolution time as important. However, one of the interviewees expressed that the intensity of responsiveness to the customer (that is the response time in each interaction) during the issue investigation process was more important than the overall resolution time and he believed being responsive could enhance the resolution time:

“I think the actual time to respond is more important than the others if we have constructive progress. So as long as you are progressing it, it does not matter how long it takes to resolve. If every interaction with the customer is to the best of our ability in progressing the issue then it affects time to resolve and will be resolved as soon as it can” [INT3].

One of the interviewees, who is a director in SEV Company, compared resolution time and support time, and emphasised that support time was more important than resolution time in measuring the service quality:

“One of the metrics that I use is, I think, support time. I think we do have ‘time to resolve’ as a measure but I don’t think it measures the quality of the service. I don’t think the time to resolve necessarily matters. You need to keep an eye on it but it does not necessarily mean that it is a good service or bad service. I think one of the measures I look at is time with support” [INT9].

Having an effective solution is another measure of quality indicated by interviewees. They highlighted the importance of addressing customers’ requirement, delivering the best solution and answering their questions proactively by going beyond what the customer requested.
Content quality is the third quality factor mentioned by the majority of the interviewees, but in different ways. A few interviewees directly referred to the importance of the technical quality of the delivered service. Others provided a deeper perspective and defined it as comprising a clear explanation and directions in the SR, effective and clear communication, and constructive and professional interaction with the customer. Technical quality is reflected in customer satisfaction and the use of SEV’s diagnostic methodology:

“Technical quality is difficult to measure and it is reflected in the customer feedback, escalation and calls to the manager on the SR. When there is a management follow up, this could be an indicator that something is missing in the quality. SEV diagnostic methodology improves the quality because customers are getting a standard way of looking at the service request. Put that troubleshooting methodology into a common way. We are forcing people to explain why they do something” [INT8].

Last but not least, “customer’s feedback and satisfaction with the delivered solution and service” is highlighted as one of the most popular indicators defining service quality. Customer satisfaction was highlighted in three ways: customer feedback, transactional satisfaction, and relationship satisfaction.

Most of the interviewees believed that customer feedback and transaction satisfaction, which show how customers feel about and react to the delivered service and solution, demonstrate service quality. However, one of the interviewee – a product line director – described the third type of customer satisfaction as an important indicator to management as it measures the overall quality of the delivered service.

“There are two sides to customer satisfaction. One is the transactional survey side. You know, looking at individual issues and how we are dealing with individual issues. That’s one side. The second side is looking at the customer experience at the bigger level, so looking at customer satisfaction with the relationship survey; so we do that twice a year. That is a survey that we do and we send to customers, not on a SR, but on the whole experience. We send it for total SEV perspective and it has got questions about the support service and it has questions about education and it has questions about
consulting. So we send that to managers, CEOs, different people in the companies to see what they think about the services we are providing them, not based on single transactional perspective” [INT9].

Some of the interviewees also suggested that customer satisfaction at the service request level is related to the time to deliver the service [“Generally what I found is that for most of my people and service requests, when they get high customer satisfaction, time with support are the shortest. So it is correlation”, INT9] and the effectiveness of the solution [“So, specifically for customer feedback the whole experience of the customer whether it is positive or negative can impact that. Nothing more and nothing less. What makes a good experience is responsiveness, clarity of communication, and the quality aspects that we see in the service request” INT10].

The above findings suggest that the support service quality in SEV Company can be divided into two different levels: (1) the process level; (2) and the outcome level.

The process level refers to how well the support service is delivered to customers and includes the timeliness of the service, the effectiveness of the delivered solution and the content quality delivered to customers during the issues investigation. The outcome level refers to how customers evaluate the delivered service, and covers customer satisfaction (customer feedback, transaction satisfaction, relationship satisfaction).

4.3.1.2 Support service performance

In order to evaluate SEV’s support service quality performance, the 2010 performance result was analysed against the targets for that year. The outcome is summarised in table 4.5.
<table>
<thead>
<tr>
<th>Service Request</th>
<th>Actual</th>
<th>Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of SRs Received</td>
<td>435560</td>
<td></td>
</tr>
<tr>
<td>Number of SRs Closed</td>
<td>431193</td>
<td></td>
</tr>
<tr>
<td>Reopen Request on Closed SRs</td>
<td>5%</td>
<td>5 to 10%</td>
</tr>
<tr>
<td>SEV Methodology Used</td>
<td>70.60%</td>
<td>80%</td>
</tr>
<tr>
<td>Overall Resolution Time (days)</td>
<td>33.75</td>
<td>35</td>
</tr>
<tr>
<td>Support Time (days)</td>
<td>13.25</td>
<td>15</td>
</tr>
<tr>
<td>Percentage Which Met Target Response</td>
<td>87.25%</td>
<td>80%</td>
</tr>
<tr>
<td>Time Discussed in Table 4.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 4.5: SEV Support Service Performance for 2010*  
(Source: Compiled from SEV Internal Documents)

The metrics used in the performance results are directly related to the timeliness of the service and indirectly reflect the effectiveness of the solution and the technical/content quality of the delivered service. As shown in the table, the overall resolution time, support time and response time scored higher than the expected values. The percentage of reopen requests from the total number of closed service requests reflects customer acceptance of the delivered solution and could show the effectiveness of the service. The content quality delivered to the customer cannot be measured without reviewing individual SRs and therefore it is not reflected in the performance results.

The customer satisfaction rate for the fiscal year 2010 for all product lines under the ES package is summarised in Table 4.6. Both the transactional and relationship satisfaction are less than SEV’s target. While the transactional satisfaction of 76.75% is slightly less than the expected number of 85%, the difference between the actual relationship satisfaction (55%) and the target (85%) is very large.
transactional and relationship satisfaction scores could be the result of different factors such as who participates in the surveys and their role in the enterprise. The transactional survey is sent to frontline people in the customer organisation – those who are directly working on the service requests with the Support Department – and is based on individual service requests. The relationship survey, on the other hand, is sent to different levels, from employees to the CEO, and it captures the overall view of the service. This may explain the gap between the two responses. One of the directors described the difference between the two survey responses as follows:

“The relationship survey is not about an individual SR; it is about the whole service. They are paying a lot of money for the service so they ask “what I am getting out of it? Is it good or bad?” The customer might rate 50% here, and higher for the transactional survey because the factors that influence that survey are quite different” [INT9].

Despite the process level factors in table 4.5 being almost above or close to the expected values, the overall satisfaction (outcome level) shown in table 4.6 was less than expected. The difference between the process level and outcome level could be interpreted in different ways. The process level is how the SEV Support Department evaluates their service level, while the outcome level is how the customers evaluate it. Therefore the difference between the process and outcome levels shows that the customer expectation was higher than what the SEV Support Department defined as their goals. However, one of the interviewees believed that the customer feedback and comments in the service request were more accurate than the transactional satisfaction survey because not all of the customers complete the transactional survey. For example, as can be seen on table 4.5, in only 25811 out of 431193 closed SRs was a transactional satisfaction survey completed.
The factors that could positively or negatively affect the process and outcome level of the service quality are discussed in the following sections.

4.3.2 Support Service Delivered/Required

SEV customers use SCT (SEV’s collaboration tool) to log service requests (SRs). The SRs are logged for any technical and functional enquiries, maintenance and repair packs and the published knowledge content issues that customers have with SEV’s ES package. The service requests generally fall into one of the following six major categories: (a) consultative enquiries; (b) setup issues (install, setup and configuration); (c) source code issues (bugs); (d) data issues; (e) environmental issues; or (f) enhancement functionality, that is, adding new functionalities to the application.

The findings indicate three important and interrelated attributes of services requests – severity, priority, complexity – that either directly or indirectly influence (positively or negatively) the timeliness of the service, the effectiveness of the solution, and the content quality of the delivered support service. They also influence the transactional level customer feedback and satisfaction. These attributes and their definitions are extracted from SEV documentation and the interviews.

Table 4.7 shows a summary definition of each of the attributes and some interview logs (where applicable). This is followed by a short discussion about the influence of customer requirements on the service that they receive.
<table>
<thead>
<tr>
<th>Service Request</th>
<th>Definition</th>
<th>Sample Interview Logs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Refers to the type of the service request</td>
<td></td>
</tr>
<tr>
<td><strong>Attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity</td>
<td>Severity shows the importance and impact of the service request and is grouped into four main severity categories, from 1 to 4. Severity 1 is considered the highest priority and severity 4 the lowest.</td>
<td>“The severity is different: severity 1,2,3,4. I categorise the issues based on severity. Severity means the impact of the issue, how many people are affected and how” [INT5].</td>
</tr>
<tr>
<td>Priority</td>
<td>Refers to the importance of the service request. It determines the order in which a support engineer is expected to work on service requests.</td>
<td>“The priority of the issue would be driven by the overall business impact of the issue. The category of customers also affects the priority” [INT4].</td>
</tr>
<tr>
<td>Complexity</td>
<td>Refers to the difficulty involved in resolving an issue, detailed in table 4.8.</td>
<td>“When there is bug and I need to reproduce the issue. If their problem needs a very complex test case, if the issue is more complicated and we are waiting on a subgroup such as frame work or advance technology group, it could take a long time”[INT1].</td>
</tr>
</tbody>
</table>

**Table 4.7: Service Request Attributes**

The **severity** of service requests reflects the business impact of the issue on customers. It ranges from one to four (sev1, sev2, sev3, sev4). The category of the service request influences the severity. For instance, enhancement functionalities always have severity 4, consultative service requests typically have low severity (sev3 and sev4), and source code issues usually have higher severity (sev2 and sev1). However, there are some “source code” issues with minor impacts that have lower severity. Each support engineer has a queue of service requests assigned to him/her.

**Priority** refers to the importance of the service requests that determines the order in which a support engineer is expected to work on service requests in his/her queue. For the purpose of analysis, priority can range from high to normal. Although there is a direct correlation between severity and priority, such that all severity 1 issues tend to be high priority, priorities are normally calculated by the SEV system. The calculation is based mainly on the severity and impact of the issue, whether the SR has been escalated, the target response due date, and the service category (premier, advance
and gold as discussed in section 4.2.2). The priority calculation assigns a numerical value to a service request such that the lower the value, the higher the priority of the service request.

**Complexity**, on the other hand, refers to the difficulty involved in resolving an issue. While some issues are simple or easy to handle, that is, they are of a single type and are restricted to a narrow band of ERP, other issues are relatively complex or difficult to handle, that is, they are broad based and need multiple technical resources across product lines. Table 4.8 provides some of the salient indicators identified from the interviews that define and demonstrate the complexity of a service request.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Extent of Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Simple</td>
</tr>
<tr>
<td>Solution</td>
<td>Known</td>
</tr>
<tr>
<td>Service Request Category</td>
<td>Mostly consultative or data issues</td>
</tr>
<tr>
<td>Integration between product lines</td>
<td>None</td>
</tr>
<tr>
<td>Complexity of the product</td>
<td>Simple functionalities</td>
</tr>
<tr>
<td>Diagnostic difficulty</td>
<td>Easy to diagnose the issues; simple setup required to reproduce the issues</td>
</tr>
<tr>
<td>Maturity of implementation</td>
<td>New</td>
</tr>
</tbody>
</table>

Table 4.8: Extent of Complexity in the Service Requests

The combination of severity, priority, complexity defines the content of a typical service request and has either a positive or negative influence on service quality. Response times for severity 1 and high priority issues are very fast. Severity 1 and high priority service requests tend to be resolved fast with an effective solution and the service is expected to have high content quality. As one interviewee mentioned:

“Severity 1 SRs get more visibility, communication and faster resolution. Severity 1 issues should be responded to immediately and cannot sit in review for a long time. You need to work on it and call the customer straight away. There is a lot more hand shaking with the customer. We are meant to call them and tell them that we received their SR and we are working on it and the customer should see what is happening on the SR bit by bit and we should inform them of exactly what is going on. So it is very visible to the customer...”
and it like that they sit next to us and they know exactly what is going on” [INT1].

However, some of the interviewees believed that although severity 1 service requests are usually closed fast with an effective solution, the content quality for severity 1 service requests suffers when there are complex issues. They blamed the process involved in severity 1 SRs, which require multiple transfers of the SR from one support engineer to another so that the issue can be worked on 24x7. Therefore, there is no ownership of the SR. Hence, despite the high resolution time and quick response time for severity 1 SRs, in complex cases there is a chance of losing some information as a result of multiple transfers, and therefore asking the same questions to customers multiple times. This not only frustrates the customers but also increases the risk of changing the direction of troubleshooting. One of the managers stressed his concern as follows:

"I think sev1s sometimes are in the danger of having poor quality because the issues we look at generally are quite complex, and moving complex issues from one person to another is a problem. So overall I say technical quality can suffer in that scenario and that is across the board” [INT8].

On the other hand, some interviewees believed that the content and technical quality remains the same for all SRs, and severity has an impact only on time. For normal priority service requests such as Severity 3 and 4, when the issue is complex such as for source code issues and enhancement functionalities, the response time and the resolution time are much longer. Usually a workaround is given to customers and the actual fix of the issue is delivered in a future version of the product; hence customers who upgrade to the higher version of the product receive the actual fix. One such example that I observed demonstrates that enhancement requests which have the lowest priority among all service requests usually take several years to be implemented.

"I had a SR today where the customer was not happy with the current behaviour of the specific functionality in the application. After I researched the issue I found out that an enhancement request has been logged for the same issue 4 years ago and several customers had requested the same change
in the application. However, after further discussion with the development team I realised they don’t have any plan to implement the enhancement request anytime soon and the only option for customers is customisation [Diary, Nov 2010].

Although simple issues could be resolved effectively as the issue is “straight forward [and the support engineer] knows the product and can reproduce the issue and provide the solution.” [INT1], there are cases where simple issues might take longer to resolve especially in the lower priority issues. “Sometimes [we] leave the easy issues to work on critical ones. So the resolution time is not always fast when the issue is easy and the other critical issue will get higher priority and affect the resolution time for the simple issue” [INT6].

Complex issues are hard to analyse and understand, take longer to troubleshoot, and require collaboration with colleagues or other departments. This negatively influences not only the timeliness but also the content quality of the delivered service. In the words of an interviewee “if it is a very difficult and complex issue, then you are going to have to rely on other resources a lot more, whether it is development or whether it is other support teams or whatever. So it is going to affect the time to respond because you are asking someone else to assist you with that” [INT 6]. Another concurred but emphasised how the complexity of an issue negatively affects the interaction quality: “if you keep the service request and ask someone else for assistance then they might not know exactly what they are talking about, and what you tell the customer might be lost in translation, which means it is not a clear update and will be less constructive. So you are not getting the right progress on it” [INT 3].

Although the performance review documentation for 2010 indicates that the average resolution time for source code and data issues is 67.25 days, for other categories the average resolution time is 24 days. There are a few very complex cases with much longer resolution time. One such a case that I observed, which took almost a year to be resolved, was:

“today I called my customer to inform him about the fix we delivered for an issue he reported almost a year ago. A total of eleven customers reported this issue since last year and different teams of support and development had been
working on the issue since then. The issue was not reproducible internally, even for the customers the issue was not consistent, and appeared when big number users tried to submit timesheets at the same time, and if the users who faced the issue tried same function again it worked fine. Therefore to trace and troubleshoot the issue was very difficult and took us a long time to find the cause and deliver the solution” [Diary 2009].

Process level difficulties in service delivery lead to customer dissatisfaction. This relationship between process and outcome level factors was articulated by a participant as follows:

“the more complex the issue, the longer it takes to be resolved; and the longer something takes to be resolved, the more customer satisfaction drops. So generally by solving the issue within three days, we generally get very good customer satisfaction. The longer it goes, the more likely the customer satisfaction would be lower, not always but generally the metrics showed this. I think with complex issues we have to deliver fantastic service to get good customer satisfaction” [INT 9].

Figure 4-2 provides a summary of the above discussion. The diagram shows the relationship between the available maintenance packs and knowledge content and the service requests that are logged by customers. As it shows in the diagram, there is a association between severity and priority of the service requests’ attributes and a relationship between service request attributes and category. The diagram also shows that the support service delivered/required influences the process level support quality, which then affects the quality of the outcome level support service.
4.3.3 ERP Life Cycle And Service Quality

Markus and Tanis’ (2000) definition of the ERP life cycle is adopted for the purpose of this study. The ERP life cycle is divided into chartering, project, shakedown and onward/upward phases, discussed in chapter 2, section 2.3. The results of the interviews show that the majority of service requests are registered with the SEV Support Department when customers are in either the onward/upward phase or in the shakedown phase. Fewer are registered in the project phase. The interviews revealed no direct relationship between the ERP life cycle and the support service quality; however, they showed that the ERP life cycle directly influences the severity, priority, category and therefore complexity (table 4.8) of the service requests, and indirectly influences the support service quality.

Table 4.9 summarises the distribution of the severity, priority and complexity of the service requests in different phases of the ERP life cycle along with some interviewee logs. This is followed by a short discussion.
<table>
<thead>
<tr>
<th>ERP Phases</th>
<th>Service Request Attributes</th>
<th>Sample Interview Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chartering</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>More sev3,4</td>
<td>Normal</td>
</tr>
<tr>
<td>Project</td>
<td>Some sev2</td>
<td>Consultative, setup issue</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>More sev2</td>
<td>Code issues</td>
</tr>
<tr>
<td></td>
<td>Some sev3,4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some sev1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Normal to high</td>
<td>Consultative, Enhancement request, Data issue,</td>
</tr>
<tr>
<td>Shakedown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onward/Upward</td>
<td>More sev1,2</td>
<td>Consultative, setup issue</td>
</tr>
<tr>
<td></td>
<td>Some sev3,4</td>
<td>Code issues</td>
</tr>
<tr>
<td></td>
<td>Normal to high</td>
<td>Consultative, Enhancement request, Data issue,</td>
</tr>
</tbody>
</table>

Table 4.9: ERP Life Cycle and Service Request Attributes

The complexity, severity and priority of the service requests are logged in different phases of the ERP life cycle. For instance, in the project phase when customers set up and configure the application, the majority of the SRs are general consultative and setup enquiry issues. Usually the SEV documentation (knowledgebase) covers these enquiries, which simplifies the process and helps the support engineers to deliver a fast and effective solution to the customers. As one interviewee mentioned:

“In the project phase, you tend to get more consultative type of issues, people ask “Can this be done?” or “How do we do this?” Also there are setup and configuration kind of issues. In the project phase there are lots of useful technical manuals and whatever we can provide in terms of white papers and notes and that sort of things” [INT3].

In the shakedown phase, the issues are more specific because customers test the application against their business requirements and therefore they could find some incompatibility. In this phase, while customers are completing the unit and integration test of the application functionalities, they may discover several source code issues (bugs) in the applications. In the onward/upward phase, the issue could be either consultative issues or bugs in the application. In this phase, customers want to know about the new functionalities in the application, are seeking the higher versions of the application and are following up the old enhancement requests they had logged.
earlier. These sorts of information are usually documented and available in the SEV knowledge content.

“In the onward/upward phase, they are live, so from time to time they want to add functionalities, they do more upgrading, they also chase the enhancement request, they might find bugs during the upgrade, they also would like to know what the latest patches are, and which is the biggest request. In this phase, read me documents for patches and notes on the latest patches are useful” [INT1].

Overall, while complex issues appear more frequently during the shakedown phase and less frequently during the project phase, the onward/upward phase receives a mix of simple and complex issues.

The priority of the SRs in the project phase is usually normal, but increases towards the end of the project phase. The priority increases to the highest level during the shakedown and the onward/upward phases if the issues encountered affect a customer’s important milestone. For instance, in the shakedown phase, an issue could affect the customers’ schedule to go live with the application; or in the onward/upward phase, an issue might have a large impact on the customers’ business and prevent them from completing a certain process or reporting within a deadline, where delays could result in a high penalty or cost for the customers. In the words of an interviewee:

“There are a number of critical issues in the onward/upward phase because for my product, customers have to actually get this information to provide the data to the third party trials, who actually interpret this data. They cannot have delays in providing that data, so if there is any issue then it will turn to severity 1. Sometimes because it is to do with government and they need to provide the data for example on a monthly basis or whatever and if they miss the deadline then it is very critical for them” [INT2].

The majority of severity 1 service requests are logged during the onward/upward phase, when customers are already working in live environments or late in the shakedown phase when customers have a few days to go live with applications. There are almost no severity 1 issues in the project phase. Other severities could appear in
any phases but the distribution varies depending on the phase. For example, the majority of severity 3 and 4 SRs (with enquiry/consultative questions and enhancement requests) are logged either during the project phase or during the onward/upward phase. Fewer are logged during the shakedown phase. On the other hand, a large number of severity 2 SRs (mostly source code or data issues) are logged during the shakedown phase or onward/upward phase.

One of the directors discussed the relationship between the ERP life cycle and the outcome level of the service quality. Customer expectations vary across the ERP life cycle and also depend on whether the issue influences an important milestone or not. This could influence customers’ satisfaction.

“I think the customer satisfaction in different phases is different. The customer has different expectations. In production, the customer has some sort of expectations. If a customer is in the project phase then they have another set of expectations. The life cycle definitely has an impact on the customer’s set of expectations. Customers could be more demanding and want their issues to be solved more quickly in a live environment” [INT9].

The above discussion is summarised in Figure 4-3. The diagram shows the ERP life cycle influences the customer requirements and affects the severity, priority and the complexity of the service request. As shown in the diagram the influence of the ERP life cycle on support service quality is mediated through support service delivered and required.
4.3.4 Vendor Competency

The interviewees’ results highlight the support engineer’s knowledge, SEV’s knowledgebase, SEV’s knowledge sharing and support governance as four main vendor competencies which influence the service quality both at the process and outcome level. Table 4.10 shows a summary definition of these vendor competencies, the dimensions of each and some interview logs. On the table, the category column represents some of the vendor competencies seed factors indicated on Figure 3.1 and additional themes emerged from the analysis of the interviews. The analysis of the interviews also resulted in a number of sub-categories under each of the major themes and those are captured under the dimensions column. Each of the dimensions are defined with reference to the literature, interviews and SEV documentation. This is followed by a short discussion on the influence of the vendor competencies on the service provided to customers.
<table>
<thead>
<tr>
<th>Category</th>
<th>Dimension</th>
<th>Definition</th>
<th>Sample Interview Logs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Engineer’s (SE’s) Knowledge</td>
<td>Essential skills</td>
<td>Refers to SEs’ product knowledge, experience and troubleshooting skills.</td>
<td>“The knowledge of the engineer, how we communicate with the customer, if the engineer know the product very well both technically and functionally, those could have a stronger effect on customer satisfaction and could resolve the issue more quickly” [INT9].</td>
</tr>
<tr>
<td></td>
<td>Complementary skill</td>
<td>Refers to SE’s knowledge of customers’ industry</td>
<td>“Industry knowledge gives us more flexibility and more options in term of the direction” [INT3].</td>
</tr>
<tr>
<td>SE’s Knowledgebase</td>
<td>Documented knowledge-Technical/functional Manuals</td>
<td>Refers to setup and configuration guide, the implementation guide for different applications and modules; and the documents that explain the application functionalities.</td>
<td>“Knowledgebase is very important; we develop our knowledge from that” [INT5]. “Knowledgebase that has been documented out there is a big factor on how you can provide good quality service” [INT7].</td>
</tr>
<tr>
<td></td>
<td>Documented knowledge-Experience Database</td>
<td>Refers to all current (open) and past (closed) SRs, bugs database and the existing notes on closed SRs.</td>
<td>“Knowledgebase is very useful; most of the issues we resolve are from knowledgebase. Our past issues are there. So you don’t have to do all the troubleshooting because it is there and you can follow the same track and communication” [INT5].</td>
</tr>
<tr>
<td>Knowledge Sharing</td>
<td>Create knowledge content</td>
<td>Refers to the knowledge content (note) that the support engineer creates.</td>
<td>“Knowledgebase is everything and as the result I create a lot of knowledge content because I know it is of value” [INT1].</td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
<td>Refers to collaboration between support engineers within the team, between different support teams and with the Development Department.</td>
<td>“Internal communication is important as it has effects on your knowledge” [INT4].</td>
</tr>
<tr>
<td>Category</td>
<td>Dimension</td>
<td>Definition</td>
<td>Sample Interview Logs</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Infrastructure</td>
<td>Refers to any internal/external software/tools (listed table 4.3), hardware and the technology that the SEV Support Department use to work on the service requests, collaborate and communicate with customers and deliver the support service to them.</td>
<td>“We should see what these support engineers need to deliver their support. The knowledge management and transfer, the procedures, tools, communication technology, protocol and methodology they use” [INT4].</td>
</tr>
<tr>
<td></td>
<td>Process</td>
<td>Refers to processes to diagnose SRs, monitor and escalate the SRs when necessary and monitor SEs’ performance.</td>
<td>“We provide engineers with the framework that they need to work with and mainly for the purpose of consistency and I suppose to ensure that engineers are using best practice” [INT10].</td>
</tr>
<tr>
<td></td>
<td>Management</td>
<td>Refers to management actions and duty to improve the service quality.</td>
<td>“Leadership I suppose is the critical factor in our support. Good leadership has the capacity to revise the support model and mature the support model” [INT4].</td>
</tr>
</tbody>
</table>

Table 4.10: Vendor Competencies that Influence Quality of Service

4.3.4.1 Support engineers’ knowledge

The knowledge of support engineers is critical to the support service quality both at process and outcome level. The findings show that support engineers need to possess both essential and complementary skills. The essential skills include technical and functional knowledge of the product, experience, and troubleshooting skills. Familiarity with customers’ industries is a helpful but not essential skill for the SEV support engineers.

For instance, technical and functional knowledge of the product helps the support engineers to understand the concept of the application, the functionalities and process in the applications, and the flows and integration between different functions and modules. It enables them to communicate about the applications’ issues confidently with the customer. This helps them to understand the customers’ issues faster and better. The experience enhances the support engineer’s knowledge of the known issues in the product and advances their troubleshooting skills for investigating new issues. Unskilled support engineers require much more time to upskill themselves and
to read documentation in order to understand, investigate and troubleshoot the issues. They need to collaborate with other support engineers more often to be able to respond to customers’ enquiries and resolve their issues. This negatively affects the timeliness of the service, as indicted by an interviewee.

“If you don’t have knowledgeable engineers, then that engineer spend more time in internal upskilling rather than effective knowledge sharing with customers, so they are creating and generating their own knowledge and upskilling themselves to be able to provide support service” [INT4].

Technical and functional knowledge of the product and experience assist the support engineers in successfully leading the investigation process, having constructive communication and interaction with customers, raising the right questions, and requesting the necessarily information. Therefore it minimises the investigation process and speeds the resolution time. As one interviewee mentioned: “someone who does not know the product asks more and more questions and the SR takes longer and longer to be resolved.” [INT9]. On the other hand, constructive interaction and communication between customers and support engineers advances the content and technical quality of the delivered service.

Lack of technical/functional knowledge of the product could also lead to inaccurate and inappropriate responses and therefore reduce the effectiveness of the solution. The influence of the support engineers’ knowledge and experience on the support service quality is also reflected in customer satisfaction: “the technical and functional knowledge of the engineers generally has a strong effect on customer satisfaction because knowledgeable engineers can resolve the issue more quickly” [INT9].

On the other hand, support engineers are not consultant or business analysts, who implement the entire application for customers, tailor the functionalities and establish a fit between customer business requirements and the application functionality. Therefore knowledge of the customer’s industry is only required for the support engineers in order for them to maintain the applications, troubleshoot the reported issues and answer the customer enquiries on the setup and configuration. Knowledge of the customer’s industry could help the support engineers to communicate with the customer more professionally and enhance the support service quality.
4.3.4.2 SEV’s knowledgebase

SEV’s knowledgebase discussed during the interviews could be categorised as technical/functional manuals and the experience database (which is the documented knowledge) that is described in table 4.10. The interview results show that SEV’s knowledgebase enhances the support engineers’ knowledge and is essential in improving all aspects of support service quality.

All SEV’s documented knowledge is available to support engineers and most of this documented knowledge is also published and made available to SEV customers. Customer could search and find information through the SCT tool described in section 4.2.3. In general, the availability of technical/functional manuals could reduce customers enquires about the setup and configuration, and the functionalities of the application. Therefore, it reduces the volume of service requests and provides more time for support engineers to concentrate on other service requests. The lack of these manuals, on the other hand, not only could have a negative impact on customer success in accomplishing some stages of implementation or upgrade, but also could negatively influence the support engineers’ ability to assist customers in a timely manner. One interviewee had such an expertise with a recent release of the application:

“Recently we had a new version of the application with no installation and configuration manual. Lot of customers were very, very frustrated because my product is not an easy product to install. One of the customers ended up having to do reinstallation five times before they got it right rather doing it the first time” [INT2].

The documented knowledge could significantly improve the timeliness of the service especially when the issues are known and have been documented as notes, or when the support engineers could find relevant information that help them to troubleshoot the issues faster. One interviewee noted:

“Documented knowledge is massive because the very first thing I do when I receive a service request is to go to the documented knowledge and search for the same or similar issues. Knowledgebase is your biggest source of diagnosing because it gives you information that you need” [INT1].

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4.3.4.3 Knowledge sharing

The interview results show knowledge sharing enhances the support engineers’ knowledge, advances the knowledgebase of SEV Company and therefore indirectly improves the support service quality. The knowledge sharing discussed during the interviews could be categorised as creating knowledge content and collaboration, as described in table 4.10.

Creating knowledge content is essential in sustaining and advancing the SEV knowledgebase. The SEV ES package is very large and has different integrated and complicated functionalities. New issues and enquiries are reported by customers on a daily basis. Support engineers in the SEV Support Department allocate time to diagnose and resolve the issues and to research and find the answers to the customers’ enquiries. Documenting the issues/enquiries and the solutions/answers can reduce duplicate effort in similar situations when the same issues/queries are raised with different customers. Creating knowledge facilitates knowledge sharing between support engineers and customers. Expanding the knowledgebase of the SEV Company enhances the support service quality as discussed in the previous section. One interviewee noted:

“Knowledgebase is very useful. Most of the issues that we solve are because of knowledgebase. The past SRs are there so we don’t have to do all the troubleshooting again. Knowledgebase is very important and affects the time frame and gives us the knowledge; we develop our knowledge from the knowledgebase in the company” [INT5].

Another interviewee noted: ‘knowledgebase that support engineers have been documenting is the big factor in how you can provide good quality support service’ [INT7].

While creating good quality knowledge indirectly improves the timeliness of the service, the effectiveness of the solution and the content quality of the delivered service, creating inaccurate knowledge can mislead customers and can have a negative impact on customer satisfaction.
Collaboration and coordination are considered important factors in transferring knowledge from one engineer to another and enhancing service quality. The SEV applications are very large and not all aspects of the functionalities are well documented. There are some integration areas which require close communication between different teams. Therefore the availability of other resources and coordination between them is mandatory. I have recorded such an integration issue where the problem could not be resolved without collaboration and coordination with other teams:

“For a few days I have been working on an integration issue between three products. I already know two of the products but never worked on the third one. The issue was very difficult and complicated and there was no documentation to discuss this integration. However, after I discussed the issue with the members of the other team, we found out that a wrong setup and configuration caused the issue and we were able to deliver the fix to the customer. Later I documented the issue and the solution as a note to be made available in the knowledgebase for future reference” [Diary, Mar 2011].

The availability of other resources, and collaboration and coordination could lead to an effective solution and positively improve the timeliness of the support service. Cooperation within the team could ensure that the support engineers cover each other’s absences and avoid a delay in responding to customers and therefore could enhance the response time.

4.3.4.4 Support governance

Infrastructure, process and management are three main attributes of support governance (Table 4.10). The infrastructure mainly influences the timeliness and the technical quality of the service, which also enhances customer satisfaction. One such example is the new technology of communication, which enables support engineers to have web conferencing with customers, to connect to their computers and to watch issues directly. Another example is the new software that support engineers use to communicate and collaborate on issues with customers. These new software and technologies have introduced new ways for support engineers and customers to interact, which improve the timeliness of the service, troubleshooting and diagnosis of
issues and clarify communication and interaction. One interviewee explained how the new infrastructure has enhanced the service quality over the last decade:

“When I first started here, we were doing service requests on piece of papers and we could write anything in there. Back in those days, the customer could not see the service request anyway and it was all for our internal use. So obviously the technology changed and we have had to provide a better job of documenting those sorts of things” [INT10].

The knowledgebase tools allow the support engineers to search documents based on customer issues and retrieve related documents. This speeds up the investigation process and enhances the support engineers’ skills and knowledge. It also allows support engineers to create useful notes for future references after they have successfully resolved issues, and to deliver effective solutions to the customers. The communication and web conferencing tools improve internal communication and allow the support engineers to collaborate globally with other members of the team, other support teams and the Development Department. Hence good infrastructure advances knowledge transfer and improves the support engineers’ knowledge.

At the same time, the lack of availability of tools could introduce delays in support delivery. The importance of the test instances are such an example that was highlighted in the interviews. Test instances allow support engineers to test the functionality internally, an important step in diagnosing customer issues. Therefore a lack of test instances could delay the whole investigation process. One interviewee shared his expertise as follows:

“I had one SR which was sitting there for two weeks and I could not find a working instance. It was not particularly a complex issue; it was how to progress through different modules and there was no instances to have all those modules work to the extent that I can actually reproduce the issue” [INT3].

Processes within SEV Company also influence different aspects of the service quality. Current processes can be categorised into three. The first process refers to SEV’s frameworks that standardise issue investigation and troubleshooting. The second is
the process to escalate service requests and accelerate issue investigation and troubleshooting. The third process is used by managers to monitor support engineers’ performance and act when required. For instance, the SEV diagnostic methodology that was introduced more than six years ago provides support engineers with a framework to ensure consistency of communication and collaboration with customers in all service requests. The diagnostic methodology helps the support engineers to provide adequate information to customers and to justify the actions they take in troubleshooting and fixing issues. According to an interviewee, the methodology has had a positive impact on the effectiveness of the solution and the content quality of the service.

“I think the SEV diagnostic methodology improves the quality. In past we used to give patches to the customers without much explanation, whereas now we explain to the customer why. So it makes engineers think a bit more about why they are recommending a patch and they are less likely to tell customer to apply a patch with no reason” [INT9].

Escalation is another example of a process in the SEV Support Department. It increases the priority of service requests and makes them more visible to the managers. The escalation process mainly improves response time.

Lack of a process for managing customer information was also discussed during the interviews as having an impact on the timeliness of the service and customer satisfaction. Lack of a process for managing the customer’s basic information not only negatively affects the volume of service requests but also prevents the Support Department from proactively supporting customers on known issues. One of the directors noted: “If we know the customer version of the product and we know there is a bad bug, then we can proactively send them the patch before they log a SR for help. That improves the quality of the service and the satisfaction” [INT9]. He also noted how the lack of such a process caused questions to be asked repeatedly by customers, which negatively influences the resolution time. He discussed future plans to add such a process, and described how this would improve the service quality.

“How much knowledge do we have in our system about customers? Our CRM system, which we don’t have. I think that impacts the quality of our service.
We are doing things to fix that, like ‘configuration manager’, which is getting a lot of information from the customer over the time during the next couple of years, getting more and more information from customer, patching information, file version, etc. In the future, most of the questions we ask customer in the service request, we won’t have to ask any more.” [INT9].

The interview results show how management could directly and indirectly influence different aspects of service quality. The process and tools in SEV Support Department enable the managers to monitor the performance of their team and make the right decision at the right time. For example, work balancing is one management task that improves the timeliness of the support service. There is a relationship between responsiveness and workloads of the support engineers. Therefore balancing the workloads between support engineers can enhance the response time. One of the directors discussed the lack of a process to better manage the workload between support engineers and to better prioritise service requests:

“To reduce the turnaround time we should help people to manage their queues better. It should not be just by training; it needs to be more enforced by the system. I mean our system needs to help priorities work better and the way we give work to engineers needs to change I think” [INT9].

Managers encouraged support engineers to adopt more than one product to assure the availability of the resource in the absence of some support engineers, thereby avoiding any delays in service delivery. Training allocation is another task for management to upskill the support engineers, thereby improving service quality. Therefore management could use the available processes and tools to enhance service quality.

Figure 4-4 shows the causal relationship between vendor competencies and how that influences the vendor’s ability to deliver the support service. The diagram shows that process and infrastructure in the SEV Company empower the management and enhance their ability to manage the support service in different ways. Management can monitor the vendor competencies and revise processes and infrastructure to fill the gap where required. They can improve existing processes and infrastructure to advance the governance of the support service. The support governance (process,
infrastructure and management) facilitates the knowledge sharing and advance the SEV knowledgebase. SEV knowledgebase and knowledge sharing not only reinforce each other but also advance the support engineers’ knowledge. On the other hand, process and infrastructure (support governance) enable the support engineers to create more knowledge and share their knowledge, which enhances the SEV knowledgebase. As shown in the diagram, vendor competencies not only reinforce each other but also advance support service delivered by publishing more material in the knowledgebase for customers. Vendor competencies also influence the support service quality at the process and outcome levels.
Figure 4-4: The Causal Relationship Between Vendor Competences and Support Service Quality.
4.3.5 Host Competency

The interview results show that customers’ wherewithal to cooperate with the vendor could either positively or negatively influence the vendor’s capability of delivering a good quality support service. Three important host competencies which could influence their level of coordination are technical competency, vendor governance, and product governance.

Table 4.11 shows a summary definition of the above competencies, the dimensions of each and some interview logs. On the table, the category column represents some of the host competencies seed factors indicated on Figure 3.1 and additional themes emerged from the analysis of the interviews. The analysis of the interviews also resulted in a number of sub-categories under each of the major themes and those are captured under the dimensions column. Each of the dimensions are defined with reference to the literature, interviews and SEV documentation. This is followed by a short discussion on the influence of the host competencies on the service that customers receive from SEV Support Department.
<table>
<thead>
<tr>
<th>Category</th>
<th>Dimensions</th>
<th>Definition</th>
<th>Sample Interview Logs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Competency</td>
<td>Implementation</td>
<td>Refers to the experience that the customer has in implementing ES or ERP applications, especially SEV ES applications.</td>
<td>“It can be very different if they are an experienced implementer or if they implementing for the first time. When we are not receiving the information that we are looking for or the correct information, then it is end up in time” [INT10].</td>
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<tr>
<td></td>
<td>experience</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Product knowledge</td>
<td>Refers to the customer’s knowledge on the concept and the functionalities within the applications they are implementing.</td>
<td>“I have a customer where the issue should be closed in one day but it is two weeks now and still I have to prove to him that the functionality is correct. So although the nature of the requirement could be easy, still it might be difficult to convince the customer” [INT1].</td>
</tr>
<tr>
<td></td>
<td>Domain knowledge</td>
<td>Refers to the customer’s knowledge about their own business and environment and the technology they use for the SEV applications.</td>
<td>“With a lot of customer, their implementation team is not the same as the go-live team or they have a third party involved during the implementation and they might not know the customers’ business requirements and they are implementing our product to fit their requirements” [INT7].</td>
</tr>
<tr>
<td>Product Governance</td>
<td>Product supportability</td>
<td>Refers to managing the minimum and mandatory requirements to run the SEV applications discussed in section 4.2.2.</td>
<td>“If their IT infrastructure is sufficient, do they have access to the latest technology? Do they have the supported platform for the applications? So if they don’t have the technology that is supported by the SEV application then it affects the efficiency” [INT4].</td>
</tr>
<tr>
<td></td>
<td>Customisation</td>
<td>Refers to the volume of customisation, their knowledge about the customisation they have done on the ES product and the way they manage the customisation.</td>
<td>“They might have a different implementation team and different technical resources at different stages, they might cut costs on one part of the project such as documentation and customisation and then the post go-live team does not know what customisation has been done so this affects the quality of the service we give them” [INT7].</td>
</tr>
<tr>
<td>Category</td>
<td>Dimensions</td>
<td>Definition</td>
<td>Sample Interview Logs</td>
</tr>
<tr>
<td>------------------</td>
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<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Vendor Governance</strong></td>
<td>Information management</td>
<td>Refers to a compulsory requirement for management approval to access the information, and/or the different layers of technical/functional people who collect and deliver the information to the SEV Support Department.</td>
<td>“The structure within the customer environment, who looks after what, their internal process, how they get information. All that could be different for different customers and could impact our ability to provide service” [INT10]</td>
</tr>
<tr>
<td></td>
<td>Service management</td>
<td>Refers to customer follow up on SRs, requests for escalation when required, communication with the SEV Support Department about important milestones, and the fundamental and basic infrastructure facility to communicate with the vendor.</td>
<td>“Customer expectation level: some customers do not wait, even if you justified the impact of the issue as small. They normally push a lot harder and normally get more complete answers and better quality solutions” [INT8].</td>
</tr>
<tr>
<td></td>
<td>Cooperation with vendor</td>
<td>Refers to the customer’s willingness to share information and provide accurate information, and their response time to the SEV Support Department.</td>
<td>“How willing they are to help themselves: if you have pleasant customers who try to help you and do what they can do to resolve the issue, then it is solved better” [INT3].</td>
</tr>
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</table>

Table 4.11: Host Competencies that Influence the Vendor Capability to Delivery Support.

4.3.5.1 Technical competency

The technical competency includes the customers’ implementation experience, the customers’ technical and functional knowledge of the enterprise system product and their knowledge about their environment (domain knowledge). Customer technical competency is essential for the vendor to be able to deliver a quality support service because it has a major influence on communication between customers and SEV support engineers. Knowledgeable customers can communicate the issues professionally and provide the right information at the right time, which not only helps the SEV support engineers to understand the issues better and faster but also speeds up the investigation process, reduces the number of interactions and positively improves the timeliness of the service.

“If a customer logs an SR with a very clear description of the issue, steps to create the issue and screen shots of the error, all the version information and all the required log files, that straightaway has 50% of my work off. Half of
the time we are not getting the right information from customers and that duplicates the time and efficiency in resolving the issues” [INT6].

Unskilled people in the host company are not able to communicate and collaborate on the issue nor can they clarify the problem for the SEV support engineers. This could mislead the investigation of the issue and therefore negatively influence the effectiveness of the solution. The skill level of the host staff also affects their ability to successfully apply the suggestions and solutions delivered by the SEV support engineers. As one interviewee puts it:

"Their skill set affects what solution we can give them. The solution is not necessarily the same. I will give you an example. I had two customers who had the same issue. We got to the stage where we gave them the solution but one was able to implement it and the other didn’t know their environment very well and they worked around it so they never implemented the permanent solution”[INT7].

One of the directors believed that customers’ lack of skills could negatively affect customer satisfaction: “If customers don’t have the knowledge, we need to educate them and educating someone when they have an issue is very frustrating for them because they want their issue to be solved, they don’t necessarily want to be educated. So that really impacts on the customer satisfaction; the customer satisfaction drops” [INT9].

4.3.5.2 Vendor governance

Vendor governance includes information management, cooperation with vendor, and service management as explained in table 4.11.

Customer information management is the structure and the hierarchy within the customer environment to collect and provide the required information to the vendor to enable them to investigate the issue. This structure and the hierarchy could negatively influence the service quality and specifically the resolution time. Some customers needed manager approval to be able to provide any information to the SEV which introduces a delay into the whole process and increases the resolution time. Having these layers between the person who faces the issue and the person who reports the issue to the SEV Support Department introduces a delay, increase confusion and
uncertainty about the issue and negatively affect resolution time and the technical quality of the delivered service.

“Large companies have their own IT department. The IT department gets the issues from the internal people and, say, they might have two or three people in charge between you and actual person who the issue begins with. The person who is in the IT department might not necessarily know how to use the application for that actual issue, so it becomes more abstract and you try to resolve the issue without knowing the exact issue.” [INT3].

Customers’ cooperation with the vendor in sharing accurate information could affect the service level that they receive from the SEV Support Department. The SEV support engineers diagnose the issue based on the information they receive from the clients. Hence any false and incorrect information negatively affects the investigation process and therefore influences the resolution time and effectiveness of the solution in particular. For instance, SEV does not provide services for customisation and any issues caused by customisation. There are cases where customers hesitate to provide the correct information to hide the customisation they have done on the product. One interviewee mentioned:

“They might give us certain pieces of information because they control it and they don’t want us to know that they have got customisation. Without providing enough information about the issue we cannot deliver a solution and not going through the proper process to fully understand the customer issue affects the speed. What information customers provide us affects speed and the solution” [INT7].

A director emphasised this as follows:

“Not every customer implementation is the same and not every environment is the same, so all we have is what they are telling us, so all those things can impact our ability to provide the service to customers” [INT10].

Customer service management could assist customers in receiving a better and faster support service. If customers respond quickly to support engineers’ requests for required information (action plans), communicate important milestones and deadlines to SEV, escalate the SRs when required, and regularly follow up on the progress of
the SR, this could accelerate the issue investigation, increase the priority of the service request and ensure the delivery of an effective solution.

Lack of proper infrastructure can influence the customer’s ability to manage the support service they receive and can negatively influence their communication with support engineers. Some interviewees highlighted delays in resolution time caused by a lack of facilities such as proper phone lines, which limit their communication and collaboration with customers who are unable to attend a web conference. For difficult and complicated issues, a web conference is very important for clarifying the issue; therefore if a web conference cannot be conducted, the issue investigation might takes much longer.

“For some customers, their telephone lines are very bad and just reaching those customers take a long time, and then they cannot get to the web conference as they have a bad internet line, so that really slow down the process” [INT6].

Another interviewee noted: “some customers don’t have a company email account. They have a Yahoo account or a Hotmail account, so they are not able to response quickly because with the company email your email will go directly to your desktop while in others you need to login to check your email.” [INT7].

4.3.5.3 Product governance

Based on the interview findings, we categorise product governance as comprising product supportability and customisation on the SEV product, as explained in table 4.11.

Product supportability means that the supported version of the SEV ES package is used. SEV Company no longer supports old versions of the ES package a few years after newer versions of the product are available (as discussed in section 4.2.2). The information about de-supporting former versions of the product is always published and sent to customers in the knowledge content with several months advance notice. Customers’ failure to upgrade to minimum requirements can negatively influence the delivery of effective solutions for customers’ issue by the SEV Support Department. Having an older version than the current supported version of the application,
database or technology could introduce several issues for the customer including environmental or source code issues or some incompatibility in setup and configuration. One such incident that I recorded explains this:

“I have been working on a service request since last week where the customer applied the latest version of the application and since then all the terminated employees’ statuses showed as death instead of terminated, and also some other functions in the application retrieved the wrong data from the database. After I researched the issue and checked the customer application version and database version I found out that the issue is not related to product code or data in the application. The issue is related to the version of the database. The customer is not on the supported version of the database; they need to upgrade the database to the supported version and that will fix the issue” [Diary – Mar 2011].

Customisation is another factor that reduces the SEV Support Department’s ability to deliver support services to customers. The SEV Support Department does not provide solutions to issues that are caused solely by custom code and customer customisation on the ES package. As one interviewee said:

“Customisation is a very difficult area and it can impact our service. It is an area that I think is a bit dangerous because sometimes support analysts hide behind the fact that the customer has customisation. You know we cannot fix the issue if is it due to customisation but we need to prove that” [INT9].

Therefore it is important to clarify customer expectations and to the SEV Support Department’s responsibility, to avoid customer dissatisfaction in such cases.

The Figure 4.5 summarises the above discussion and shows the causal relationship between host competencies and how this influences the vendor support service quality.
Figure 4-5: Causal Relationship Between Host Competency and the Vendor Service Delivery
As shown in the diagram, the customer’s technical competency and product governance positively influences the customers’ ability to govern the vendor. Vendor governance also includes good cooperation with the vendor and good information management, both of which lead to better service management. More knowledgeable customers can be more responsive to the vendor’s action plans and are faster in collecting reliable information that is requested by the SEV Support Department. Customisation by the customer, however, negatively influences product supportability and therefore negatively influences the customers’ ability to govern the vendor. While customers with higher product supportability can benefit more from the repair and maintenance packages that are delivered by SEV Company, the customisation of the ES product can reduce this ability.

Customer service management can also positively influence the priority of the service request and consequently can influence the support service that the customer receives. Overall the host competency (customer competency) has a positive influence on the support service quality.

4.3.6 Vendor–Host Relationship

*Customer service level* and *relationship governance between vendor and customer* are two main factors in the vendor–host relationship that influence the service quality that SEV Support Department delivers to its customers. These competencies are developed based on the different dimensions and the definition of each that are extracted from interviews and the analysis of the findings.

Table 4.12 summarises the competencies, dimension and definition of each and some interview logs. On the table, the category column represents some of the vendor-host relationship competencies seed factors indicated on Figure 3.1 and additional themes emerged from the analysis of the interviews. The analysis of the interviews also resulted in a number of sub-categories under each of the major themes and those are captured under the dimensions column. Each of the dimensions are defined with reference to the literature, interviews and SEV documentation. This is followed by a short discussion on the influence of the vendor–host relationship on the support service level.
<table>
<thead>
<tr>
<th>Category</th>
<th>Dimensions</th>
<th>Definition</th>
<th>Sample Interview Logs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractual (Service Level)</td>
<td>Premier</td>
<td>Refers to different level of the service level agreement between the ERP vendor and customer.</td>
<td>“Different ranking (service level) for the customer at the end of the day impacts the priority and impacts our responsiveness” [INT10].</td>
</tr>
<tr>
<td></td>
<td>Advanced</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship Governance</td>
<td>Communication management</td>
<td>Refers to communication between customers and SEV Support Department.</td>
<td>“How you write and talk to the customer and try to meet their expectations. You communicate with them towards getting the solution for them to solve their problem, sometimes verbal communication and sometimes written. Sometime it is better to have it in writing so you can explain the issue. Verbal communication with some customers based on their skill level and also our skill level is sometimes good and sometimes bad. Sometimes it is good to pick up the phone and have a web conference but another time it isn’t. So you have to make a judgment” [INT7].</td>
</tr>
<tr>
<td>Time zone barrier</td>
<td></td>
<td>Refers to the different time zones where SEV customers are located.</td>
<td>“Sometimes customer will be impatient and I have to explain to the customer that I am in Australia and I came online in your last few hours and this is the reason for the delay” [INT1].</td>
</tr>
<tr>
<td>Language barrier</td>
<td></td>
<td>Refers to the different languages which SEV customers speak.</td>
<td>“If you work with someone who only can talk the native language of that country, it definitely slows the process down” [INTT7].</td>
</tr>
</tbody>
</table>

Table 4.12: Main Vendor–Host Relationship Factors that Influence the Vendor Capability of Delivering a Quality Support Service

4.3.6.1 Contractual/Customer service level
The interview results suggest that the customer service level is critical to the vendor support service quality and influences the priority of the service request and therefore indirectly affects the timeliness of the service. However, the delivered solution and the technical and content quality remain the same. “We have some customers who are more important; we deliver the solution quicker but I don’t think the solution itself is different for someone else” [INT8]. However, the service level affects the customer’s expectation and influences response time to the service request in each interaction between the customer and support engineers (discussed in table 4.2).
Often the more important the customers are, the larger the implementations that they have, such as having many users, and the higher the level of complexity in the business. Therefore, they can be much more demanding. On the other hand, SEV Company assigns a service delivery manager to customers with higher service levels. The service delivery managers know the customers’ deadlines and important milestones and they help prioritise customers’ service requests and set customer expectations. The service delivery managers also follow up the progress of service requests with the SEV Support Department and escalate the service requests when required. For instance, one interviewee mentioned: “We do have specific customers where we have weekly calls between the customer, Development [Department] and Support [Department] to prioritise the SRs they have logged, which is based on how important the SRs are. Then we work on them by prioritising them. So yes, we do have that with big customers who pay big bucks” [INT2].

### 4.3.6.2 Relationship governance

The interview results show that relationship governance is an essential factor in supporting service quality. There are some strengths and barriers that could influence the relationship between vendor and customer. These could be categorised as communication management, language barriers and time zone barriers, as explained in table 4.12.

Managing the communication between SEV support engineers and the customer is essential in establishing a good relationship between parties. Close communication with the customer can help the support engineers to understand the customer’s situation. Having information such as customer’s important milestones that may be at risk as a result of the issue they face, the skill level of the customer, and whether the customer is generally happy or unhappy with the support service can assist the support engineer in planning the issue investigation to meet customer expectations. One interviewee said:

“Relationship building is related to allocating time to the customer, having a call or web conference and that sort of thing. We cannot just give them an update and not call them. Then this is very remote relationship” [INT3].
Effective communication with customers can also help in setting customer expectations about the support service. Hence explaining the support service process, support response time based on the severity of the service request (table 4.2) and the difference between severity and priority levels of service requests can help customers to understand the support process better and make customers more satisfied with the service they receive. One interviewee believed: “Some customers have quite high expectations of what we should provide them. I think it is our job to provide a consistent expectation. We should not make unnecessary exceptions” [INT8].

On the other hand, the customer’s attitude and the way that customers communicate with support engineers was also mentioned as affecting support services, and this could influence the relationship with the support analyst. One interviewee described it in the following way:

“Any kind of good, happy or medium relationship helps resolve the issue faster than when a customer is being rude to the engineer. I have a few customers – I know them by their first names – and as soon as I get their service requests I call them straight away. I know we worked on many of their issues previously and the customer understands what I tell them” [INT6].

Language and time zone differences could affect the communication between SEV support engineers and customers, and turn the relationship into a remote one. Therefore both the cooperation ability of the host and vendor service delivery could be affected. Language barriers could affect the effectiveness of the solution and the technical quality if customers cannot communicate the issue with the SEV support teams: “sometimes it can be difficult to convince the customer due to language barriers” [INT3].

Being in two different time zones with no business hour overlap restricts communication and eliminates verbal communication, introducing delays in any interaction between customers and SEV support engineers.

“Distance in terms of time zone makes it difficult and also your resolution time is slow because when you are not in the same time zone you ask a question and it takes a day until they come back to you” [INT1].
Figure 4-6 summarises the above discussion and shows how the relationship between vendor and customer influences the quality of the SEV support service. The diagram shows that customer service level positively influences the support service that customers receive and could increase the priority of the service request. On the other hand, while the relationship governance can boost the support service quality, language and time zone barriers can negatively influence the way that both parties manage their relationship.
Figure 4-6: The Influence of the Host Competency on SEV Support Service Quality.
4.4 SUMMARY

The first part of this chapter discussed the SEV Company background including the general background, service level and service category. Then dimensions to measure the support service quality were discussed. Thirteen factors that influence vendor support quality were identified (refer to tables 4.7, 4.9, 4.10, 4.11, 4.12). As it shows in figure 4.6, these factors are related to (a) support service delivered/required, (b) ERP life cycle, (c) ERP vendor competencies, (d) ERP customer competencies, and (f) the relationship between ERP vendor and customer. The findings also show a relationship between different factors.

Each of the above factors influences the service quality to a different degree. Based on the discussion with interviewees, the factors are categorised by the degree to which they influence support service quality. Table 4.13 shows each factor and the degree to which it influences support service quality. Each factor is numbered as follows: (1) critical enabler factors, (2) essential enabler factors, (3) inhibitor factors; and (4) hygienic factors.

Critical enablers are those factors that have direct and positive influences on support service quality. Essential enablers are those factors that have indirect and positive influences on support service quality. Inhibitor factors are those factors with negative influences. Hygienic factors are those factors when lacking negatively influence the service quality but whose existence does not necessarily have a positive influence.
Table 4.13: Factors that Influence the Service Quality.

*Numbers Indicate the Degree of Influence as Described in Text.*

In the next chapter the above factors will be discussed with reference to the literature review in chapter 2.
CHAPTER 5  ANALYSIS AND DISCUSSION

5.1 INTRODUCTION
In this chapter the major findings of the case study are analysed and discussed with reference to the literature and the research framework. The chapter is organised as follows. In section 5.2, the vendor support service definition and the vendor support service quality factors are discussed. The next four sections deal with the following: (section 5.3) critical factors that enable the support service quality; (section 5.4) essential factors that enable the support service quality; (section 5.5) factors that inhibit support service quality, (section 5.6) hygienic factors that contribute to support service quality. The final section 5.7 is a summary.

5.2 VENDOR SUPPORT SERVICE AND QUALITY
ERP vendors provide a range of support services to their clients. Although the type of support might vary from one company to another, the most common support services that ERP vendors provide are maintenance, critical repair packs, technical/functional updates, upgrade and enhancements packs, knowledge sharing, and assistance with various types of technical and functional service requests. These findings are consistent with clients’ expectations of service documented in previous literature, including (1) maintenance and repair of ERP applications (Brehm, Heinzl & Markus 2001; Law, Chen & Wu 2010; Somers & Nelson 2004; Wang et al. 2008), (2) technical and implementation assistance (Law, Chen & Wu 2010; Somers & Nelson 2004; Wang et al. 2008), and (3) knowledge sharing (Liang & Xue 2004; Nah, Lau & Kuang 2001). However, the delivery of training (Nelson, RR & Cheney 1987; Ngai, Law & Wat 2008; Somers & Nelson 2004; Wang et al. 2008), sales consultancy for ERP products (Ndubisi, Gupta & Massoud 2003), and implementation (Zhang et al. 2003) do not fall under SEV’s support service contract. Instead, training, sales and implementation consultancy are delivered as separate services under the responsibility of different departments (chapter 3, section 3.3.2; table 3.1).

ERP vendors measure the quality of support services at both process and outcome levels. Process level indicators are the timeliness of the service, the effectiveness of the solution and the content quality of the provided service. The outcome level
includes customer feedback and satisfaction. At the process level, the timeliness of the service comprises resolution time, support time and response time. The effectiveness of the solution comprises how well the customer’s requirements are addressed and whether the best solution is delivered. The content quality comprises the technical quality and the interaction quality of the delivered service. Service response time is one of the most widely cited vendor support quality indicators (Bharati & Berg 2005; Claybaugh & Srite 2009; Kettinger, Park & Smith 2009). Taking the client perspective, Claybaugh and Srite (2009) described an example of high quality vendor support as one with quick response times, effective answers, and close communication through phone, e-mail and site visits. They described an example of poor quality vendor support as one which was incomplete, with even cryptic answers, with inefficient processes and procedures, a lack of flexibility and a tendency to stick to the contract.

The above findings are consistent with previous literature on client expectations and the vendor’s perspective. Furthermore, the findings extend these previously known quality indicators. For example, support time is part of resolution time and includes the overall time that service requests are waiting for support engineers. Response time is the turnaround time for each interaction between customer and vendor. Resolution time is the overall time from when the service request is opened until it is closed with a solution. It includes the time waiting for the customer to provide required information. As such, ERP clients can influence the overall resolution time of the vendor support service especially if they take a long time in responding to a vendor’s request.

The outcome level of support service quality refers to customer satisfaction. It is an overall measure of a vendor’s success in delivering good quality support services. Goles (2001) also regarded the customer satisfaction as an overall measure of success in IS projects. Meeting customer expectations is one of the most widely used service quality indicators (Bharati & Berg 2005; Claybaugh & Srite 2009). Delivering effective solutions to customers’ issues and effectively answering their enquiries are mandatory in meeting customer expectations and fulfilling their requirements. Teo, Singh and Cooper (2009) stated that meeting and fulfilling all user requirements as stipulated in the contractual agreement is one of the success factors for ERP vendors.
Levina and Ross (2003) believed that considering the customers’ feedback and needs enables IS outsourcing vendors to revise and improve in-house competencies. This in turn improves the quality of service they deliver to their customers, and that reinforces the overall customer satisfaction.

While the finding of the study about the importance of customer satisfaction as one indicator of support quality is consistent with previous literature, the study also shows that there are three levels (service request, transaction and relationship) that vendors use to measure customer satisfaction. At the service request level, customers communicate their feedback and satisfaction to support engineers both verbally and in writing during each service transaction. That gives a chance for the support engineers to consider the customers’ needs and thereby improve the support service quality. At the transactional level, satisfaction is measured by a survey that is sent to customers after the service request is closed. This assists managers to revisit the support service quality and improve the service quality based on customer expectations. At the relationship level, satisfaction is measured by a survey that is sent to customers periodically. The results assist management to understand the overall view of customer expectations, and thereby to improve the support service quality. In addition, there is a correlation between process level and outcome level of the vendor support service quality which leads to the following proposition:

**Proposition 1:** The timeliness of the service, the effectiveness of the solution and the content quality of the delivered service influence customer satisfaction with the vendor’s support service.

### 5.3 CRITICAL FACTORS THAT ENABLE THE SUPPORT SERVICE QUALITY

The severity and priority of the service request, the support engineer’s knowledge and the service level of the host organisation are the *critical enablers* of support service quality.

*The severity and priority* of the issue have a direct and positive influence on the timeliness of the support service, with severity 1 and high priority issues being the most critical. ERP vendors are expected to provide prompt service (Kettinger, Park &
Smith 2009). Research into the critical success factors in ERP implementation has identified timely vendor support as critical to the success of ERP (Zhang et al. 2002) and to ensure that the ERP project proceeds with minimum interruption (Zarb & Kierstead 2008). End users expect round-the-clock support (Leinfuss 1994), quick turnaround time and excellent response time to any service request, especially when the issue is urgent (Claybaugh & Srite 2009).

Round-the-clock support service is usually available for severity 1 service requests and support engineers are expected to start working on high severity and high priority service requests as soon as the customer updates the service requests. The severity and the priority of the service requests have a positive influence on the effectiveness of the solution and the customer satisfaction, with severity 1 and high priority issues being the most critical. The content quality delivered during the service is also higher for high priority service requests. However despite the expectation for severity 1 service requests, round-the-clock support for severity 1 service requests negatively influences the communication and interaction quality and therefore negatively impacts the content quality of the service. The influence of issue severity and priority on support service quality is insignificant for low priority issues and for those of severity 3 or 4.

On the basis of the above discussion, the following propositions are put forward.

*Proposition 2: The higher the severity of an issue and the faster the timeliness of the service; the higher the effectiveness of the solution, the greater the customer satisfaction, but the lower the content quality of the service.*

*Proposition 3: The higher the priority of an issue and the faster the timeliness; the more effective the solution, the higher the content quality of the support service, and the greater the customer satisfaction.*

The second critical factor for support service quality is the vendor support engineers’ *level of knowledge*. ERP applications are very complicated and they integrate several functions and modules from different applications. ERP customers require lifelong vendor support service and maintenance during and after ERP implementation (Loh & Koh 2004). The capabilities and competencies of the support engineers provide technical power to ERP vendors to influence the success of the ERP implementation
(Ngai, Law & Wat 2008). The knowledge and experience of the support engineers enable them to instruct and direct the issue investigation process and to deliver fast and effective solutions to the customers, thereby increasing customer satisfaction.

Teo, Singh and Cooper (2009) stated that vendor staff should have some technical knowledge of and expertise in ERP systems to be able to assist customers successfully; otherwise the project progresses slowly and the vendor may not be able to meet customer requirements. Shiong and Molla (2006) mentioned that insufficient vendor knowledge leads to the “trial and error” method being used to troubleshoot issues, which negatively affects service time. Similarly, knowledgeable support engineers are found to be critical for delivering timely support service. Experienced and knowledgeable support engineers have a better understanding of customer requirements, are more familiar with implementation challenges and can resolve application issues much faster. Support engineers that have a deep knowledge of ERP applications clearly communicate issues to customers, and direct the investigation process and deliver support services with good content and technical quality.

On the basis of the above discussion the following proposition is put forward.

*Proposition 4: The more knowledgeable the ERP vendors’ support personnel are, the faster the timeliness; the more effective the solution, the higher the content quality and the higher the customer satisfaction.*

The service level is another critical enabler for support service quality. Zarb and Kierstead (2008) argued that ERP vendors prefer larger customers to smaller ones, and deliver better service to larger customers. The findings of our case study do not support this. Rather than size of the client being important, we found that the service level agreement of the client and the nature (severity and priority) of the issue were the important elements. This finding is consistent with literature that highlight the importance of meeting customer’s expectations as per the specified contractual agreement to the success of ERP (Claybaugh & Srite 2009; Teo, Singh & Cooper 2009). Higher service levels (advance and gold) have higher priority and therefore faster response times. They also have dedicated service delivery managers who follow up the progress of the service request and escalate it when required. Hence the customer’s service level has a direct positive influence on the timeliness of the
support service quality and indirectly influences other aspects of the support service quality. Based on the above discussion the following proposition is put forward.

*Proposition 5: The higher the customer service level, the faster the support service.*

5.4 **ESSENTIAL FACTORS THAT ENABLE SUPPORT SERVICE QUALITY**

The research identified four *essential enablers* of support service quality: (a) the knowledgebase and knowledge sharing of ERP vendors; (b) the technical competency of ERP customers; (c) the relationship governance between vendors and customers; and (d) the life cycle of the ERP implementation.

*Vendor’s knowledgebase and knowledge sharing* boost support service quality at both process and outcome levels. As knowledge management is a key factor for any organisation (Grossman 2006; Jones 2006) and helps the organisation not only to track and re-use past experience but also to facilitate knowledge transfer from one generation to another (Dani et al. 2006; Jones 2006), vendors that develop and share knowledge – technical/functional manuals, knowledgebase of issues, troubleshooting processes, and causes and solutions – can avoid making similar mistakes and speed up the delivery of the vendor support service. Having a comprehensive knowledgebase enable the vendor to positively improve the timeliness of the support service. This is more visible for known issues that have been documented with an effective solution. However, if the knowledgebase records the process of troubleshooting different types of issues, it could also improve the timeliness of service for unknown issues.

In addition to timeliness, the vendor’s knowledgebase positively improves the effectiveness of the solution and the content quality of the support service. Using the knowledgebase, support engineers not only can offer a successfully tested solution to customers but also construct and direct investigation of an issue effectively. This reinforces Levina and Ross’s (2003) finding where vendors have benefited from having a methodology to document past experiment and apply it to similar situations across different customers. In addition to improving the effectiveness and timeliness of support service, existing documents such as technical and functional manuals in the vendor organisation provide the opportunity for support engineers to upskill and
extend their knowledge. On the other hand, making high quality vendor documentation available to customers improves customers’ knowledge allowing them to be more independent of vendor support service, and helps them to resolve the application issues independently, thereby boosting customer satisfaction. To facilitate this, vendors have to create a collaboration platform among different teams such as support teams, development teams and support engineers. A collaboration platform is a quick way for facilitating knowledge sharing, especially for knowledge and experience that is not documented (Levina & Ross 2003; Motwani et al. 2002). Sharing knowledge both internally among different staff and externally with clients positively influence the timeliness of service and improve the quality of the interaction with the customer.

Based on the above discussion the following proposition is put forward.

Proposition 6: The vendor knowledgebase and knowledge sharing contributes to the effectiveness of the solution, the timeliness and content quality of the vendor support service and customer satisfaction.

The technical competency of customers is another essential enabler of vendor support service quality. Investigation of the issues related to ERP applications requires collaboration between vendors and customers. End-to-end participation from both sides is required and enables ERP vendors to deliver good quality support service successfully. Hence customers are required to have technical competency and this positively improves all aspects of the support service. A lack of competency has a negative impact. The technical competency of the customer was mentioned in IS and ERP literature as an important success factor for the customer (Goles 2001; Koh, Ang & Straub 2004; Law, Chen & Wu 2010). The findings here extend this to the vendor domain.

Knowledgeable and technically competent customers educate vendors about their business requirements and provide them with the required information. This assists vendors in delivering reliable service to their customers. Support engineers are not able to direct the investigation of issues and deliver an effective solution unless they receive the necessary information about customers’ issues and requirements. They also cannot deliver timely service unless they receive the required information in a
timely manner. Hence a lack of customer capability can negatively influence the vendor’s ability to deliver good quality support services. This finding is consistent with Law’s (2010) study of vendor support and maintenance in a successful ERP implementation where customer’s knowledge and their documentation about in-house customisation was found to empower them to coordinate with the vendor during maintenance and support. Knowledgeable customers appreciate vendor efforts better and generally are more satisfied customers.

On the basis of the above discussion the following proposition is put forward.

Proposition 7: The customer’s technical knowledge contributes to the effectiveness of the solution, the timeliness and content quality of the vendor support service and customer satisfaction.

The relationship governance is another essential enabling factor in vendor support service quality. Communication is the formal and informal sharing of meaningful information in a timely manner between parties (Goles 2001). Communication management sustains the vendor–client relationship (Teo, Singh & Cooper 2009; Zarb & Kierstead 2008). Likewise, clear communication has been found to direct the issue investigation successfully, reduce redundancy, maintain consistency in information, estimate the resolution time, plan the troubleshooting process and escalate the service request if required. Hence, clear communication enables vendors to deliver the solution at the right time to help customer meet their deadlines. While a lack of communication delays the investigation and negatively influences the overall resolution time, regular verbal (such as by telephone) and written communication during the issue investigation process increases customer satisfaction. While Zarb (2008) found that when time zones differ, the timeliness of the service can be improved if both parties adopt the “follow the sun” strategy, the current findings suggest that communication barriers such as different time zones and language differences negatively impact on the communication between parties.

Based on the above discussion the following proposition is put forward.
Proposition 8: The relationship governance between vendor and client contributes to the effectiveness of the solution, the timeliness and content quality of the vendor support service and customer satisfaction.

The life cycle of the ERP implementation is another essential enabler of vendor support service quality. The life cycle of the ERP project does not directly influence the support service quality, but it influences the service request attributes. For instance, the issue severity and priority of the service request are higher when the customer faces an issue in the onward/upward phase (the live environment) rather than during the project phase when they start installing and configuring the ERP application. The life cycle of the ERP project influences the complexity of the service requests and it is more likely for customers to face more complex issues in more mature implementation. For example, Markus and Tony (2000) study of the ERP life cycle phases and activities, support this assertion.

Based on the above discussion the following proposition is put forward.

Proposition 9: The impact of the ERP life cycle on support service quality is mediated through the attributes of the service request.

5.5 FACTORS THAT INHIBIT SUPPORT SERVICE QUALITY

The complexity of the customer issue is an inhibitory factor in support service quality.

The case study revealed that the complexity of customer issues negatively influences vendor support service quality. Mayer (1995) discussed how troubleshooting of an issue related to integration of different applications (from different vendors) delayed the solution for a long time and this was due to complexities caused by the integration. Troubleshooting complex issues requires a lot of resources, time and collaboration. Hence issue complexity usually has a negative influence on the timeliness of the solution. However, maintaining good technical and interaction quality for complex issues is difficult, and a lack of collaboration on complex issues can negatively influence the direction and clarity of the issue investigation. For example, Xue’s et al. (2004/2005) study of the timeliness and troubleshooting strategy of complex outsourcing issues found that seamless collaboration and communication
is essential for troubleshooting complex issues. Zarb’s (2008) study reported how a lack of communication led to difficulty in resolving a complex issue.

Based on the above discussion the following proposition is put forward.

**Proposition 10:** The more complex the customer issue, the lower the timeliness of the service and lower the content quality of the vendor support service.

### 5.6 Hygienic Factors in Support Service Quality

Support governance (vendor competency), product governance and vendor governance (customer competency) are hygienic factors in support service quality and a lack of these negatively influences vendor support service quality.

**Support governance,** which includes a vendor’s infrastructure, process and management, is one of the vendor competencies that influences different aspects of the support service quality. Although lack of infrastructure and processes prevents support engineers from delivering a good quality support service, the existence of infrastructure and processes does not guarantee a high quality support service unless the support engineers use them efficiently. For instance, a lack of diagnostic methodology increases the redundancy in communication with the customer and reduces the clarity of communication with the customer. Hence a lack of diagnostic methodology negatively influences the content quality of the delivered service. However, having a good diagnostic methodology does not guarantee that every support engineer will follow the right process when troubleshooting the issues. Nevertheless, support engineers who follow a defined methodology can deliver better content quality support service compared to others and can achieve higher customer satisfaction. According to Levina and Ross (2003), using a defined methodology to standardise the service delivery process can positively influence the timeliness of the service.

Another example is having reliable internal test instances that are available to support engineers to enable them to replicate the customer issues. The ability to replicate customer issues internally can reduce the need for communication with the customer and save time. Hence the lack of a reliable internal test instance can increase the support time and overall resolution time. However, the existence of a reliable internal
test instance does not mean that all support engineers have the ability to use the internal instance and reproduce the customer issue to reduce the support service time.

Escalation processes are another example which reduces service time. Claybaugh and Srite (2009) mentioned that timely escalation processes on the part of the vendor led to a more positive customer assessment of quality of the vendor support service and increased customer satisfaction.

Based on the above discussion the following proposition is put forward.

*Proposition 11: A lack of support governance prevents the ERP vendor from delivering a timely and good content quality support service and an effective solution, which negatively influences customer satisfaction. However, good support governance does not guarantee a quality support service.*

*Product governance* is another hygienic factor in vendor support service quality. Although the customer’s ability to govern the ERP product does not guarantee a consistent high quality support service from ERP vendor, the lack of this ability will certainly have a negative influence on the vendor’s ability to deliver a good quality support service, and in some cases may even prevent the delivery of the support service. For instance, it is very difficult for ERP vendors to maintain the code for several versions of a product. Therefore they no longer support some old versions when they deliver the new versions of the application. The ERP vendor’s ability to provide solutions to customers’ issues is very limited if the customer runs old version of the product that is no longer supported. Law (2010) also stated that ERP vendors do not support old versions of applications after a period of time and therefore it is important for ERP customers to be using the supported versions of the application in order to receive support services. Hence upgrading the ERP application on a regular basis and using at least the minimum required version enables customers to use the available maintenance pack and enables the ERP vendor to deliver good quality support service.

Customisation of ERP products negatively influences the product supportability. According to Law (2010), customisation increases the risk for ERP applications because it prevents customers from having ongoing software upgrades and
maintenance. ERP vendors do not support customer customisation on ERP applications. Therefore after upgrading to higher version, there is chance that customers either lose their customisation or find that their customisation is incompatible with the new version of the application. For example, if customers integrate their ERP application with applications from other vendors, the delivered maintenance packs (from the ERP vendor) and new versions of the application might not be compatible with other applications (from other vendors) that customers use. In such a case, it is the customer’s responsibility rather than the ERP vendor’s to fully test the new version and maintenance patches before they are migrated to the live environment. Ng (2010) stated that more effort is required from ERP customers to manage vendor maintenance support and to proactively analyse the impact of the maintenance patches, especially if they integrate different software packages. ERP vendors do not deliver any solution to issues if it is due to customer customisation.

Proposition 12: Poor product governance in the customer’s organisation reduces the ability of ERP vendors to provide a timely support service, an effective solution and good content quality support service. However, even if the customer has a good product governance, this does not guarantee good quality vendor support service.

Vendor governance, that is, the customer’s ability to manage and deliver the information requested by the vendor, customer cooperates with the vendor and the way that the customer manages the support service, influences the vendor’s ability to deliver the support service. Information sharing with the vendor is a customer obligation in IS and ERP projects (Koh, Ang & Straub 2004; Nah, Lau & Kuang 2001). Similar to the findings of Ang, Koh and Straub (2004), the current study found a correlation between the vendor’s success and the degree to which customers fulfil their obligations. Poor information management on the part of the customer, complicated authorisation procedures and/or multiple access layers to information in the host organisation delay customer action in providing the required information to support engineers, which in turn delays the issue investigation and negatively influences the overall resolution time. Poor cooperation on the part of the customer in providing the required information can also jeopardise vendor delivery of an effective solution. Law (2010) also found that successful ERP maintenance and support (M&S) cannot be achieved unless the vendor and customer staff work cooperatively. Lack of
clarity and lack of availability of the required information (from the customer) negatively impacts on the clarity and direction of the issue investigation.

On the other hand, follow-up by the customer and good service management increases the support engineers’ attention to customer service requests. Customer escalation requests based on their requirements (for example, if the issue negatively affects the customer’s ability to reach an importance milestone) increase the priority of the service request and that reduces the response time and the overall resolution time. According to Goles (2001) the customer should have some degree of managerial competence and should be able to plan, organise, lead and control the necessary activities to manage a successful relationship with the vendor. It is the customer’s responsibility to inform the vendor of any importance milestones and dates.

A high volume of service requests negatively influences the support engineers’ response times. Lack of customer infrastructure management can delay the issue investigation. For instance, ERP vendors hesitate to deliver any patches to customers for direct implementation in the live environment. Therefore, customer delays in preparing the extra testing instances rather than the live environment instance (that is, the test instance on the customer side) delays the issue investigation process and the overall resolution time. Law (2010) mentioned that ERP customers should invest in additional hardware and software platforms to be able to test the impact of the vendor maintenance patches before migrating the patch to the live environment.

Based on the above discussion the following proposition is put forward.

Proposition 13: The lack of management to govern the vendor in the customer’s organisation prevents the ERP vendors from providing timely support service, an effective solution and good content quality support service. However, even if the customer has good vendor governance, this does not guarantee good quality vendor support service.

5.7 SUMMARY

In this chapter the findings of the current study were analysed with reference to the previous literature. The analysis showed that the definition of the vendor support service is consistent with that described in previous studies. However, the case study
extends the dimensions of support service quality at the process and outcome levels including providing more detailed definitions of dimensions in each level. The current study also extends the factors that influence support service quality and structures them in terms of critical, essential, inhibitory and hygienic factors that support the service quality. Table 5.1 shows a summary.

<table>
<thead>
<tr>
<th>Category of Factors</th>
<th>Critical</th>
<th>Essential</th>
<th>Inhibitor</th>
<th>Hygienic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor</td>
<td>Human capital</td>
<td>Knowledgebase and knowledge sharing</td>
<td></td>
<td>Support governance</td>
</tr>
<tr>
<td>Host</td>
<td></td>
<td>Technical competency</td>
<td></td>
<td>Product governance, vendor governance</td>
</tr>
<tr>
<td>ERP Lifecycle</td>
<td></td>
<td>Life cycle of the ERP implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vendor-host relationship</td>
<td>Service level</td>
<td>Relationship governance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Request</td>
<td>Severity, Priority</td>
<td></td>
<td>Complexity</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.1: Factors that Influence the Quality of Vendor Support Service in ERP Implementation

In the next chapter (the final chapter), the five main questions of the study will be revisited and the theoretical and managerial implications; and the research limitation will be discussed.
CHAPTER 6        CONCLUSION

6.1 INTRODUCTION
The goal of the current research was to present the ERP vendors’ perspective on the support service they provide to ERP customers, the dimensions of the support service quality and the factors that influence the quality either positively or negatively. The research aimed to answer five main questions as follows: (1) what is vendor support service and how is it measured? (2) How do the ERP implementation phases influence the vendor support service quality? (3) What are the vendor-specific factors and how do they influence the vendor support service quality? (4) What are the host-specific factors and how do they influence the vendor support service quality? (5) What are the factors specific to the relationship between vendor and host and how do they influence the vendor support service quality?

The literature review was reported in chapter 2. Against the backdrop of the review, a conceptual framework was developed, as described in chapter 3. The research method chosen to fulfil the goal of the study was a single case study using qualitative methods. Data were collected from the Australian branch of one of the largest global ERP vendors. A total of twenty-four semi-structured interviews were conducted. Data were analysed through template analysis using the initial conceptual framework as a guide and allowing for new codes to emerge whenever appropriate. The findings of the study were presented in chapter 4 and discussed in chapter 5.

In this chapter, the five main questions of the study are revisited in section 6.2. The theoretical and managerial implications are discussed in section 6.3 and the limitations of the research and future research directions presented in section 6.4. The chapter ends with some concluding remarks.

6.2 REVISITING THE RESEARCH QUESTIONS
In the following sections, the answers to the five main research questions in this study are reviewed, based on the findings of the literature and case study.
6.2.1 What is Vendor Support Service and How is it Measured?

Based on both the literature review and the case study findings, vendor support service can be defined as ERP vendors’ delivery of technical and functional assistance and maintenance support such as critical repair packs, updates and upgrade to ERP customers. The findings suggest that ERP vendors can provide functional and technical assistance in two different ways: (1) by publishing and making readily available to customers information and knowledge about various aspects of the application; and (2) by resolving service requests that ERP customers log. The service requests are based on the issues and problems that customers encounter whilst implementing and using ERP applications, knowledge and maintenance packages.

Although the above definition is indicative, it is not exclusive as different vendors follow their own structures when packaging what is included or left out of the support service. For example, while sales, education and implementation services are regarded as separate services for the ERP vendor used in this case study, for other vendors these might be part of the support service.

The common ways to evaluate the vendor support service quality (VSSQ) are responsiveness, the effectiveness of the services in meeting the host organisations’ requirements, and customer satisfaction. However, a better appraisal of support service quality would be obtained if ERP vendors adopted a two tier evaluation system: process and outcome. At the process level, vendors can use the timeliness of the service (which includes resolution, support and response time), the effectiveness of the solution, and the content quality (that is technical and interaction quality) as indictors of the quality of support service they render to ERP customers. At the outcome level, customer satisfaction, which can be assessed at customer feedback, transaction and relationship satisfaction levels, provides vendors with an overall indicator of quality. There is a strong correlation between process and outcome levels of VSSQ, such that high VSSQ at the process level is a necessary if not sufficient condition for high VSSQ at the outcome level.
6.2.2 How do the ERP Implementation Phases Influence the Vendor Support Service Quality?

ERP lifecycle phases are commonly defined as chartering, project, shakedown, and onward/upward (Markus & Tanis 2000). Initially, it was assumed that the impact of the ERP lifecycle on vendor support service quality is mediated through delivered/required support service. Although the assumption of a mediated relationship between the ERP lifecycle and support service quality holds true, the mechanism is slightly different from the initial understanding. First, the support service starts from the project phase and continues through the shakedown and onward/upward phases. Second, the business impact of the issues that customers face is different at each phase of the ERP life cycle. The issues in the onward/upward phase (live environment) have more severe impacts on customers’ business than the issues in the shakedown and project phases.

Third, the ERP life cycle influences the nature of the customer requirements such that higher severity, higher priority and more complex issues are more likely to be raised in the shakedown and onward/upward phases than in the project phase. For instance, severity 1 service request are less likely to be raised in a non-live environment. Hence, customers with more mature implementation are likely to receive a better response, faster resolution, better content quality and a more effective solution, which contributes to satisfaction. Therefore, the ERP implementation phases influence the attributes of the service request and indirectly affect the support service quality.

6.2.3 What are the Vendor-Specific Factors and How do They Influence the Vendor Support Service Quality?

Human resource capability, industry knowledge and experience, infrastructure and processes, and support management were the vendor-specific factors that were identified during the literature review to influence the vendor’s responsiveness to the customer, the effectiveness of the delivered service and customer satisfaction.

First, the case study confirmed the importance of these factors and provided richer insights into their composition and degree of influence. For instance, industry knowledge and experience were found to be attributes of the human resource capability rather than being separate factors. Human resource capability is one of the
few critical factors that influence VSSQ. It is important that vendors invest enough in building both the essential knowledge (such as experience, product knowledge and troubleshooting skills) and complementary knowledge (such as industry knowledge) of their work force to provide high quality service to customers. Vendor infrastructure and processes, and support management were found to be attributes of the support governance competency. Support governance empowers the vendor to manage the support service and plays a hygienic role in delivering good quality support service, which in turn helps to reinforce support governance and other vendor competencies such as knowledgebase, knowledge sharing and SEs knowledge.

Second, the case study also extended previous findings and identified two more essential competencies of ERP vendors that can improve the support service quality. An ERP vendor’s knowledgebase (technical/functional manuals and experience database) and knowledge sharing mechanisms (published knowledge and collaborative platforms) are essential competencies to deliver good quality support service as well as advance human resource capability. When vendors’ build good quality knowledgebase, it improves the published knowledge content available to customers and positively influences customer satisfaction.

6.2.4 What are the Host-Specific Factors and How do They Influence the Vendor Support Service Quality?

Customers’ technical competency, vendor governance and product governance are the three host specific factors that enable ERP vendors to deliver good quality support service.

The customers’ technical competency which includes customers’ implementation experience, knowledge of the ERP product and knowledge of their own industry is an essential factor that influences their satisfaction with the delivered support service. Customers’ capability to govern the vendor through proper information management, cooperation and service management are hygienic factors: while the presence of these factors are not critical to a vendor’s support delivery, the lack of them negatively influences the vendor’s ability to deliver good support service to customers. For example, customers’ capability to manage the service they receive from the vendor influences the priority of the service request.
The study also identified that customers’ product supportability (a dimension of product governance) is a hygienic factor and the lack of it negatively influences vendors’ ability to deliver a good quality support service to customers. On the other hand, customisation has a negative influence on product supportability and therefore managing the customisation improves product supportability. Product supportability is correlated with customers’ ability to use the maintenance packages delivered by the vendor.

6.2.5 What are the Factors Specific to the Relationship between Vendor and Host and How do They Influence the Vendor Support Service Quality?

Contractual and relationship governance are the factors specific to the vendor–host relationship that affect the quality of the support service delivered to ERP customers. The contractual/service level agreement (premier, advance and gold) between the vendor and customer is a critical enabler of support service quality. There is a correlation between the service level agreement and the priority of the customer requests. Time zone barriers and language barriers can negatively influence communication management between vendor and host.

Based on the above discussion we revised the initial conceptual framework and proposed the framework shown in Figure 6-1. This revised framework highlights the following key points:

1. Support service quality has a two-tier evaluation system: process and outcome. The process level is how a vendor measures the quality of the support service it delivered. The outcome level is how customers react to the support service they have received.

2. Vendor support service is influenced by different factors. These factors are related to vendor competencies, customer competencies, vendor–host relationship competencies and customer requirements.

3. There are several positive and negative relationships between different competencies and their attributes.
4. The influence of the ERP life cycle on vendor support service quality is mediated through customer requirements during different phases of the ERP implementation.
Figure 6-1: Vendor Support Service Quality (VSSQ) in ERP
6.3 THEORETICAL IMPLICATIONS

In earlier research on ERP implementation and success/failure factors, vendor support was identified as one of the important critical success factors (CSFs) in ERP projects, and the vendor was identified as one of the critical people (CP). Yet there was no systematic research to investigate the VSS and the VSSQ in ERP projects. The current research has addressed this gap. First, it specifically presented the vendor perspective to explore the vendor support service quality in all phases of the ERP implementation, thereby bridging the gap in previous studies.

Second, the findings of the case study extend the current ERP literature in several ways.

1. This research has clarified the definition of the vendor support service, and has proposed comprehensive measurement of quality for vendor support service at both process and outcome level.

2. It has provided a deeper understanding of customers’ requirements from the vendor support service during different phases of ERP implementation by exploring the importance of attributes such as severity, priority and complexity of the customer requirements in different phases. The results show that the vendor support service is engaged in ERP implementation from the project phase but with more emphasis during the shakedown and onward/upward phases, since customers usually have issues of higher severity, priority and complexity during the last two phases (shakedown and onward/upward) compared with during the project phase.

3. This study has also proposed detailed competency factors that positively or negatively influence the support service quality and the causal relationship between competency factors and their attributes. The results confirm the vendor value preposition and show that different competency factors and their attributes reinforce each other and advance the vendor support service both at process and outcome level.

Third, we have extended the initial introduced conceptual framework and delivered an integrated theoretical framework: vendor support service quality – VSSQ, shown in
Figure 6-1. Thirteen propositions were made that offer substantial opportunities for future research in examining the validity of the propositions. In addition to the propositions, several relationships between VSSQ factors have been put forward, which provide opportunities for further research in examining these relationships.

6.4 MANAGERIAL IMPLICATIONS

The outcome of the case study shows that the vendor support service requires end-to-end commitment and cooperation between the ERP vendor and ERP customer. Thus both ERP vendors and ERP customers can benefit from the analysis of the vendor support service and the relationship between vendor and customer.

The severity of the service request is a critical determinant of the support service quality. However, the process for handling severity 1 service requests was identified as problematic in providing good content quality of the delivered service. Severity 1 SRs are passed from one engineer to another to cover the need for 24x7 service. If there is a lack of internal and external communication and collaboration at each transfer (both verbally and written), this can negatively influence the interaction quality with the customer and the direction of the issue investigation. Hence in this area, ERP vendors could benefit from improving their processes in the investigation of severity 1 service requests to ensure: (1) proper handling of the internal and external communication; (2) tracking of the engineers who are involved; and (3) tracking of the progress and the value added by each engineer.

Support engineers’ knowledge is another critical determinant of the quality. Hence regular training and upskilling is very important for ERP vendors to keep the support engineers up to date and knowledgeable. It is important that support managers regularly identify the knowledge gap of their support engineers to provide them with regular and required training. Moreover, vendor’s knowledgebase and knowledge sharing (collaboration) are not only essential for the vendor support service but they also reinforce the support engineers’ knowledge. Hence, it is crucial for the ERP vendor to invest resources to build the knowledgebase and to encourage collaboration between support engineers.
ERP vendors should educate their customers about the importance of the customers’ role in vendor support service quality. ERP customers would benefit more from the vendor support service if they consider a few factors. First, their service level has a positive effect on the vendor support service. Therefore based on their situation and requirements they could consider upgrading the service level. Second, ERP vendors do not provide a support service if customers do not run the supported version of the application. Therefore, it is very important for ERP customers to maintain a supported version of the application in order to continually receive the vendor support service. Third, having qualified and knowledgeable staff enables customers to cooperate efficiently with vendor personnel, and thereby receive a higher quality support service. Lastly, both ERP vendors and adopting organisations would benefit by ensuring an effective mechanism of keeping communication continuous and very clear during the issue investigation.

6.5 LIMITATIONS OF THE RESEARCH AND FUTURE DIRECTIONS

This research has made an important contribution to understanding the vendor’s perspective in support service quality; however, it has some limitations that should be considered for future research in this field.

The first limitation is that a single case study approach was conducted to capture the vendor perspective on support service quality. The selected case is one of the main players in the ERP domain, and covers many ERP customers globally. While the single case was large enough to cover the required data for the purpose of the current study, multiple case studies of both global and local ERP vendors would enable greater understanding of the VSSQ and important VSSQ factors.

Second, the number of interviews was limited to 24, and these were conducted in Australia. Although the data saturation technique was used to determine the number of required interviews, having more data would be useful in confirming the result of the current study.

Third, during the course of the study, the researcher was employed as a support engineer in the case organisation and there is a potential for researcher bias. The involvement of interview participants including other support engineers, managers
and directors has helped to reduce this bias; but there is still the possibility of bias in interpretation and analysis.

Fourth, the vendor support service involves an end-to-end relationship between the ERP vendor and the adopting organisation. However, as the focus of this search was on the vendor’s perspective, we did not include ERP customers in the investigation. Hence, capturing the customer’s perspective on VSSQ would add further value to the findings of this research.

Fifth, there are two models of ERP delivery—software as a product and software as a service models. The product model, which was investigated in the current research, refers to where host organisations implement and manage the ERP software. In the service model, the application is hosted on the vendor’s infrastructure and is managed by the vendor, with the host organisation accessing the service. This has implications for some of the factors discussed in this research, particularly host-related factors such as product governance and vendor governance. Hence additional research is required to explore VSSQ in the service model.

In conclusion, apart from accomplishing the research objectives, relevant ideas have been developed and a valuable contribution to a better understanding of the vendor support service quality has been developed. Gaining a deeper knowledge of the factors that influence the VSSQ can help both ERP vendors and ERP customers to establish a good relationship to be able to sustain both the quality of the vendor support service and the implementation and use of the ERP application.
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APPENDIX A – Questions Used in First Set of Interviews

1. Imagine the following Client profiles:
   - Category A – chartering Phase – clients who are searching for business solutions and are just considering SEV Company as one of the alternatives
   - Category B – Project Phase – Clients who have just bought SEV Company E-business suit and are attempting to setup and configure the application that you are supporting.
   - Category C – Clients that have setup and configured the application and now are testing the functionalities before scheduling to go live.
   - Category D – clients who are already live and from time to time add new functionalities or upgrade the application to a higher release.
     a. Effect on kind and type of issue and their requirements from vendor support?
     b. Which ones are common and which ones specific to their profile?
     c. Effect on type of support.
     d. Effect on the priority of the issues
     e. Effect on quality and success of support
     f. Application user (Application user, for instance, could be a consultant who tests the functionalities, IT staffs, end users or managers).
     g. Effect on your allocation of support.
     h. Effect on your success in supporting the different client categories

2. Imagine the following client types:
   - Category A – clients who are consulting companies who implement SEV Company Business suit for host companies.
   - Category B – clients who are host companies and have the implementer teams in house to help them in implementation and the team works with SEV Company support directly.
   - Category C – clients who are host companies but have support contract with SEV Company (SEV Company consultant) to help them in house to implement the ERP.
     a. Do you provide different support?
     b. Any difference between the natures of the support they really required?
     c. Does the relation between SEV Company – Agent – Host make any different in the support when we have SEV Company – Agent – Host, SEV Company – SEV Company – Host and SEV Company –Host
     d. If yes can you explain and provide some example.
     e. Is there any issue related to the relationship above that is affecting the support to customers’ category A, B, C can you provide with example?

3. Do you have any category for the customers? I mean do you rank your customers depend on how important they are to SEV Company or do you have any other ranking for your customers.
   a. If yes please provide examples of different category.
b. How is the support different depend on the category?

c. Do you have special care or support to some category?

d. What is the critical factor that can affect the support to each type?

4. Is there any customer specific factors influence the support
   a. Such as supporting customers globally? Do you face any issue when you are supporting non-local customers? Can you provide some examples?
   b. For example how are different languages or distance managed?

5. Is there any specific thing in SEV Company that can affect the support you are providing to the customer either positively or negatively? For instance:
   a. How the knowledge management in the company can affect your support. Please explain.
   b. How the application training can affect the support you are providing to the customer.
   c. What is the effect of the internal and external communication on your support?
   d. Does the customer behaviour affect your support?
   e. Is there any other specific thing that influences your support to the customer?

6. What would you consider as the most critical factors that influence your support?
APPENDIX B – Questions Used in Second Set of Interviews

1. How do you define and measure the quality of the support service?
2. What service do you provide to the customer? (The definition of the service and the limitation).
3. What factors positively and negatively affect the quality of the service and how? This factors could comes from:
   - SEV Company such as engineer’s skill set, Industry knowledge, troubleshooting skills, support governance, infrastructure and process?
   - Customer side such as customer skill set, ERP assimilation, ERP implementation project management, and vendor governance.
   - Relationship between two parties such as contractual, relationship governance.
   - Factors related to the issue itself? Such as impact of the issue, type of the issue, severity and priority of the issue.
   - Factors related to the implementation phase? How implementation phase affects the severity and priority of the issue?
4. What factors could affect the efficiency of the service? (Minimum expenditure of time and resource)?
5. What factors could affect the turn around time to customer?
6. What factors could affect the resolution time?
7. What factors could affect the effectiveness of the service? Solve the issue but not in the timeframe that customer needs?
8. What factors could cause an SR to be closed unresolved? Do you know on average how many close this way?
9. What could affect the accuracy of the support service?
APPENDIX C – Questions Used in Third Set of Interviews

The research identified Timeliness, Effectiveness, Content quality and Customer satisfaction as the four most important dimensions for evaluating service quality. In addition, a number of factors that have a direct or indirect effect on service quality have been identified. These factors are listed under column…. I am seeking your assistance to classify those factors into four groups.

**Critical enablers are the most important factors that have a direct and positive impact on the service quality dimension.**

1. Essential enablers are those factors that have an *indirect and positive* impact on the service quality dimension,
2. Inhibitors are factors that have a *negative impact* on service quality
3. Hygienic Factors are factors that are *pre-requisite to service delivery*. Once these factors are removed or are absent from the service eco-system, there is an adverse effect on service delivery. However the existence of these factors does not necessarily lead to higher service quality.
4. No effect: the factor *has no effect* on service quality

In the table below, for each dimensions of service quality, please indicate if the factor is a critical enabler, an essential enabler, inhibitor, hygienic or has no effect, by putting either 1 or 2 or 3 or 4 or 5 respectively in the space provided.
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APPENDIX D – Invitation Letter

University
Business Portfolio
School of Business Information Technology - BIT
Level 17, 239 Bourke Street, Melbourne
Victoria 3000, Australia

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT
PROJECT INFORMATION STATEMENT

Project Title:
Factors that influence the quality of vendor support service in enterprise resource planning implementation and use

Investigator:
o Investigator name
Supervisors:
o Senior supervisor
o Second supervisor

Dear participant, (the name of person will be typed instead of participant)

You are invited to participate in a research project being conducted by RMIT University. This information sheet describes the project in a straightforward language, or ‘Plain English’. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate or not. If you have any questions about the project, please contact the investigator or her supervisors as stated above.

This research is being conducted by Forough Fardipour, a Masters Degree student at the School of Business Information Technology, RMIT University and an [name of company] employee. The project has been approved both by the RMIT Human Research Ethics Sub Committee and [name of company] Company.

Enterprise Resource Planning (ERP) systems are one of the most popular IT applications. ERP is also one of the fastest growing market segments. The vendors’ role is very important (in fact, critical) in any ERP implementation and has been identified as one of the critical success factors. Vendor support could influence an ERP implementation either positively or negatively. Therefore, identifying the factors that affect vendor support can benefit not only the vendors but also help organisations to have a successful ERP implementation. The aim of this research is to understand the factors that influence vendor support service in ERP implementations and use. The questions to be asked relate to:

• The definition of the support service quality;
• The type of support an ERP vendor provides at different stages of ERP implementation;
• The issues that the vendor face in providing these types of support
• How clients’ support requests are prioritized
• The factors that contribute to successful support


You are approached to participate in the interview because you are working in the Support Department of [name of company] Company as a support engineer, support manager or director. The interview will take a maximum of one hour. With your consent, the interview will be audio-recorded and will subsequently be transcribed for further data analysis, however you have the right to cease the taping at any time. In all stages of the research the collected data will remain completely confidential and will be treated in a manner to protect the participant’s name. The collected data will be analysed and the results published without including information that can potentially identify either the respondents or their teams. In other words, anonymity of participants is guaranteed in all stages of the research and also in all publications resulting from this research. The name ‘[name of company] Company’ will not be published without the express agreement from [name of company] Company. In the event of this not being agreed to the name ‘[name of company] Company’ will be replaced with ‘SEV Company’.

All the collected information including the tape-recorded interviews, the soft and hard copy and the transcript of the interview will be kept for 5 years in a locked filing cabinet and soft data in a password protected computer in the office of the Investigator in the School of Business Information Technology 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 Investigator/s will have access to the data. After 5 years the soft copies will be shredded and placed in a security recycle bin and electronic data will be deleted/destroyed in a secure manner.

This research is conducted as part of my Master degree at RMIT and is completely independent of the [name of company] Company therefore your acceptance/declining to attend the interview will not have any positive or negative effect on your value in the company and if you decline to attend the interview your name will remain confidential. Your participation in this research is voluntary. As a participant, you have the right to withdraw your participation at any time; you can have any unprocessed data withdrawn and destroyed, provided it can be reliably identified, and provided. The questions asked in the interview refer to your support experiences; however, if you feel unhappy about a particular question during the interview, you have the right to withdraw completely or avoid answering the question(s).

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

If you agree to participate, please sign the enclosed ‘Prescribed Consent Form’ and return it to me. If you have any questions regarding this research, you can either contact me or my supervisors at the addresses below.

Yours Sincerely

Investigator signature
Investigator:

Supervisor:              Supervisor:
APPENDIX E – Prescribed 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

BIT- Business Information Technology / RMIT

Name of Participant:

Project Title: Factors that influence the quality of vendor support service in enterprise resource planning implementation and use

Name(s) of Investigators: (1) (investigator) Phone: ____________________________
                                 (2) (supervisor) Phone: ____________________________
                                 (3) (supervisor) Phone: ____________________________

1. I have received a statement explaining the interview/questionnaire involved in this project.
2. I consent to participate in the above project, the particulars of which - including details of the interviews or questionnaires - have been explained to me.
3. I authorize the investigator or his or her assistant to interview me or administer a questionnaire.
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.
   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.
   (e) 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___ (researcher to specify). 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: ____________________________
(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) ____________________________ Date: ____________________________
(Signatures of parents or guardians)

Name: ____________________________ Date: ____________________________
(Witness to signature)

Participants should be given a photocopy of this consent form after it has been signed.
<table>
<thead>
<tr>
<th>Any complaints about your participation in this project may be directed to the Executive Officer, RMIT Human Research Ethics Committee, Research &amp; Innovation, RMIT, GPO Box 2476V, Melbourne, 3001. Details of the complaints procedure are available at:  <a href="http://www.rmit.edu.au/rd/hrec_complaints">http://www.rmit.edu.au/rd/hrec_complaints</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>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 <a href="mailto:rdu@rmit.edu.au">rdu@rmit.edu.au</a>. Details of the complaints procedure are available from: <a href="http://www.rmit.edu.au/rd/hrec_complaints">http://www.rmit.edu.au/rd/hrec_complaints</a></td>
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