THE CONCEPTUAL MODEL OF CONTINUOUS IMPROVEMENT
TEAMWORKING IN RETAIL BANKING OPERATIONS:
A MIXED-METHOD STRATEGY

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

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Declaration

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

Signed:

……………………………………………
Suryadeo Vinay KISSOON

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ABSTRACT

Under the new financial reforms brought about by the Australian government through the *Financial Services Reforms Act 1988* (FRSA), there has been an increase in the competitiveness as a strategic issue of Australian banking institutions (Hutley & Russel, 2005) leading to the integration of *Continuous Improvement* (CI), teamworking, and virtual teamworking (e-teamwork) for strategic performance improvement in retail banking supply chain. The triangulation of the three knowledge domains has mapped and framed the emergence of the Continuous Improvement Teamworking (CIT) Model qualitatively evidenced by the Concern-Task-Interaction-Outcome (CTIO) Problem-Solving Cycle or CTIO Cycle from an integrated operations management perspective. The CTIO Cycle was also strategically framed from other conceptual problem-solving cycles from the literature. The CTIO Cycle qualitatively uses the Continuous-Task-Interaction-Team (CTIT) philosophy using both face-to-face interaction with reference to CI and teamwork, and virtual interaction with reference to CI and virtual teamwork. The CTIT was structured from the ‘Total Teamwork Way’ (Atkinson, 1995).

This dominant qualitative research explores and develops the concept of the CIT Model in a major Australian retail banking operational sector using a sequential, mixed-method strategy for presentation of four different types of data in four steps of the process of research (3 Qualitative methods v/s 1 Quantitative method). This research task is important as retail banking managers still do not seem to find the right problem-solving approaches to make their teams strategically work better in resolving key retail operational matters. This was qualitatively justified by: using the phenomenological paradigms of ethnography (moderate participant observation) as the method of collecting primary data (Spradley, 1980) for 12 months (290 hours); two case studies simultaneously done (for 12 months: 6 months and 1 year each) with 18 team members in two poorly-performing retail branches using two Continuous-Task-Interacting Teams (CTITs) for strategic performance improvement; and content analysis (Neueundorf, 2002) for face-to-face interviews with 29 retail banking managers over 2 months. A positivistic paradigm was used to validate the CIT Model/CTIO Cycle further using a personal survey with 149 retail banking employees over four months in two major regions in Victoria. The participant observation qualitative study had been the key driver to guide the research techniques for the two case studies, face-to-face interview and eventually the personal survey in successfully attempted to complete the mixed-method research tasks.

The dominant qualitative methodology facilitated the researcher task to acquire and gain knowledge socially for understanding the emergence of the CIT Model/CTIO Cycle. Team members as the unit of analysis were managers, team leaders, personal bankers, customer service
officers and other front liners. As qualitative research has been subjected to considerable criticism, this dominant qualitative research using a mixed-method strategy used evidence-based practice and applied research to justify its significance in capturing reality. The versatility aspect of the dominant qualitative study has been the interaction with individuals as team members which would have been practically difficult if the less-dominant quantitative method was used first and/or alone. Thus, the success of this thesis research task had been on the systematic qualitative methods which have engendered confidence in the use of qualitative research.

Although this thesis is about addressing a problem in a major Australian retail banking organisation through which some other developments have been undertaken, the two research questions were about the new form of teamworking and the effectiveness to strategically implement the CTIO Cycle to achieve strategic performance improvement of the key performance measures. The problem-solving approach of the CTIO Cycle classified the team meeting, consultation and participation, and quality improvement components as face-to-face interaction. Online functional services, conferencing/teleconferencing and virtual communication components were related to virtual interaction. A positive correspondence was found using the 12 paired measures from the six core elements of face-to-face interaction and virtual interaction variables, as observed from the participant observation study. Thus modern retail banking operations needs both face-to-face and virtual interactions to perform better as demonstrated by the CTIO Cycle, enhancing the notion of hybrid team structure. Two decades ago, retail banking predominantly used face-to-face interaction, while using only telephone and faxes as virtual interaction media. But with the advances of technological know-how and enabling technologies, the retail banking operational sector is strategically changing with the adoption of more interaction media such as the use of the internet, intranet, emails, voicemail, conferencing, teleconferencing, shared files, and other online functional services. Team members in retail banking operations not only need to work face-to-face, but also virtually in addressing concerns or problems in a Continuous Improvement approach. Hence the research confirmed that teamworking in a modern service environment requires the use of both face-to-face and virtual interaction to deliver improvement.

Much research has been conducted on CI and teamworking. The gap identified has been the incorporation of virtual teamworking with CI and teamworking. Hence, the participant observation confirmed the CIT Model. The two case studies implemented the CTIO Cycle which justified its problem-solving approach in achieving productive performance were recognised by senior management by coming down to team members to award certificates of excellence to CTIT. The CTIO Problem-Solving Cycle developed was based on the Continuous Improvement Teamworking Model focused on two key concerns raised in the two least performing retail banking operational branches by team members and then qualitatively addressed by the team to achieve the
desired performance. The model tested in the two bank branches achieved significant improvement (both tangible and intangible) in the two key performance measures. The face-to-face interviews using *content analysis* evaluated the validity of the model, and eventually the personal *survey* confirmed the reliability of the model. By doing the dominant *qualitative* research first, many hidden details and crucial parameters of the CIT Model were properly discovered by being closer to the scene. This would not have been successfully achieved if a quantitative methodology was firstly used. The strength of this thesis has been on its dominant qualitative approach. Thus, the qualitative approaches specifically used in the participant observation study, two case studies implemented with team members and face-to-face interviews with managers have shown how the qualitative research can be a better strategy to start the research process as it is as systematic as quantitative research. The participant observation strategic qualitative inquiry assisted the researcher to see the *purposiveness* and the *congruence* of the sequential mixed-method which would have been different by starting with the personal survey first (i.e., dominant quantitative to less-dominant qualitative). Hence the phenomenological analysis as an analytic strategy (Richards and Morse, 2007) assisted the researcher to transform live Continuous Improving Teamworking (CIT) experiences into textual expression.

The different chapters for each methodology have been strategically reduced to facilitate reading, while briefly describing the most important and relevant data and information obtained. Any further information or clarification can be obtained from the author. This was facilitated by presenting refereed papers on each chapter of the thesis which were improved with reviewers’ comments. Thus, this study contributed for more than 29 papers with the Best Refereed Paper Award by the PhD Candidate at the Association of Qualitative Research (AQR) International Biennial Conference and two other Awards from industry. This research is important to senior managers and first-line managers in improving the effectiveness and efficiency of teamwork as well as the overall operational activities of their businesses facing increasing competition, economic downturn, paradigm shift to E-Human Resources Management, E-Quality Management, E-Supply Chain Management, E-Entrepreneurship, E-Business, demanding customers for Information System Quality with E-banking, and widespread waves of technology-driven innovations in Information and Communication Technologies (ICT) in the retail banking supply chain.
-All living entities, including human beings, animals, birds, insects, reptiles, creepers and trees, depend upon the heat and light given by the sun-god from the sun planet. Furthermore, it is because of the sun’s presence that all living entities can see. The total height of the universe, from top to bottom is about four billion miles. While the sun is situated (vertically) in the middle of the universe. The distance between the sun and the circumference of the universe is two billion miles (Bhaktivedanta Swami Prabhupada, 1975 pp.314-316 as mentioned more than five thousand years ago in the Bhagavad-gita)

Can NASA built a team to justify that?

-But what do we give up, when we give all? And yet man or woman thinks it hard to give up all (White 1977, p. 29)

Do we really need to give up everything just to make a good team?

- Na jayate mriyate va kadacin nayam bhutva bhavita van a bhuyah ajo nityah sasvato yam purano na hanyate nanyamane sarire

“For the soul there is neither birth nor death at any time. He has not come into being, does not come into being, and will not come into being. He is unborn, eternal, ever-existing, and primeval. He is not slain when the body is slain.” (Bhaktivedanta Swami Prabhupada, 1977 p.25)

-love is one of the words we use most and understand least. The problem is that there are many kinds of love. One of the distinctions we can make between different kinds of love has to do with time, duration- how long love lasts. Some love lasts a few days, some lasts a life time, and some lasts forever. Most lovers aspire for the latter, but in vain (Bhaktivedanta Swami Prabhupada, 2004 vii)
CHAPTER 1

INTRODUCTION

Eliminate barriers that rob hourly workers of their right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.

Deming (1982)

Create cheerful workplaces where humanity is respected, exercise people’s capabilities to bring out their limitless potential, change the shop floor attitude in aiming for ever increasing goals.

Ishikawa (1989)

1. Rationale for the Research

The research was conducted to strategically improve the business process performance (entrepreneurial process improvement) of a major retail banking organisation. This was strategically done by connecting people with technology, information system and gaining productive quality performance through a modernised Continuous Improvement Teamworking (CIT) Model using the systematic CTIO (Concern-Task-Interaction-Outcome) Problem-Solving Cycle or CTIO Cycle in the retail banking operational sector. The CIT Model is triangulated from the knowledge domains of teamworking, virtual teamworking, and Continuous Improvement. This research addresses only one main concern to justify the CIT Model evidenced by the CTIO Cycle by applying the sequential mixed method. The CTIO Problem-Solving Cycle is a further development of the CIT Model, which is justified by the integration of key quality tools from the problem-solving Deming PDSA Cycle and Six-Sigma DMAIC Cycle by using the CTIT (Continuous-Task-Interacting-Team) type in two case studies for supply chain strategic performance improvement in two least-performing retail branches operations. The CTIO Cycle and CTIT support the CIT Model, while the CTIO Problem-Solving Cycle is implemented by the CTIT. This thesis addresses a problem in a major Australian retail banking organisation to illustrate the evolving new type of problem-solving teamworking with technology and CI through which some developments have been made.

1.1 Background of the study

1.1.1 Emergence of the Continuous Improvement Teamworking (CIT) Model and CTIO Cycle in retail banking operations

First, the emergence of the CIT Model evidenced by the CTIO Cycle is described in a few paragraphs on competitiveness, Continuous Improvement, teamwork and e-teamwork in the retail banking sector as an introduction to the thesis. The CIT Model realised by the CTIO Cycle is then
summarised and demonstrated through the classificatory framework in Figure 1.1. It illustrates the notion of competitiveness making an Australian banking institution integrate the three knowledge domains of CI, teamwork, and e-teamwork to show the emergence of the CIT Model. ‘Retailing is the business of providing goods and services to customers’ (Ghosh, 1994 pp. 50-51). Retail strategy is also related to quality and competition (Ghosh, 1994).

1.1.1.2 Competitiveness in Australian retail banking operations

Competition is ‘the act of competing; rivalry for supremacy; rivalry offered by a competitor’ (Xavier & Ramachander 2000, p. 2). ‘Competition in an industry comes not simply from direct competitors but from the underlying economics of the industry’ (Porter, 1980). ‘Strategy is a set of actual decisions made by an organization over time. Synergy is a combined total worth more than the sum of its individual’ (Hanna & Newman, 2001 pp. 36-37). Miller (1998 pp 156-189); and (Gilmour, 1991) explains the relevance of operations-level strategy to develop capabilities in process execution as shown in the two case studies (Chapters 6 & 7) that will yield competitive advantages for the firm. The world of retailing is constantly changing over time and there is more competition for consumers, employees, products, process layout, services and resources (Dunne and Lusch, 2005). Nevertheless, this research is concerned only with justifying the Continuous Improvement Teamworking (CIT) Model which relates more to the ‘integrated operations management’ field. In the introduction, competitiveness has been mentioned to illustrate its contribution to the adoption of TQM/Continuous Improvement philosophies by banking organisations. As described by Moncrief (2006), foreign banks entering the Australian financial market have focused on gaining market share and becoming more competitive as they gain expertise in this sector at international level. Some of the foreign banks which have progressively entered Australia are plotting a ‘pillar fight’ with the four major banks, namely NAB, CBA, ANZ and Westpac in the retail banking supply chain. A recent survey done by consulting firms Accenture and Price Waterhouse Coopers shows that various international banks operating in Australia are refocusing on proprietary networks to generate growth, recruit more Australian workers and acquire more assets.

In fact, as cited by Moncrief (2006) – Accenture’s executive partner in Australian financial services – stated that the four big Australian domestic banks are protected from takeover by the four-pillar policy (no merger between the four major Australian banks) and have fallen into a pattern of group thinking. For instance, in the Australian context, Dutch and German banks forecasted a 26 percent growth from 2004 to 2007 in their employment base, while the French and Swiss banks expected to have 24.8 percent more employees (Moncrief, 2006). Asian banks projected a 14.5 percent growth in jobs while North American banks forecasted 16 per cent growth (Moncrief, 2006). Asian banks expected to drop their expatriate employees from 10.1 percent to
9.3 percent of their total employees (Moncrief, 2006). Thus, about 57.8 percent more people were employed in Australia by non-Australian banks in 2006 compared to 2004 (Moncrief, 2006). Foreign banks held an estimated $213 billion in total assets in 2004 and were expected to increase this figure by 54.7 percent, to about $330 billion by 2007 (Moncrief, 2006). In 2004 speculation appeared in the media that merger talks were taking place between the NAB and ANZ banks on one hand and between CBA and Westpac on the other.

However, due to the four-pillar policy, progress was not possible. Nevertheless, in 2008 one of the major banks announced their merger with another bank which occupied the fifth position in the Australian banking sector. In doing so, the major bank is expected to become the leading banking organisation in Australia in 2009. In order to complete this merger the previous CEO of the major bank, had to step down to allow the CEO of fifth position Bank to join the major bank as the new CEO in 2007 (The Age, 2008). The new CEO has a key role for the possible merger. This illustrates how the banking sector is becoming more competitive and the major banks want to create a cartel like conditions to stifle the smaller banking and foreign financial organisations (The Age, 2008). With the entry of foreign banks, domestic banks have not been unresponsive to letting newcomers take their valuable customers to gain market share; rather, they have started making their own ‘aggressive promises’ leading to increased competition. The retail banking operational sector is strategically becoming a focal point for major banks as the ‘moment of truth’ between front-line staff and the customers is an important strategic business issue for top management. Promoting a culture of employee involvement, as found by Dawson and Patrickson (1991), was one of the main sources of better service quality in the Australian banking industry. All issues relating to customer service are becoming a serious concern for local banks. However, it is the people working for the bank and interacting daily with the customers, who strategically play a crucial role in the retail banking supply chain. Thus, employees working for the banks are being strategically directed towards working together better as teams in retail banking operations to perform effectively and gain competitive edge. The concept of teamworking is becoming crucial for addressing customer concerns and providing quality customer service by doing the right tasks first time and every time.

1.1.1.3 Deregulation leading to competitiveness

‘Business operations have undergone fundamental change during the 1980s and 1990s because of government deregulation’ (Coyle, Bardi and Langley, 2003 p.6). Banks are highly leveraged and are involved in riskier business compared to firms in other sectors of the economy (Macey, 2006). Well capitalised banks have a debt-to-equity ratio of 10:1 as opposed to a 1:1 debt-to-equity ratio typical of non-financial firms (Macey, 2006). This riskiness is characterised by the banks’ balance sheet which shows severe disparities and mismatches in the structure of their assets and liabilities.
Bank assets are invested in long-term instruments, which are normally loans to commercial and residential borrowers as mortgagees. The liabilities, however, are represented in terms of deposits (Macey, 2006). Banking organisations without credible deposits insurance regimes are very fragile, risky and unstable. This is why Friedman (as cited by Macey, 2006) argued that government regulation which worked extremely well over for forty years had to be reviewed after the failures of many financial institutions. Hence, market-oriented economists see deposit insurance as permitting banks to operate in the market without causing major macroeconomic dislocation and assisting policy makers and analysts to recognise the level of government regulation. The deregulation of the Australian financial system started in the early 1980s. Hutley and Russell (2005), described how financial reforms brought about by the Australian government through the Financial Services Reform Act 1988 (FRSA) following the stock market crash in 1987, increased the competition among Australian banking institutions. The term ‘deregulation’ is the act of freeing people and firms from the effects of government regulation (Macey, 2006). Deregulation has strategically initiated a paradigm shift in the retail banking sector supply chain. As described by Battellino (2000), changes were made to the financial and operational systems which have brought about greater sophistication and major changes in the size of financial markets and retail banking. There has been more efficiency, improving customer satisfaction, output and performance with competitive pressure amongst banking organisations retail operations and the capitalisation of banks also strengthened (Battellino, 2000). Over the last decade, the impact of regulation on the banking and financial services industry in Australia has had many implications for bank management teams and senior managers. The new regime allows an overseas operator to operate a market or facility such as retail banking operations in Australia, enhancing competition at a strategic level and better conduct as a financial services provider (Hutley & Russell, 2005). Thus new international banking organisations entering the Australian field are making the market more competitive with their products, services, and facilities.

The FSRA Act is complex and the ASIC (Australian Securities and Investment Commission) administration of the law and changes in the Act are inevitable due to the evolution of the financial services industry (Hutley and Russell, 2005). Banking institutions are strategically giving due diligence and care to the effective training, accreditation, interaction and involvement of their staff in the retail banking supply chain. With deregulation and electronic banking, the banking sector has also become sophisticated with the use of advanced technologies. For example, in the 1990’s, one of the major Australian banks made severe losses resulting in the resignation of two executive directors to be strategically replaced by a banker from USA who brought experience of deregulation. The following year the major Australian bank made a marked improvement in profitability and was even nominated as the Australian Bank of the Year. Improvements were possibly made on competitiveness measures, compliance issues in dealing with customers, loan
availability to customers and debt collection including a better banking legal framework. The role of retail banking operations as the engine of banks is vital for banking organisations to generate customer satisfaction and achieve greater sales of banking products and services. The arrow in Figure 1.1 marked ‘1’ shows that Battelino (2000), Hutley and Russell (2005) and Macey (2006) have found that deregulation along with financial reforms in the banking sector have strategically led to greater competition.

1.1.1.4 Competitiveness leading to the adoption of TQM/Continuous Improvement

‘Business and performance excellence models provide areas for improvement for the purpose of strengthening organisational efficiency, effectiveness and competitive position’ (Dalrymple, 1999). ‘In the competitive business environment of the 21st Century, performance measures should address issues of innovation and Continuous Improvement to enhance customer satisfaction’ (Zhao, 2002). ‘Competitive advantage denotes a firm’s ability to achieve market superiority’ (Evans & Dean 2003, p. 26). As described by Hutley and Russell (2005), financial deregulation, advances in information and communication technology, the sophistication of financial markets, financial innovation and globalisation have contributed to the Australian financial system’s ability to evolve quickly over recent years. These developments have narrowed the differences between banking and financial institutions and brought about a marked increase in the competition between financial institutions in the market (Hutley & Russell, 2005). Nowadays, the image of the retail banking operations is changing through the process of continuous improvement. Every detail is being monitored to provide customers with total satisfaction and to meet their needs and wants. Hence as illustrated in Figure 1.1 with the arrow marked ‘2’, Battelino (2000), Cohen and Brand (1993), Duncan and Elliot (2002), and West, Tjosvold and Smith (2005) have described competitiveness as leading organisations to strategically adopt the concepts of TQM/Continuous Improvement. Creating competitive advantages is becoming a strategic issue (Dess et al., 2010).

1.1.1.5 TQM/Continuous Improvement leading to teamwork

As stipulated by Ho and Dalrymple (2002), ‘TQM philosophy emphasises a systematic, integrated, consistent, organisation-wide perspective involving everyone and everything. It focuses primarily on total satisfaction for both the internal and external customers within a management environment that seeks Continuous Improvement of all systems and processes’. The arrow marked ‘3’ in Figure 1.1 shows that teamwork has been further enhanced with the implementation of TQM in the form of Continuous Improvement concepts. Atkinson (1997), Berk (1995), Cohen and Brand (1993), Glassop (2002), Shapiro (1997), Tagliaferri (1982), and Yukongdi (2001) have shown that continuous improvement leads to better teamwork.
TQM is a quality journey, which most organisations have not been able to achieve so far, as it may take decades to change the attitudes of employees and employers towards working together as a team of quality practitioners. The mindsets of management representatives and employees within an organisation are not always aligned. Thus, many organisations have adopted Continuous Improvement which is much easier to implement, rather than going straight into TQM implementation. For instance, the banking organisation participating in this study strategically started implementing Six-Sigma with teamworking as Continuous Improvement initiatives rather than starting with TQM. Six-Sigma can be considered as one of the major pillars of TQM. The Six-Sigma problem-solving activity is normally initiated in this banking organisation by a group of designated employees, mostly at management levels, to function as a team working on a project to alleviate important problems as approved by the project steering committee (Booth, 2007). The two case studies in this research show how banking employees as front-liners have been working together with management representatives (with the assistance of a facilitator) in two different retail banking branches using the Continuous Improvement Teamworking Model through the CTIO Cycle to achieve strategic performance improvement.

As mentioned by Macaulay and Cook (1995), working together with good teamwork produces good customer service. The service sector is undergoing a process of radical change in terms of the teamworking approach (Tranfield and Smith, 2002). While the banking and financial system is going through a rapid process of change (Moutinho and Phillips, 2002). A recent study done by Moutinho and Phillips (2002) of 58 bank branch managers selected from 14 branches of two major Scottish banks demonstrated that the effectiveness of a bank branch is impacted by the effectiveness or otherwise of management practices. The banking sector strategic planning and performance relationship have been the focus of several studies over the last three decades as mentioned by Moutinho and Phillips (2002). A model of internal communication in the financial services sector was developed by Asif and Sergeant (2000), utilising a grounded theory approach. Satisfied employees will produce satisfied customers through good communication (Asif and Sergeant, 2000). The present research investigated the new teamworking approach being adopted in the retail banking operational sector for bank branches to be competitive and strategically applied a new teamworking approach, as the Continuous-Task-Interacting-Team (CTIT), in the two case studies.

1.1.1.6 Teamwork leading to e-teamwork

Many organisations worldwide are currently exploring the potential gains from working with virtual teams (Edward & Wilson, 2004). Many are implementing co-located teams with established organisational structure and support (Edward & Wilson, 2004). Before teamwork there was no e-teamwork. E-teamwork has emerged through the integration of routine teamworking with advanced technological knowledge in how to work better as a team. However, as has been illustrated by Edwards and Wilson (2004), virtual teamworking has some disadvantages, as discussed in the
implications Section 11 of Chapter 11. In the mixed methodology used in this study, e-teaming work practices through virtual teamworking using enabling technologies with routine teamworking are further illustrated. The arrow marked ‘4’ in Figure 1.1 indicates that Bermus and Fox (2002), Conner and Finnemore (2006), Haskins (2002), and Jennings (2006) are among many authors who have illustrated that teamwork has led to the emergence of e-teamwork in various organisations. Human input, new technology and communication networks are becoming important for the smooth running of an organisation and many banking institutions are becoming virtual organisation (Gandy and Chapman, 1997). This means that banking institutions are investing more in interactive means of communication to reduce cost and save time in assisting internal and external customers virtually over the telephone, using online banking functional services and internet facilities. Retail banking is becoming busier, therefore retail banking policy-makers are encouraging both internal and external customers to use online banking facilities to improve customer service without the need to open new retail branches. Consequently, there is a shift from using only routine face-to-face teamworking to employing co-located and virtual teams intercommunication via a variety of interactive telecommunication networks. E-teamwork is related to E-Supply Chain Management (E-SCM) in retail banking. E-SCM can improve the supply chain business process (Boonyathan and Al-Hakim, 2007). Moraga et al., (2007) explained the portal quality issues developed by organizations due to competition.

1.1.2 Deregulation to e-teaming leading to CIT Model in retail banking operations

Figure 1.1: A classificatory framework illustrating Continuous Improvement, Teamwork and e-Teamwork strategically leading to the emergence of the Continuous Improvement Teamwork (CIT) Model evidenced by the CTIO Cycle.

Authors:
(1) Battelino (2002); Hutley and Russel (2005); Macey (2006); Read (2009).
(2) Battelino (2002); Cohen and Brand (1993); Duncan and Elliot (2002); Ho (2006); Oakland and Sohal (1996); West, Tjosvold and Smith (2005).
More than two decades ago the Australian banking sector was not highly competitive. To summarise, this study tries to illustrate the emergence of the CIT Model realised by the CTIO Cycle as shown in Figure 1.1. Deregulation through the Financial Services Reform Act 1988 strategically led the Australian banking sector towards increased competition. With competition came the adoption of TQM through continuous improvement to improve the quality of service. Teamworking has strategically been initiated to improve the performance of banking organisations. Teamwork is at the heart of TQM.

With advanced technology, automation of the banking sector through the intranet, Internet, telephone banking, online services, voicemail, distributed operating systems, computer-supported cooperative work systems, groupware and other electronic communication, virtual teamworking has also strategically gained importance in banking organisations. With the crucial leadership role of the manager in encouraging the staff to strategically work as a team, e-teaming encapsulated in the process of Continuous Improvement approach is being used in the banking operational sector. These methods improved the Australian banking institutions’ operational effectiveness. The classificatory framework as explained is shown in Figure 1.1.

The classificatory framework in Figure 1.1 shows the strategic triangulation of Continuous Improvement, teamwork, and e-Teamwork concepts in the development of the Continuous Improvement Teamworking approach presently being used in one major Australian banking organisation. The numbers 1 to 4 and directional arrows in Figure 1.1 illustrate the contributions of authors to the research. Changes over time led to the current CIT Model. The model has evolved and developed following the work of the authors cited in the literature review, through what has been observed with this mixed-methods study, and from the researcher’s practical experience in working with teams. This led to the classificatory framework leading to the emergence of the CTIO Problem-Solving Cycle in the Australian retail banking operational sector. The model was strategically developed by the author on the basis of the work done by other researchers relevant to CI, teamworking, and virtual teamworking. The CIT Model/CTIO cycle is justified in this research on the basis of the researcher’s empirical study using the mixed-methods to validate the model further.

1.2 Purpose of the research

The purpose of this research is to strategically explore the central concept of the Continuous Improvement Teamwork Model evidenced by the CTIO Problem-Solving Cycle in the retail banking operational sector using the mixed-methods approach. At this stage, Continuous Improvement Teamwork is defined here as continually working towards resolving a concern through teams’ face-to-face interaction and virtually relating to a common goal set to achieve
organisational objectives and the productive performance of the bank. The purpose is directly related to the research questions.

1.3 Delimitation or scope of the research

The scope of this study is reflected in the field of ‘quality management processes of the product-service bundle from a supply chain perspective’ within the service sector. It is extended more precisely in areas of Continuous Improvement, teamwork and e-teamwork. The main focus is on face-to-face (physical) and virtual interactions in relation to the six key components of the CIT Model/CTIO Problem-Solving Cycle. This study is performed in one major Australian banking organisation. Banks have many departments such as financial services, capital investment, financial planning, insurance, corporate clients, business banking, and so on. The focus of the research has only been in the value-adding system of the integrated operations management product-service bundle in the retail banking supply chain and business process.

1.4 The research problem identified: The gap in the retail banking supply chain

With competition in the financial sector, retail banking managers did not seem to have the right problem-solving approaches to make their teams work better in resolving key issues and retail operational matters. As mentioned by a senior management team from a banking institution, this has been a key issue for consideration as a supply chain strategy for their value-added productivity. In fact the senior management team sanctioned this study, in line with their Continuous Improvement (CI) philosophy, after the researcher presented his research proposal to them. This study illustrates the significance of both routine teamworking using face-to-face interactions, and virtual teamworking using virtual interactions in a Continuous Improvement philosophy environment to cross-functionally integrating operations management. This involves the problem-solving approach to research on how team members in retail operations can continuously improve in their daily activities. Much research has been conducted on CI and teamwork, but there was a gap in the literature on CI and virtual teamwork in the integrated retail banking operations management.

1.4.1 The major consequences of the problem

It is important to perform this study to address the research problem identified, as this will clarify the proper implementation of a strategic problem-solving approach in a CI environment in retail banking operations. Retail banking senior managers and managers who use the Continuous Improvement Teamworking Model through the CTIO Cycle as an effective asset can obtain strategic productive performance and achieve competitive advantage for their firms.
1.5 The research questions

For the purpose of this research two research questions have been developed. Research question 2 is part of research question 1. The research questions to address the aims of this study are as follows:

Research question 1 (main research question answered by Studies 1, 2, 3 and 4)
‘Is there a new form of problem-solving team working approach in a major Australian retail banking operational sector involving face-to-face and virtual interactions?’

Research question 2 (answered by Study 2–two case studies)
‘Does the CIT Model/CTIO Problem-Solving Cycle methodology implemented yield positive outcomes in addressing the two major problems in two least-performing retail branches strategic supply chain of the major bank?’

1.6 The value and the originality of this research

This research is based entirely on the original and extensive work of the researcher. This research is focused specifically on the importance of using CI, teamworking and virtual teamworking in the problem-solving approach in a retail banking organisation. With the amalgamation of three core knowledge domains, senior management and policy makers learned from these management theories to face the retail bank’s competitive position. However banking management has still not embraced the problem-solving approaches from the ‘quality management and integrated operations management’ theory from many other fields.

Major Australian banking organisations are still facing a real problem of how to strategically make their employees work as a dynamic team. There seems to be a ‘neglect’ from banking senior management by underestimating contributions that scholars have made to the problem-solving cycles to triangulate the notion of CI, routine teamworking, and virtual teamworking effectively. This is mainly why the researcher adopted a more industry-based practical approach within a real environment to show the importance of the problem-solving within the three core knowledge domains. Second, the research used a dominant qualitative methodology strategy by being closer to the scene and being practically involved with participants in defining the CIT Model systematically, as evidenced by the CTIO Problem-Solving Cycle. The researcher’s regular and systematic involvement with participants in the mixed-methods approach has led to the convergence of good results. ‘Primary research can make a contribution’ Cooper (1989). This thesis is a work of primary research in some depth on Continuous Improvement Teamworking and is mostly exploratory in orientation.
In this study it has been found that there is a new form of Continuous Improvement Teamworking approach being adopted in the retail banking service sector, which involves the integration of routine face-to-face (Physical) teamworking activities with a continuous improvement objective, coupled with the use of virtual electronic communication, teleconferencing, and a web of digital collaborative communication technologies to enable virtual teamworking. The implementation of the CIT Model evidenced by the CTIO Problem-Solving Cycles had contributed to both quantifiable and unquantifiable profit by improving productivity. It was also found that the model uses both face-to-face and virtual interactions in the CTIO Problem-Solving approach to address concerns for team members in their immediate place of work.

1.7 The mixed methodology strategy for research framework and design

Four separate but related studies were conducted to strategically achieve this research objective in a mixed-method research process. The sequential exploratory design as described by Creswell (2003) integrated four different types of data in four steps of the research methodology design. It has been conducted in two phases, the first stage using qualitative methodologies (participant observation, case study, and content analysis) followed by the second phase of a quantitative methodology (personal survey). Each step of each of the studies is linked sequentially one after the other to confirm findings and extend insights about the six core elements of the CIT Model in relation to the two key variables: face-to-face interaction and virtual interaction. More explanation about the mixed-methods approach is given in the methodology section of Chapter 4.

In the first step of the initial stage for the purpose of this study, the researcher conducted the participant observation by using the ethnographic research cycle approach as described by Spradley (1980) to acquire and gain knowledge socially for understanding the emergence of the Continuous Improvement Teamworking approach. The researcher spent about 12 months (approximately 290 hours) in the major Australian banking organisation. Team members used as the unit of analysis were managers, team leaders, personal bankers, and customer service officers in the major banking organisation. The researcher used a medium degree of involvement with a moderate participation type to maintain a balance between being an insider and an outsider. This is further explained under moderate participant observation and triangulation in Chapter 5. Data triangulation methodology was used to overcome bias.

In the second step of the initial phase of the research, two case studies as two key projects in process improvement were strategically conducted in two different retail banking branches for strategic performance improvement. To justify the problem-solving approach of the CTIO cycle, a strategic integration of the Deming-Shewhart PDCA cycle and Six-Sigma DMAIC cycle, common quality tools were used in each of the two case studies to address the two most important
performance criteria in the retail banking sector. The CTIO Problem-Solving Cycle is a practical hybrid cycle amalgamating the two problem-solving qualitative approaches into a single and efficient one which can be valued to a lesser extent in quantitative research. Team members working in both case studies in the two branches were called the Continuous-Task-Interacting-Team (CTIT). The researcher was involved in the Continuous Improvement Teamworking approach to help the team members to work as a Continuous-Task-Interacting-Team to enable them to achieve strategic improved performance. The first case study, involving nine team members, was on improving home loan sales referrals and the second one involving another nine team members was on improving customer service in two different retail branches. Each of the case studies was done in parallel over a period of 12 months (First case study: 6 months; Second case study: 1 year). The CIT Model/CTIO Cycle was implemented practically with banking staff.

In the third step of the first phase of this research, face-to-face interviews were done with 29 management representatives in the major bank to focus mainly on the six core elements of the Continuous Improvement Teamworking approach which were identified in the participant observation study. Content analysis as described by Neuendorf (2002) was used to analyse the data. The researcher, having learned about the CIT Model from the two first steps of the mixed methodology, has gone further into in-depth details (funnelling effect as described by Zikmund, 2003) of the face-to-face interviews to understand the six core elements of the CIT Model better.

Figure 1.2: The mixed methodology cycle summarising the research process for the mixed method strategy for this study.
In the last step of the second phase of this study, the quantitative methodology was eventually done by a personal questionnaire survey of 149 banking staff to enhance the funnelling effect which narrowed down the key measures of the main elements of CIT, which was analysed using Microsoft Excel. The personal survey was done to provide verification of the six key elements and their measures of the CIT Model. Figure 1.2 illustrates the mixed-methods applied.

**1.7.1 The strategic and substantial qualitative methodology in the mixed methods**

As mentioned by Torrance (2008 p.507), the quality of qualitative research has been subjected to considerable criticism mainly driven by an international movement for evidence-based policy and practice. The response to criticism of qualitative research is leading to the production of various standards and guidelines to control the quality of qualitative research. What is required of qualitative researchers is to engage with policy makers and research participants to acknowledge the limits of research knowledge while addressing issues of quality collaboratively. For this study, conducted by the researcher, the various substantial qualitative methods used have aimed to bring the researcher closer to the scene by engaging with the participating organisation and the study participants. The systematic qualitative methods used have engendered confidence in the use of qualitative research to illustrate the Continuous Improvement Teamworking Model.

The use of the qualitative methods has not only addressed the quality aspect of qualitative research, but it has also provided a better outcome in the way that it has been applied practically in a major Australian bank. Each of the qualitative methods used evidence-based practice to justify its significance in capturing reality. The researcher, by being engaged with participants, has better understood the concept of CIT and believes it would have been difficult to identify many other key issues if the quantitative personal survey method alone was used. However the quantitative methodology used has been useful in providing further justification of the CIT Model. The qualitative approaches specifically used in the participant observation and case study phase will illustrate how qualitative research can be a better strategy to start the research process as it is as systematic as quantitative research. The implementation of the CTIO cycle clearly demonstrates the strength of this problem-solving cycle with more emphasis on the versatility aspect of the qualitative methodology when dealing with individuals as team members. As mentioned by Richards and Morse (2007 p. 48), the distinctiveness of qualitative methods ‘is in the way the researcher thinks about the data and subsequently conceptualizes – that is, think up from data and how different strategies are applied’. The researcher adopted such qualitative distinctiveness.

**1.8 Summarising the research tasks and findings**

The CIT Model/CTIO Problem-Solving Cycle was mapped and framed from the three knowledge domains, Continuous Improvement, teamworking and virtual teamworking which consist of six
core elements (team meeting, consultation and participation, quality improvement, online functional services, conferencing and teleconferencing, and virtual communication) with respective measures. The six key elements were narrowed from 59 descriptive observations. The participant observation study was the core method of this study. The strategic problem-solving approach of the CTIO Cycle using key quality tools integrating the Deming PDSA (Plan-Do-Study-Action) Cycle and the Six-Sigma DMAIC (Define-Measure-Analyse-Improve-Control) Cycle was implemented in two retail branches using the Continuous-Task-Interacting-Team (CTIT) in two case studies as two separate projects which yielded both tangible and intangible gains. This further justified and classified the team meeting, consultation and participation, and quality improvement components as face-to-face interaction. Online functional services, conferencing/teleconferencing and virtual communication components were related to virtual interaction media. A positive correspondence found between face-to-face interaction and virtual interaction variables was found using content analysis for the face-to-face interviews with 29 managers, and a personal survey then evaluated the reliability of the model with the 149 retail banking staff.

1.9 Continuous Improvement Teamwork, a versatile and appealing Construct

This paragraph is showing the justification of the CIT Model realised by the CTIO Cycle. The contribution of this thesis illustrating the theory development of the CIT Model evidenced by the CTIO Cycle is explained in more detail in Chapter 3. The CIT Model is presented according to current understanding and the observations presently being made within retail banking. The focus is on banking as there are various interactions between team members especially when there is a concern. For the purpose of this research work, the Continuous Improvement Teamwork Model has been developed and justified as follows:

(i) The mapping of relevant knowledge domains of CI, teamworking and virtual teamworking from the literature review.

(ii) The classificatory framework (Figure 1.1) to demonstrate the emergence of the CIT Model/CTIO Cycle.

(iii) The framing and linkages of the CTIO Problem-Solving Cycle with other problem-solving conceptual cycles.


(v) The author’s previous practical experience as Operations Manager in the manufacturing and service sector, working in Continuous Improvement environment and teams for nearly 15 years and employing Deming-Shewhart PDCA Cycle using Quality Circles, Kaizen team, Six-Sigma using DMAIC cycle, information system quality, HACCP (Hazard Analysis Critical Control points) and ISO 9000 related to integrated operations
management. Five prestigious awards in industry for working on quality management projects from a supply chain management perspective.

(vi) The gap in literature on Continuous Improvement Teamworking aligned with CI and virtual teams practice

(vii) The author’s tutoring and lecturing experience for about 10 years in various fields of management including operations, production, SCM/Logistics, HRM and strategic management.

(viii) The real experience of the CIT Model in the workplace after working in a leading Australian Bank for more than three years.

(ix) The inductive and deductive reasoning approaches using the strategic mixed methodology.

(x) The participant observation study conducted for 12 months.

(xi) The implementation of the CTIO Problem-Solving Cycle using the CTIT approach in two case studies by integrating the quality problem-solving tools from Deming-Shewhart PDCA Cycle and Six-Sigma DMAIC Cycle for about 12 months. Author’s qualified and accredited to work on quality projects for process improvements as Chartered Quality Professional with Chartered Quality Institute (U.K) and also possessed Certificate IV in Workplace Training and Assessment to train staff and managers in industry.

(xii) Face-to-face interviews with 29 managers working in retail banking.

(xiii) The personal survey with 149 retail banking staff.

(xiv) The qualitative strategy of using a Dominant Qualitative-Less Dominant Quantitative methodology.

(xv) Various international conference papers, academic journal articles and book chapters peer reviewed internationally on CIT Model/CTIO Cycle.

1.10 General motivation for investigating Continuous Improvement Teamwork in Australian retail banking operations

Nowadays with interactive electronic communication (Haskins, 2002), e-business enterprises, e-collaboration, globalisation, economic conditions and reforms (Battellino, 2000; Hutley and Russell, 2005) retail banking operational activities are changing. Both managers and scholars underestimate the challenges of teamwork in large organisations with more than a million employees (West, Tjosvold and Smith, 2005). Similarly, the notion of virtual teamworking has also not been extensively researched in service sector organisations. The teamwork and virtual teamwork aspects of running an organisation are of strategic importance. As described by Bernstel (2002), one south-eastern Pennsylvania bank learned the power of teams in 1999. There were 12 team members in each group who looked at specific customer segments and sales plans in a customer-based approach to meet the needs of their customers. As the researcher had previously worked in a major banking organisation, it was easier to perform the research work. From the researcher’s experience in the banking sector, it was recognised that the existence of the CIT Model
and what was really occurring in the retail banking was important to be informed through this study. By being close to the scene in the retail banking sector, the researcher was motivated to perform this research. The challenging and strategic mixed-methods used to test the theory have also been a motivating factor.

1.11 Thesis structure – Chapter outlines

This thesis consists of 12 chapters. Chapter one introduces the background of the study, the research context (research rationale to show the emergence of the CIT model/CTIO Cycle is described in the classificatory framework), the research problem identified, major consequences of the problem, justification of construct, the research questions, purpose, scope, motivation to perform this study and chapter outlines.

Chapter two contains the literature review, which explores the research in the multidisciplinary fields of Continuous Improvement (CI), teamworking and virtual teamworking triangulated to a common and strategic problem-solving approach in relation to ‘Total Quality Management’ mostly relevant to the operational banking service sector.

Chapter three explains the crafting of the Continuous Improvement Teamworking (CIT) Model and the Concern-Task-Interaction-Outcome (CTIO) Problem-Solving Cycle from the literature. The linkages of the CTIO Problem-Solving Cycle framed from other problem-solving conceptual cycles are demonstrated. The evolving Continuous-Task-Interacting-Team (CTIT) used in the CTIO Problem-Solving Cycle from problem-solving teams in a ‘Total Teamwork Way’ (Atkinson, 1997) is also illustrated. The CIT Model/CTIO Cycle uniqueness and key features are discussed.

Chapter four outlines the mixed methodology and explains the importance and strategy of conducting the qualitative research before the quantitative research for improved research quality (Belk, 1993).

Chapter five presents the participant observation study using the ethnographic research cycle to depict the six core elements of the CIT model/CTIO Problem-Solving Cycle which are synchronous conferencing, internet online functional services, continuous improvement, virtual teamworking, team meetings and consultation and participation. The measures for the six key elements were also researched.

Chapters six and seven demonstrate, discuss and analyse the application of the CIT Model/CTIO Cycle using its six key components in two retail branches operations. The implementation of the CTIO Cycle was effected by a Continuous-Task-Interacting-Team (CTIT) in each of the two poorly performing branches. The CTIO Problem-Solving Cycle was used to
illustrate how the two most important performance parameters of retail banking were strategically improved. To justify the problem-solving activity of the CTIO Cycle, the common key tools and techniques of the problem-solving Deming PDSA (Plan-Do-Study-Action) Cycle and Six-Sigma DMAIC (Define-Measure-Analyze-Improve-Control) Cycle were integrated to address the problem of poor ‘home loan sales referrals’ and ‘customer satisfaction’ in two retail branches.

Chapter eight briefly discusses and analyses the face-to-face interviews conducted with 29 management representatives to further justify the six key components of the CIT Model.

Chapter nine briefly presents and discusses the results of the personal survey to further verify the six core elements and classified all measures of the CIT Model.

Chapter ten interprets the entire analysis using the mixed-methods (qualitative and quantitative methodologies). Chapter ten also summarises the research by using the different sets of sequential data in the mixed-methods to provide answers to the research questions.

Chapter eleven discusses the implications, conclusions and recommendations. It also outlines the contribution to knowledge made by this research.

Chapter twelve reflects upon the research undertaken, what worked and what might be done differently, the importance of the strategic qualitative research in the mixed-methods, explains the problems encountered in performing this challenging research work of exploring and exploiting the CIT Model/CTIO Cycle, describes a critical review of the research, suggests areas for further investigation, looks at current and future trends, and the dissemination of research findings throughout academia and industry.
CHAPTER II

2.0 LITERATURE REVIEW

The years have also brought improvements in integrative research reviewing techniques which summarizes past research. Reviews can attempt to integrate what others have done and said, to criticize previous scholarly works, to build bridges between related topics areas, and/or to identify the central issues in a field. Cooper (1989)

2. Chapter overview

Chapter two contains the literature review, which explores this research task in the multidisciplinary field of ‘integrated operations management’ with emphasis on Continuous Improvement (CI), teamwork and virtual teamwork. Total Quality Management is introduced by showing its impact in the banking service sector. The author has reviewed the literatures most relevant to this study and covers a wide range of topics involving CI, teamwork and virtual teamworking as an integrated quality management philosophy from a supply chain management perspective. The importance of teamwork in Continuous Improvement as researched, is discussed. The interaction ability to link team members in the problem-solving approach of the PDCA Cycle and DMAIC Cycle in relation to CI was envisaged. Quality tools for Continuous Improvement used in problem-solving approaches and important for the CIT Model/CTIO Cycle are mentioned. The various aspects of evolving online virtual group work, electronic communication and quality standards using e-teamwork have been reviewed and discussed. The key issues, dimensions and implications of virtual teamworking in Information System Quality are also reviewed. The focus of the research being mapped as the two main themes emerging from the literature, is on the interaction medium and the problem-solving approach of team members in the CIT Model realised by CTIO Cycle related to integrated operations management.

2.1 Introduction to Total Quality Management for better lean supply chain approaches

“Total Quality Management (TQM) is a management approach that places emphasis on continuous process and system improvement as a means of achieving customer satisfaction to ensure long-term company success” (Summers 2000, p.14). As described by Oakland and Sohal (1996), TQM is an approach for improving the competitiveness and effectiveness of a whole organization. It depends on each individual at every level. Total Quality Management (TQM) is a discipline started in the manufacturing sector in the United States in the 1920’s (Berk, 1995; Garvin, 1988, p.6; Mitchell, 1999). Walter Shewhart in the 1920’s initiated the development of the field of ‘quality management’ using statistical techniques whilst working at Bell Telephone laboratories (Garvin,
1988, p. 6). Shewhart’s work was further developed into the ‘Total Quality Management’ philosophies by the work of other quality gurus such as W. Edwards Deming, Joseph M. Juran, Armand Feigenbaum, Phillip B. Crosby, and Kaoru Ishikawa explained in Table 2.1. After successful implementation in Japan, the ‘quality management’ philosophy came back to succeed in the United States and in other industrialized nations and to become deployed worldwide (Berk, 1995). Quality management disciplines have taken a revolutionary approach to continually improve quality of goods, performance and workplace productivity. As described by Cohen and Brand (1993), companies that have adopted ‘Total Quality Management’ strategies have learned to work better and gain competitive advantage by allowing employees to make use of their knowledge and available experience.

2.1.1 Quality definitions from Quality Gurus

Quality definitions from the Quality Gurus in relation to Continuous Improvement and teamworking (grounding on the problem-solving approach) are demonstrated in Appendix 1. The various contributions of the quality gurus to explain ‘Total quality management’ are presented with emphasis on the problem-solving approach. Retail supply chain management had also been demonstrated by Ayers and Odegaard (2008 p.255) for operating improvements for better lean supply chain approaches.

2.1.2 Integrated quality management for integrated operations management

‘Quality management and more specifically, Total Quality Management (TQM) and ISO 9000 burst onto the Australian business scene with gusto in the late nineteen eighties and early nineties. Many organizations, large and small, adopted quality with great enthusiasm. This was part of the global quality push which spawned numerous consultants and so called gurus who did the global circuits promoting their versions of quality (e.g Crosby, Deming, Juran, Imai)’ as cited by Brown (2002). In his paper Brown tried to address a few questions such as….Is quality still a driving force in business today?...Has it taken on new forms?...Have other fads and fashions taken its place?...Has it simply matured? His paper also examined the current status of quality in organizations to the date of presenting compared to a decade before. He concluded that quality has not been replaced by other initiatives, but has become an integral part of managing a business. He cited ‘Integrated Quality Management without the jargon has become the norm’. Is this really the case? Rather, has quality management continuously evolved in Australian organization according to their needs in improving certain processes, products and services? Chandran and Chidambaram (2002); and Santos (2002) mentioned Integrated Quality Management System (IQMS) when ISO 9001:2000 (Quality Management System), ISO 14001:1996 (Environmental Management System) and OHSAS 18000:1999 (Occupational Health and Safety Management Systems) were integrated
together to provide for initiatives which can improve the processes of the organization while meeting regulatory quality standards.

‘Integrating Supply is one approach to sole sourcing now being promoted by many distributing companies’ (Hanna and Newman, 2007 p. 90) is also a supply chain coordination strategy. Ho (2002) spoke about the integration of 5-S on Six-Sigma, ISO 9000, ISO 14001, OHSAS 18001 and TQM in an integrated Management Process Model enhancing competitiveness of firms. BSI Learning in the UK’s leading quality magazine, ‘Quality World’ in May 2008, mentioned Integrated Management Systems (IMS) which combine existing ISO 9001 and/or ISO 14001 and/or OHSAS 18001 systems. The Deming PDSA (Plan-Do-Study-Action) Cycle approach was integrated into the ISO 9001 quality management system for Continuous Improvement initiatives and named ISO 9001:2000 from year 2000 onwards (Ching , 2002). The Deming PDSA Cycle approach explores the tacit knowledge from front liners to improve performance of the firm (Quality Systems, 1996; Ching, 2002; and Summers, 2006). While Jack and Waring (2002) explained that the new version of the old approach such as ISO9000:2000 is emerging that have Continuous Improvement at their heart. They also pointed out whether Continuous Improvement initiatives are not being better understood and adopted by many organizations. Ching (2002) stipulated that the essence of the new ISO version is the conversion process of turning customer requirements into their satisfaction by filling the gap using Continuous Improvement initiatives.

The Supply Chain Operating Reference (SCOR) Model refers to the five core management processes, the PSMDR (Plan-Source-Make-Deliver-Return) standard as referred by the Supply Chain Council (Hanna and Newman, 2007 p. 86). SCOR describe processes and enhance coordinated improvement as an integrated operations management philosophy. Integrating operations management across functions is gaining momentum to better coordinate activities across supply chain (Hanna and Newman, 2007 p. 69). The Deming PDSA problem-solving approach continuously involves employees to work as a team (Summers, 2000) and explore the tacit knowledge from front liners to improve productive performance of the firm (Ching, 2002). The PDCA problem-solving Cycle integrates both Continuous Improvement and teamworking which lays more emphasis on tacit knowledge of employees closer to reality in their daily operational activity of the organization (Berk, 1995; Ching, 2002; Summers, 2006). However, Quality problem-solving methodologies such as Deming PDSA cycle and DMAIC (Define-Measure-Action-Improve-Control) Cycle can also be integrated using only the essential quality tools. Summers (2000) argued about the use of the seven most important quality tools in addressing a problem. The Check Sheet, Pareto Chart, Cause–and-Effect Diagram, Flowchart, Histogram, Scatter Diagram and Control Chart as used in the DMAIC Cycle were mentioned by Summers (2000) as the most important quality tools which can be used in alleviating a problem in
Jack and Waring (2002) spoke about integrating Continuous Improvement and performance measurement. Jordan (2002) mentioned integration of technology and marketing management in order to stay ahead of competition. Guo, Lan, Wei and Ying (2002) speculated on the building of integrated Quality Management Control (QMC) to face the new challenges of quality management in China. Al-Hakim (2007) researched on Information Quality Function Deployment. Businesses and government organizations also locate secondary information by integrating it with other new identified sources in the process cycle of locating, using, evaluating and integrating (Stewart, 1984). Cooper (1989) spoke about integrative research review, which is a justification for critical attention to research reviews being integrated. Sanders, Galloway and Keogh (2008: 164) as cited by Zhao (2008) argues that integrated or hybrid strategy of both cost leadership and differentiation is certainly a viable business entity over the long term. Booth (2003) had used an integrated approach to planning leadership development to build a management development program between RMIT University and Bunnings. This integration had led to a continuing organizational growth and engaged both parties with continuing improvement. Similarly, the problem-solving activity for Continuous Improvement, teamworking and virtual teamworking can be integrated in line with ‘quality management’ and ‘human resources management’ philosophies as will be demonstrated in this study. There are different types of integration, but for the focus of this thesis, this has not been developed as it is a different area for further research. The focus of the integration has primarily been on the problem-solving activity and interaction medium.

### 2.1.3 Quality definitions relating to CI and teamworking

Definitions of Quality in relation to Continuous Improvement, teamworking and customer expectations in service sector as cited by Rura-Polley and Clegg (1999) are illustrated in Appendix 2. Akao (2002) was among the authors from the literature found to be talking of “building quality as a technology”. Other definitions given recently by other authors including the use of technology and information systems are illustrated in Appendix 2. The key aspects of each of these definitions to sustain the Continuous Improvement Teamworking model and the CTIO cycle are shown in Table 2.1 (refer Appendix 2). The relevance of CI, teamworking and customer service in relation to TQM is also demonstrated.
2.1.4 Quality System Effectiveness Measurement Processes in the service sector

The service sector represents industries as varied as banking, retail, service stations, internet, e-business and fast food restaurants (Lovelock, 1996, p.39). Services organizations also include hotels, legal firms, health services, educational institutions, financial services, transportation and also public utilities (Evans & Dean, 2003, p. 12). Gronroos (1990, p.3) stated that services are an experienced series of processes, where the customer often actively participates in production. For the business service sector Dalrymple (1999) suggested that resources, leadership, people and knowledge, customer focused processes, organizational performance, information and analysis, innovation and learning, business results and customers are needed for business performance excellence. Some of the Business Quality Models involving the service sector are the Australian Business Excellence Framework which focuses on seven critical success categories within an organization; The European Excellence Model focussing on fundamental concepts that underpin business excellence (EFQM, 2009); The Malcolm Baldrige National Quality Award; The NSQT (National Society for Quality through Teamwork)/ Perkins European Quality Award (Teare et al., 1999) and others used to recognised a company being successful in implementation of ‘quality management’ philosophies.

The NSQT `s teamworking model assists in improving performance through involvement of employees to work as effective teams (Teare et al., 1999). Some models of service quality are the SERVQUAL (Parasuraman, Zeithaml and Berry, 1990), Nordic 2 Factor (Gronroos, 1990), 2 Dimension V/S 3 Dimensions (Lehtinen and Lehtinen, 1991), 3 Component model (Rust and Oliver, 1994), Multilevel (Dabholkar, Thorpe and Rentz, 1996) and Reconceptualisation (Brady and Cronin, 2001). ‘Customer Service Excellence’ is also a new governmental standard in UK being implemented by SGS to achieve superior customer service (Quality world, 2009).

‘Teamwork’ as a key element of ‘quality management’, after being successfully used in the manufacturing sector, has shifted into services companies. However, as reported by Chang (1995), in a survey of 300 electronics service sector companies, 73 percent had a total quality initiative, while 63 percent of those having quality programmes failed to improve quality defects by even as much as 10 per cent. There seems to be less research on how teamworking was initiated in different companies who failed to improve quality defects.

2.1.5 Quality management in the banking services operational sector

In Australian banking organizations, there may not be quality circles as such, but teamwork is being used as an important quality management tool for better team involvement, commitment, decision taking and obtained better results (Bernstel, 2002). The quality circles and teamwork approach has shown positive impact on the quality of work life, productivity and absenteeism, not only in government (Cohen and Brand, 1993), but in other industries such as health care,
electronics, as well as in the banking sector as cited by Goh (2000). The American Quality Foundation and Ernst & Young demonstrated how banking organizations are using quality improvement activities (Chang, 1995). As reported by Oakland and Sohal (1996), the Reserve Bank of New Zealand initiated a TQM programme with ISO 9002 in their currency department with much focus on identifying work process improvements as part of their strong emphasis on CI and teamworking. While looking at the four major Australian banks in the banking sector, Six-Sigma and Continuous Improvement as the quality management system in the integrated operations management strategy have been implemented. We can see that in the major Australian financial service sector, there is preference for using the Six-Sigma quality management system rather than the ISO 9000:2000 new version.

2.1.6 Quality circle and/or Six-sigma for processes improvement in financial services

According to Tagliaferri (1982), as “quality circles” fade, a $371-million-asset bank (Depositors Trust Company) in Augusta Maire tried “Top Down” teamwork. The bank operated a team employees program successfully involving managers and employees from different places of work, which was supported by the top management team. The results of research with senior representatives from eleven financial services organizations showed that these financial institutions are leading exponents of lean, Six-Sigma and business Process Management Methods within the financial industry (Hayler & Nichols, 2007). These financial institutions are American Express, Bank of America, Credit Suisse, Dresdner Kleinwort Wasserstein, First Data Resources, JP Morgan Chase, Lloyds TSB, MBNA Consumer Finance, Merrill Lynch, Overseas Chinese Banking Corporation and UBS. As mentioned by Evans and Dean (2003, p. 243), “a good example of Self-managed team (SMT) is found at AT & T Credit Corporation”. Pande, Newman and Cavanagh (2000) identified Six-Sigma as the organizational quality management system helping leading international organizations in saving millions of dollars by producing more satisfied customers. As mentioned by Terziovski (2002) is Six-Sigma going to be another fad? And is it going to succeed where many companies have learnt from their previous mistakes of TQM? However, most of the major Australian banking organizations are using Continuous Improvement and/or Six-Sigma problem-solving methodology for achieving high performance of their organizations.

2.1.7 Quality in retail banking supply chain services

Service as explained by Evans and Dean (2003, p.12) reflects the transaction between buyer (customer) and seller (provider). A service can be just handling a customer complaint or as complex as approval of a home loan for a defined time mortgage. Many service organizations handle a very large numbers of customer transactions. For instance, the Royal Bank of Canada
might process more than 5.5 million transactions for 7.5 million customers through 1,600 branches and more than 3,500 banking machines (Evans and Dean, 2003, p.13). In the service sector the average customer who had a problem will tell nine or ten others about it and customers who have had complaints resolved satisfactorily will only tell about five others (Evans and Dean, 2003, p.12). It costs six times more to get a new customer than to keep a current one and of the customers who make a complaint, more than half will do business again with the organization if their complaint is resolved and if the customer complaint is resolved quickly, this figure will jump to about 90% (Evans and Dean, 2003, p.12). This is why in the retail banking sector, quality of service is crucial as it is the customers who make use of the retail business activities and generate profits. In order to manage customer satisfaction with severe competition, managers need to make employees work better as a team using CI initiatives to deliver superior customer service and maintaining a good customer base. Services are generally labour intensive while manufacturing is more capital intensive, and in services the quality of human interaction with customers is a vital factor that involves human contact (Evans and Dean, 2003 p.13). This is why the operational aspects of retail banking require a higher degree of customization with internal and external customers than does the manufacturing sector.

As mentioned by Fleming and Asplund (2007) retail banking as a sale and service company have high levels of direct customer contact. ‘Every interaction one of our employees has with a customer is a chance for something to go wrong’ Fleming and Asplund (2007, p. 17). For the purpose of this study we will be looking only at retail banking. According to information gathered in 2007 and 2008 from an Australian bank, there are 55 banks with 14 Australian owned in Australia. Also, the four major Australian banks ranking in the top 100 of global banks hold 64% of all bank deposits and 77% of all bank loans and advances in Australia. Australian deposit-taking institutions which represents retail banking operations hold 49.9% of AUD $ 3,168.8b, representing the assets of financial institutions. The source of funds from banking retail activities is contributing largely for generating banking business activities. The Australian banking services are widely accessible with about 5000 retail branches, about 3200 giroPost, about 24000 ATMs and 52000 EFTPOST terminals. Thus, as mentioned by management representatives from this major banking organization involved in this research, their 1400 retail banking operation branches in Australia are of significant importance for revenue generation activities such as repayments of home loans, personal loans, business loans, financial planning, credit cards, accounts keeping fees and many other fees. However, an Australian banking organization started implementation of ‘quality management in its integrated operations management service sector’ using CI and Six-Sigma to perform better since 2004 in some of its operations to follow a leading American bank.
2.2 CONTINUOUS IMPROVEMENT (CI) IN SUPPLY CHAIN MANAGEMENT

The continuous improvement (CI) philosophy focuses on improving processes to enable companies to give the customer what they want the first time, every time. This customer-focused, process-oriented approach to doing business results in increased satisfaction and delight for both customers and employees. Summers (2000, p.39)

Continuous Improvement (CI) is a philosophy that Deming described simply as consisting of improvement initiatives that increase successes and reduce failures. Bhuiyan & Baghel (2005, p.761)

2.2.1 The Continuous Improvement concept: A TQM foundation

Higher requirements for improved quality of products and services have led to the emergence of the Total Quality Management philosophy as described by Terziovski (2002 p. 206). “Continuous Improvement is an inherent part of the TQM process. Continuous Improvement consists of measuring key quality and other processes indices in all area, and taking actions to improve it” as cited by Berk (1995, p. 15). While Chang (1995) mentioned Continuous Improvement (CI) as one fundamental theme embedded in quality improvement philosophy. As mentioned by Bhuiyan and Baghel (2005 p.761), Bessant at al. (1994) defined CI as ‘a company-wide process of focused and continuous incremental innovation’. This philosophy is based on the recognition that each employee has a valued and valuable contribution to make toward the success of the organization. A Continuous Improvement framework was also proposed by Temponi (2005). The linkage of continuous improvement and teamwork is of importance for successful implementation of TQM (Berk, 1995 and Shapiro, 1997).

TQM, though with some failures, has taken a revolutionary approach in some organizations to continually improve quality of goods, performance and workplace productivity. As described by Cohen and Brand (1993), companies that have adopted TQM strategies have learned to work better and gain competitive advantage allowing employees to make use of their knowledge and available experience. TQM has been implemented in organizations through continuous improvement and teamworking approaches (Berk, 1995 and Shapiro, 1997).

Continuous Improvement suggestion was mentioned in an assembly plant in Parsons-Ellisiason (Berk, 1995, p.14). Continuous Improvement is part of the management of all systems and processes (Evans and Dean, 2003, p. 18). To reach the top most levels of performance requires a well-defined and well-executed approach to Continuous Improvement and learning. Continuous Improvement refers to both incremental and breakthrough improvement (Evans and Dean, 2003, p. 18). For instance, “sustainable technologies” as described by Zhao (2008), depend on incremental improvements to an already established technology. However, Continuous Improvement initiatives may focus on enabling technologies. Organizations that are investing in quality on a systematic and
constant basis are often those that have experienced serious problems in the past (Borowski and Soler, 2007). This may not be generalised as some organization may have invested in Continuous Improvement initiatives to achieve better performance. The mode of interactions of team members in a Continuous Improvement approach is important when quality is initiated in an organization.

Continuous Improvement (Kaizen in Japanese) where in the Kaizen approach as practised in Japanese companies reflects mostly on minimal financial investment and everyone to participate in the process with improvements resulting from the know-how and experience of workers (Evans and Dean 2003, p.205). The concepts of involvement, empowerment and teamwork are crucial for the realization of Continuous Improvement by allowing the organization to fully utilize its human resources capabilities to achieve significant teamworking synergies. In the banking service sector, Continuous Improvement consists of measuring key process indices such as customer satisfaction, sales referrals, error minimisation, and cost control.

2.2.2 Cycle of Continuous Improvement

Murray and Chapman (2003) contended that it is useful to think of the levels of learning for CI as cycles, since one cycle of learning depends on the other and evidence of learning can be found at each stage of the cycle as shown in Figure 2.1. The point that Murray and Chapman (2003) were making was that the evidence of routines at each stage in a cycle learning of the cycles of Continuous Improvement as illustrated in Figure 2.2 increases as firms learn new behaviours that challenge and improve the old routines.

Figure 2.1: Adaptive learning, cycles of Continuous Improvement (Adapted from Bessant & Caffyn, 1996 as cited by Murray & Chapman, 2003).

![Diagram of Continuous Improvement Cycles](image-url)
### 2.2.3 Continuous Quality Improvement

Continuous quality improvement needs a new way of managing work where employees are not only ordered but asked to think and participate in the process of organizing work (Cohen and Brand, 1993). A good road map for implementing and realizing Continuous quality improvement is by assisting employees to work on selected continuous improvement projects by assigning teams (Berk, 1995). Teams are often seen as a solution for improving collaboration, performance and productivity in knowledge-based organizations (Summers, 2000). Murray and Chapman (2003) compared the implied interface between quality control and Continuous Quality Improvement shown in Figure 2.2. They also mentioned the way quality control evolved through continuous quality improvement to TQM. The concepts of involvement, empowerment and teamwork are crucial for the realization of Continuous Improvement or Process Improvement by allowing the organization to fully utilize its human resource capabilities. The conceptual problems of applying Continuous Quality Improvement were explored by Roffe (1998) in higher education.

![Figure 2.2: The implied interface between quality control and continuous quality improvement (Murray and Chapman, 2003).](image)

### 2.2.4 Continuous Improvement Process

A Continuous Improvement Process for customer relations was proposed by Tennant, Warwood & Chiang (2002). Their study concluded that organizations should develop a management style to support Continuous Improvement of daily working processes. They developed the Continuous Improvement Process based on a structured problem-solving model incorporating the application of

Examples of Quality control
- Brainstorming
- Sampling
- Zero Defects
- Pareto Analysis
- Run Charts
- Benchmarking
- Cause and Effect
- Force Field Analysis

Examples of Continuous Quality Improvement
- Providing leadership
- New behaviour
- Strategic planning
- High cooperation
- Quality products/service
- Incremental change

Efficiency

High performance
established quality tools by the problem-solving teams from the customer relations department. Morton (1998) as cited by Tennant, Warwood & Chiang (2002) believed that a problem-solving team is a ‘bottom-up’ approach to problem-solving which is more natural and effective for achieving Continuous Improvement. This is so because it is the workforce who better understand, contribute, generate and manage changes. Nelson and McFadzean (1998) as cited by Tennant, Warwood & Chiang (2002) recommended the use of a facilitator (as deployed in case studies of this study) who is an expert in the problem-solving process to manage the problem-solving teams. The Continuous Improvement Process is illustrated in Figure 2.3.

Figure 2.3: Continuous Improvement Process with focus on team forming and objective formulating to use the PDCA Cycle (Tennant, Warwood & Chiang, 2002).

2.2.5 Process Management and Process Improvement

As described by Booth (2007), process management is normally used to enable a group of employees to analyze their work from the various stakeholder dimensions by determining a way to monitor the performance of the process. Process improvement provides a structured environment
for employees to work together in a team by applying Deming PDSA or Six-Sigma DMAIC Cycles to improve work processes and eliminate problems from their jobs. The employees are also empowered to make fact-based decisions about how they can make the improvement happen. With the application of a structured problem-solving approach in a team, process improvement is normally achieved. Atkinson (1997) illustrated the development of problem-solving teamworking evolving from reactive problem-solving teams to proactive process improvement teamworking.

**2.2.6 The Problem-Solving Approach in Supply Chain Management (SCM)**

‘SCM refers to the configuration, coordination, and improvement of a sequentially-related set of operations’ (Hanna & Newman, p.25). ‘Problem-solving can be defined as the process of identifying a difference between the actual and the desired state of affairs and then taking action to resolve the difference’ Anderson, Sweeney, Williams and Martin (2008, p.3). ‘A problem is any situation in which what exists does not match what is desired or, said another way, the discrepancy between the current and the desired state of affairs’ (Goetsch and Davis 2000, p.505). As described by Anderson, Sweeney, Williams and Martin (2008), the problem-solving process involves the following seven steps:

1. Identify and define the problem
2. Determine the set of alternative solutions
3. Determine the criterion or criteria that will be used to evaluate the alternatives
4. Evaluate the alternative
5. Choose an alternative
6. Implement the selected alternative
7. Evaluate the results to determine whether a satisfactory solution has been obtained.

As mentioned by Berk (1995) and Anderson et al. (2008), strong problem-solving skills are essential to successful TQM/CI implementation and without these skills one is doomed to solving the same problems over and over again. Problem-solving might sound a good task in high-technology situations, but the basic problem-solving approach such as Deming PDSA, Kaizen Six-Sigma, Business Improvement Team (BIT), Process Improvement Team (PIT), Problem-Solving Team and many others can be used to alleviate all problems. The technology may differ but the basic approach to solving problems for continuous improvement stays the same as it has been for some time. The problem-solving process, when used, improves the quality and business processes through a systematic approach to promote staff involvement, enhances motivation, improves teamwork and communication (Quality Systems, 1996 and STA, 1996).
Typical measures of team dynamics include problem-solving skills, achievement of results, use of team resources, and effectiveness of communication (Castka, Bamber & Sharp, 2003). Bessant and Caffyn (1996, p.10) as cited by Murray and Chapman (2003), the early days of CI was involved with learning systematic problem-solving while practising the use of simple tools and techniques. The tools for Continuous Improvement (relating to the problem-solving approach) as described by Evans and Dean (2003, pp. 99-108); Montgomery (2009) are mostly the flowcharts, checksheets, histograms, pareto diagram, cause and effect diagrams, scatter diagram, control charts plus others.

However, in the May 2009 issue of Quality World magazine, the Chartered Quality Institute (CQI) has been providing training courses using a structured approach to ‘problem-solving through root cause analysis’ using some of the quality tools. This course provides an in-depth understanding of how to define the problem based on Kepner Tragoe; select a range of potential root causes; identify the most likely root cause using a ‘cause and effect’ diagram; use other quality tools such as ‘brainstorming and voting techniques’, ‘value analysis’, ‘failure mode and effects analysis’, ‘force field analysis’ and ‘why why’; investigate at the point of the problem; identify potential solutions; decide on the optimum solution having assessed the risks associated with each solution; assess the risk associated with delivering the solution to customers; review drivers and resistance while implementing solutions. Song & Yao (2002) illuminated key issues in retail supply chain by offering some practical techniques to solve important problems. Agrawal & Tsay (2002 p. 53) also demonstrated the retail manager’s probability of meeting profit target v/s wholesale price in the retail supply chain performance in relation to the retail manager’s problem in the control system.

2.2.7 Shewhart PDCA cycle problem-solving approach to CI

The PDCA Cycle also known as the ‘Control Cycle’ is shown in Figure 2.4 and Table 2.4. The PDCA stands for PLAN-DO-CHECK-ACTION. Goetsch and Davis (2000) described the PDCA Cycle as a continual improvement model which was called the Deming Cycle after Dr. W. Edwards Deming introduced it to the Japanese, who referred it as the Shewhart Cycle after its originator. It is a problem-solving approach to CI. As described by Singapore Technologies Automobile (Quality Systems, 1996; STA, 1996), the PDCA Cycle is a very important and useful concept in BIT. It allows us to deal with a problem systematically where the data collected will support the decisions and solve the problem. The PDCA Cycle assists the team not to jump to conclusions but to continuously look for the root causes of the problem. The PDCA Cycle can also be used to manage and check on the progress of a project. By following the steps in the PDCA Cycle, the team had a better chance of completing the project on time and on target (Quality Systems, 1996).
The PDCA Cycle is also referred as the Shewhart cycle (Montgomery, 2009 p.21). The 8 steps in the PDCA Cycle which are commonly used by Business Improvement Teams (BITs) are shown in Table 2.4. Each step needs to be followed. The results achieved are eventually checked at Step 7 (Evaluate Results). When the results do not meet the team’s expected target, the team need to go back to step 5 in the Plan stage to find out why the target has not been met. Likewise, Summers (2000) explained differently to CQI and Quality Systems (1996), the problem-solving steps with common quality tools in process improvement using the PDCA Cycle. In the ‘Define’ step of PDCA, the brainstorming, Pareto analysis, WHY-WHY diagrams quality tools are normally used. In the problem analysis step the Cause-and-effect diagrams, Checks sheets, Scatter diagrams, Control charts, Run charts, Force-field Analysis tools are used. In the Solution evaluation step, the Control charts, Run charts, Scatter diagrams, Histograms, Check sheets and Pareto charts are used. Sommers (2000) named the team using the PDCA Cycle as an interdisciplinary problem-solving or quality improvement team. However, Besterfield (1999) mentioned only seven phases of the PDCA Cycle or PDSA Cycle or Continuous Process Improvement Cycle. The seven phases identify the opportunity, analyse the process, develop the optimal solution(s), implement, study the results, standardize the solution and plan for the future.

2.2.7.1 The eight steps in the PDCA cycle

As mentioned by Evans & Dean (2003 pp.238-239), the Union of Japanese Scientists and Engineers reported that 5.5 million workers participated in 750 quality circles using the PDCA Cycle which mostly uses departmental problem-solving teams. The teams were meeting once a week for one to two hours to identify a set of problems to work on. The team identified the causes from data collected and proposed the best approach to resolve the problem.
Table 2.4: The four stages in Deming PDSA problem-solving methodology to CI can be further broken down into eight steps (STA, 1996).

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activities</th>
<th>Explanations</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAN</td>
<td>Step 1: Select Theme</td>
<td>• Topic is selected through consensus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reasons for choosing the topic must be explained</td>
</tr>
<tr>
<td></td>
<td>Step 2: Plan Schedule</td>
<td>• Plan activities and time schedule</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Allocate manpower resources</td>
</tr>
<tr>
<td></td>
<td>Step 3: Grasp Present Situation</td>
<td>• Collect data to determine present situation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Where possible, data should be collected to support how &quot;bad&quot; the situation is</td>
</tr>
<tr>
<td></td>
<td>Step 4: Set Target</td>
<td>• Set target for improvement</td>
</tr>
<tr>
<td></td>
<td>Step 5: Analyse and Determine Problem and Plan Corrective Action</td>
<td>• Suggest possible causes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Investigate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Isolate actual causes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Give as many solutions as possible</td>
</tr>
<tr>
<td></td>
<td>Step 6: Implement Plan</td>
<td>• Try out best solution</td>
</tr>
<tr>
<td></td>
<td>Step 7: Evaluate Results</td>
<td>• Record findings</td>
</tr>
<tr>
<td>CHECK</td>
<td></td>
<td>• Observe any side effects</td>
</tr>
<tr>
<td>/not</td>
<td></td>
<td>• Collect data</td>
</tr>
<tr>
<td>STUDY</td>
<td></td>
<td>• Evaluate effectiveness of solution</td>
</tr>
<tr>
<td>ACTION</td>
<td>STEP 8: Standardise Actions Taken / Review</td>
<td>• If target is not met, return to Step 5 and start again</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If objectives are met, Solution should be standardised and put in official manuals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Monitor the process periodically to ensure that the desired results are maintained.</td>
</tr>
</tbody>
</table>

2.2.8 Six-Sigma problem-solving approach as a CI initiative

As described by Booth (2008); Evans and Lyndsay (2005); Stamatis (2003); and Pyzdek (2003), the Six-Sigma DMAIC (Define, Measure, Analyse, Improve, Control) problem-solving cycle is the foundation block supporting Continuous Improvement. ‘Six-Sigma reveals more than 2000 titles in press today’ Fleming and Asplund (2007, p.15). Six-Sigma as a CI tool has consistently produced positive results in companies that have implemented it (Fleming and Asplund 2007). DMAIC Cycle is useful because it is the basis for improvement by defining what needs to be improved, measures current performance, analyses the issues to identify how to make improvement, institutes improvement, institutes control to sustain improvement until the next iteration. As explained by
Booth (2007) and Pyzdek (2003), the key Six-Sigma principle is to continuously monitor customer requirements and assess process performance against them (Process Management) and the problem-solving DMAIC Cycle is then used to close the identified gap (Process Improvement). Six-Sigma, which is a derivative of TQM, emerged in the late 1980s as a way for an organization to examine quality problems and sustain process improvements. The term ‘Six-Sigma’, has been described as a holistic approach to achieving organisational excellence and was initiated by Motorola in 1986 after their quality management initiatives started in the late 1970s (Evans and Lyndsay, 2005; Evans and Dean, 2003). Their goal was to achieve 10-fold improvement by 1986 and in 1986, Motorola adopted a single metric for quality, total defects per unit, which had allowed all departments of the company to measure and compare their quality improvement rates (Evans and Lyndsay, 2005).

As mentioned by Evans and Lyndsay (2005, p. 133), with their next goal set at an additional tenfold improvement by 1989, and then a one-hundred fold improvement by 1991, they achieved Six-Sigma capability by 1992. Hence, from there, the aim of achieving Six-Sigma has been to meet 3.4 defects per million parts, or 99.9999998 percent perfect products (Pyzdek, 2003). Between 1983 and 1987, Motorola spent more than US $170 million for employee education to ensure they had the necessary skills to achieve the company’s quality and performance objectives. ‘By 1998, the company had generated US $ 1.5 billion in savings the next year’ (Evans and Lyndsay 2005, p.133).

Table 2.5: Sigma Conversion Table (Terziiovski, 2002 p.206).

<table>
<thead>
<tr>
<th>Quality level (Yield)</th>
<th>Defects Per Million Opportunities (DPMO)</th>
<th>Sigma</th>
<th>Cost of Poor Quality (% of Sales)</th>
<th>Types of Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.9</td>
<td>690,000</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69.2</td>
<td>308,000</td>
<td>2.0</td>
<td>30-40</td>
<td>Doctor Prescription Writing</td>
</tr>
<tr>
<td>93.3</td>
<td>66,800</td>
<td>3.0</td>
<td>20-30</td>
<td>Service sector</td>
</tr>
<tr>
<td>99.4</td>
<td>6,210</td>
<td>4.0</td>
<td>15-20</td>
<td>Baggage Handling Systems</td>
</tr>
<tr>
<td>99.98</td>
<td>320</td>
<td>5.0</td>
<td>10-15</td>
<td></td>
</tr>
<tr>
<td>99.9997</td>
<td>3.4</td>
<td>6.0</td>
<td>&lt; 10</td>
<td>Best in Class (e.g. Motorola)</td>
</tr>
</tbody>
</table>

Six-Sigma was also viewed as a holistic quality management philosophy of using statistical methods and tools (Evans and Lyndsay, 2005; Pyzdek, 2003; and Stamatis, 2003). By 1992, questions were being asked about the benefits gained by many organizations caught up in the quality crusade. As cited by Booth (2007), Mckinsey and Company commented in Jan-Feb 1992 Harvard Business Review: “Increasingly, it appears that too many quality programs are
ineffective...we are seeing a disturbing large number of companies whose total quality management programs are failing to show signs of business impact. Similarly, the service sector, which has been adopting the Six–Sigma derivative of TQM, may not achieve Six-Sigma level as shown by Terziovski (2002) in Table 2.5. It may be, as demonstrated by Terziovski (2002), that Four-Sigma may be best suited for the banking sector rather than Six-Sigma as is not about reducing defects like in the manufacturing sector but rather meeting 100% customer satisfaction in the banking sector.

2.2.9 Human-Sigma as a CI initiative

‘What Six-Sigma did for manufacturing, Human-Sigma will do for the service economy’ (Ralph Oliva, Penn State University as cited by Fleming & Asplund, 2007 book cover page). Human-Sigma as mentioned by Fleming & Asplund (2007) appeared in the July/August 2005 issue of the Harvard Business Review and was presented by Quality World (CQI) in November 2008, is based on five rules to bring excellence to the way employees engage and interact with customers. They introduced the Human-Sigma performance bands by combining employee and customer engagement scores at the local unit level to yield a single Human-Sigma score. The single score ranges from 1 to 6 into six broad performance bands. The impact coefficient represents the relative levels of revenue growth within the six bands of Human-Sigma performance. The five rules are as follows:

Rule 1: Employees and customers experiences must be managed together.

Rule 2: Emotions drive and shape the employee-customer encounter.

Rule 3: The employee-customer encounter must be measured and managed at local level.

Rule 4: Employee-customer engagement interacts to drive better financial performance and the interaction can be quantified and summarized.

Rule 5: Sustainable improvement in the employee-customer relationship requires discipline, company commitment, reward and recognition.

In their book, Fleming & Asplund (2007 p. 18) mentioned how the CEO of a retail bank slammed his hand on the table to say ‘no’ in empowering bank’s tellers as front liners to have a greater degree of decision-making autonomy to deliver a higher standard of customer service rather than just asking the approval of a supervisor. They pointed to the elements of trust that senior management need to have in front liners. Fleming & Asplund (2007) also refined the Human-Sigma concept by formulation of the impact coefficient for Human-Sigma in relation to
employee and customer engagement. Hence, managing employee-customer encounters and interactions as reflected by Fleming and Asplund (2007) with human-sigma as CI initiatives are also crucial for achieving productive performance in the retail banking sector.

2.2.10 The value and versatility role of teamwork in CI

The teamworking approach unlocks organizations by connecting people and creating more employee involvement and coherence. Poor application of teamwork reduces individual responsibility, decision rights, inefficiency for completion of tasks and operations (Nurmi, 1996). Without teamwork, there is absence of TQM and CI initiatives which charges employees to do right thing, right first time and everytime (Quality Systems, 1996). The benefits of teamwork as CI building capabilities for organization was also studied by Transfield, Parry, Wilson, Stuart and Foster (1998) where they illustrated three team archetypes and characteristics namely Lean teamworking (waste elimination and continuous improvement), Self-directed teamworking (commitment and involvement generate creativity and innovation) and Project teamworking (integration and coordination). When teams work well in CI initiatives, the results can be extremely powerful with synergy created with the experience of team members leading to a more effective delegation of tasks, a more stimulating and motivating environment for team members to perform better. As reported by Turvey and Neal (2001), a high performance work system is a recent new approach discovered in relation to labour management and is being said to be appropriate in the current business environment. This is also a CI initiative using teamworking. It involves the use of systems of work practices for business success by putting greater emphasis on worker participation, teamworking and flexibility in work design together with decentralised managerial tasks and responsibilities.

2.3 TEAMWORKING IN SUPPLY CHAIN MANAGEMENT (SCM)

There is a wide body of research and knowledge underpinning teamwork. As mentioned by West, Tjosvold, and Smith (2005), human beings have been working in teams for over 200,000 years in discovering the structure of the human genome, building great palaces, exploring space and other planets and many other things. Teamwork, after being successfully used in the manufacturing sector, has shifted into service sector companies. A team can be defined as a group of people working together to achieve a goal (Conti & Kleiner, 1997) or as collaborative activity of individuals (Shapiro, 1997). While, Goetsch and Davis (2000) described a team as a group of people with a common and collective goal.
As stipulated by Stamatis (2003), team management is important for implementation of quality management in financial organizations. Edwards and Wilson (2004), defined the word team in reference to a project where two or more people must coordinate interdependent activities and make joint decisions to accomplish a common goal. A team could be cross-functional and multidisciplinary in nature. Where possible team members can be subject matter experts, customers, process owners, operators, information technology personnel, and others as needed. However, the incorporation of virtual teamworking in the team management process is an area of further research. Teams became more popular in the 1980s (Snee, Kelleher, & Reynard, 1997). Teamworking has been improving organizational health and driving quality forward as cited by Ingram et al. (1997). The quest to reduce the gaps between poor quality to good quality and low profitability to that of high profitability can be facilitated by the implementation of teamwork (Kissoon, 2008a). Creating teams with an edge involved the complete skill set to build powerful teamworking (Harvard Business School, 2004). Oakland and Sohal (1996, p.305) presented a case study in the currency department of the Reserve bank of New Zealand to illustrate their road to quality where a structured problem-solving process was developed and quality teams met for an hour every week to review work processes by providing solutions to identified process related problems.

2.3.1 The notion of routine and original teamworking

Organization practising QC, Process Improvement Teams (PIT) and Kaizen teams do have a proper teamworking structure (Quality Systems, 1996; Berk, 1995; and Booth 2007). Quality rests with each individual and every task. As workers work in the system it is management’s responsibility to work on the system (Deming as cited by Adam and Everett, 1992). Teamwork as described by Evans and Dean (2003) can be viewed in three ways. Firstly, vertical teamwork which is mostly teamwork between top management and lower-level employees. Secondly, horizontal teamwork, where teamwork within work groups and across functional lines (often called crossed-functional teams). Thirdly, inter-organizational teamwork, where we have partnership with suppliers and customers in the supply value chain. Team-based organizations revolve around customers (Evans and Dean, 2003). However, in reviewing teamworking for the purpose of this study more emphasis has been on Quality Circles and Six-Sigma problem-solving approaches using teamworking. QC and Six-Sigma project work implementation will not be achieved without team work. Likewise poor team work will result in poor QC and Kaizen teams. Thus, the interrelationship between QC, Kaizen teams and teamwork is of concern and important for the success of QC and Six-Sigma project work. The best description of original teamworking in workplaces is the illustration and critical elaboration about QC and other successful related teams.
QC and Six-Sigma using team members’ interaction, problem-solving and the continuous improvement approach, suitable employee relationship and quality improvement initiatives can emerge for increasing the productivity of their organizations. General Electric was, in fact, doing many things that a company should do to improve the teams, which were the idea of the boundaryless company, delayering and training (Asia Intelligence Wire, 1998). The basic philosophy behind the implementation of QCs in an organization is people development for continuous improvement of the organisation in all aspects (Mepza, 1998). Tranfield and Starkey (1998) as cited by Sommer (2002) advocated that research should complete a virtuous circle of theory and practice through which research and practice inform theory that in turn inform practice. Similarly, problem-solving approaches using PDCA cycle and DMAIC cycles in project work shows the virtuous circle aspects which in practice informs organizations of the teamworking health of its employees from practical project work using quality concepts and methodologies. Untapped resources from workers, supervisors and managers in the process are properly used in quality management projects using quality tools (Adam and Everett, 1992). QC problem-solving teams mostly using PDCA cycle and Six-Sigma problem-solving teams mostly using DMAIC cycle are good quality methodologies for tapping into the capability in organizations for improving efficiency and to perform better (Besterfield et al., 1999; Summers, 2000; and Fleming and Asplund, 2007). QC and Six-sigma enables employees to do what they should be doing to improve performance through creation of cross-discipline teams (Quality Systems, 1996; and Stamatis, 2003).

Australian companies are striving to get better results from staff with self-improvement quality programs that liberate the biggest profit centre (Hooper, 2005). QC movement can also help to create a shared vision for quality improvement through team learning (Senge, 1992 as cited by Goh, 2000). Both PDCA cycle and DMAIC cycle concepts can be thought as the operationalisation of learning. This is true as in any team circle there is knowledge creation through brainstorming sessions which leads to performance improvement in the immediate place of work. Managers are paid to achieve targeted outcomes (performance) from their team by using all available resources (Ainsworth et al., 2002). The way that they drive their teamwork effort is crucial and both QC and Six-sigma help in creating influential teams. As researched by Brislin, MacNab, Worthley, Kabigting and Zukis (2005) Japanese managers seem to have an acceptable understanding of what motivates employees in using quality methodologies but there is still room for improvement. QC and Six-sigma start from top management and concern everyone in the organization.

2.3.2 Relevant international research on teamworking.

As described by West, Tjosvold and Smith (2005), research on teamworking has already been done on the following: the importance of trust for team cooperation by enabling psychological
identification, group attachment style where team members feel secure in groups, task conflict and problem-solving in groups, team effectiveness (relating to cooperative goal interdependence and openness with team member’s experience and viewpoints), the concept of a team mental model (which looks at roles, support, resolving conflict, feedback consideration and managing time), need for team-based organizations with managers working together, ‘collective mind’ emerging from aggregation of the separated team member cognitions, individual reward in teamwork, legitimacy of power relations between team members at different hierarchy levels, leadership role in teamwork, how teams can be encouraged by creativity and innovation.

The TEaM model was developed by Castka, Bamber, Sharp (2002) based on the EFQM excellence model. The NSQT’s teamworking model was proposed by Teare, Munro-Faure, Scheuing and Bowen (1999) which involved improving performance through people to drive effective teamwork and change programmes. The basic model of a hypothetical team was done by Nurmi (1996) where the research was focussed on four team leadership styles. These were namely: Dictatorial (one person imposing his views in the group with outcome 20-50%); Compromising (consensus, arbitration or holding the group together is more important than the group’s performance with outcome 33.3%); Integrative teamwork (resources of the team are gathered together into an integrated outcome of the team with outcome 100%); and Synergistic teamwork (innovative teamwork with resources exceeding the input with outcome 100%). Nine key team leadership skills were also tested in 40 countries in a Team Management Systems in the Margerison Mc Team wheel model and this was also applied to team working in banks (Margerison, 2002). As described by Shapiro (1997) team work also applies between different departments, between managers and employees. A model of teamwork was developed by Shapiro in 1997 and seven main factors were hypothesized for effecting teamwork. These factors were satisfaction with colleagues, trust in colleagues, perceived colleagues commitment to quality, quality awareness, supervisory participation, perceived management commitment to quality and an improvement in general commitment to quality in the organization. Also in a model cited by Ingram et al., (1997), teamwork can be studied in a three-stage sequence which identifies those inputs and throughputs leading to successful outputs.

2.3.3 Quality circles team approach re-engineered

An extensive review of the literature shows that there is a reduction of empirical research on the effects of quality circles, as cited by Yukongdi (2001). Research also done by Terviovski et al. (1999) has shown that QC related TQM practices have decreased in Australia. In fact, some research suggests that QC has a positive impact on a company productivity and quality (Berk, 1995; Goh, 2000; Mepza, 1988 and Terziovski et al., 1999). Melbourne Chapter Australian Quality Circles Association (AQCA) (1998); Barad and Kayis (1994); Berk (1995); Goh (2000);
MEPZA (1988) and Quality Systems (1999) have described QC as a means to improve teamwork. Quality Circle is normally constituted of a secretariat, facilitator, leader and team members managed by a steering committee who work to improve any serious problem affecting the smooth running of operations in their immediate place of work. As described by Covey (1989), a ‘paradigm shift’ is a shift in the thinking process and changing ways of doing things in a continuous improvement approach. Quality goals with new ways of doing things to work as a dynamic team in the problem-solving methodologies are constantly changing to better meet the organization operational needs and processes. This is so, because many things are modified, re-engineered and being done in a different way by keeping the original framework to better support Continuous Improvement in a notion of Continuous Cycle (Booth, 2008) and achieve better performance.

Figure 2.4: Shifting goals of PDCA cycle to DMAIC cycle with the notion of Continuous Cycle to support Continuous Improvement (Booth, 2008).

Deming PDSA cycle

- P – Plan what to do
- D – Do it
- C – Check it worked
- A – Act to sustain it

Six-Sigma DMAIC cycle

- Define, Measure, Analyse
- Improve
- Control

There has been a shift from Quality Control Circles (QCC) to Quality Circles (QC), Quality Teams, Business Improvement Teams (BIT), Corrective Action Teams (CAT), Kaizen
Teams, Self Managed Teams (SMT), Work Place Improvement Teams (WIT), Problem-Solving Teams and many other nomenclatures. Thus, the QC teamworking approach is evolving, constantly changing and re-engineered to fit organizational objectives, values, vision and mission in an evolving competitive environment. As mentioned by Conti and Kleiner (1997), individual working is less efficient than the collaboration of many individuals. Similarly, teamwork as originally defined is still the same in all these different nomenclatures. For instance, the notion of teamwork used in Kaizen, Six-Sigma, BIT, CAT, WIT and some others is practically the same. However, there are further modifications done and implemented in these different teams. For instance, as described by Zetie (2002), the Deming PDSA cycle used in QC seen as a learning cycle leading to continuous improvement has a strong similarity to Kolb’s (1984) experiential learning cycle but differs. Similarly as illustrated in Figure 2.4, the PDCA cycle also has a linkage to the Six-Sigma DMAIC cycle though there are differences in their approaches. Appendix 9 shows the relevance of the PDCA cycle.

To illustrate an example at Singapore Technologies Automobile (STA, 1996), Quality Control Circles (QCC) which was formed in 1985 changed nomenclature to Business Improvement Team (BIT) in June 1995 to steer their teams to be more focused on the business of the day. The Business Improvement Team was part of their Total Quality Commitment (TQC) movement. The Total Quality Commitment (TQC) steering committee was normally chaired by the CEO who sets directions, policies and approves all TQC plans. The Business Improvement Team’s concept did provide a strong framework in implementing the problem-solving PDCA cycle to improve the business.

2.3.4 PDCA and DMAIC problem-solving cycles using teamworking

The purpose of the PDCA cycle was to help team members to solve problems in line of CI as it provides the structure for work improvements so that a team can use the various tools logically, identify and analyse problems, develop workable solutions, solve problems and ensure that they will not happen again (STA, 1996). As described by Besterfield et al., (1999) the Kaizen DMAIC problem-solving cycle defines management’s role in continuously encouraging and implementing small improvements. This involves everyone as a team by improving communication, use of value-added and non-value-added work activities. To conclude, the importance of teamwork in the problem-solving PDCA and DMAIC cycles were mentioned by Quality Systems (1996); Oakland and Sohal (1996), Besterfield et al., (1999); Summers (2000); Goetsch and Davis (2000); Evans and Dean (2003); and Fleming and Asplund (2007). Poor application of teamwork in the problem-solving approach reduces individual responsibility, decision rights, inefficiency for completion of tasks and operations (Nurmi, 1996). It involves the use of systems of work practices for business success by putting greater emphasis on worker participation, interactions medium and flexibility in
work design together with decentralised managerial tasks and responsibilities. The next paragraph demonstrates the shift in the traditional teamworking approach where by virtual teamworking has been progressively incorporated with technological advancement for organization to work more efficiently as a team.

### 2.4 VIRTUAL TEAMWORKING IN SUPPLY CHAIN MANAGEMENT (SCM)

#### 2.4.1 The notion of virtual teamworking in the modern SCM organization

Elements of the CIMA model for knowledge transfer and learning in process improvement processes relates to CI and learning in logistics and supply chain was studied by Hyland, Soosay and Sloan (2003). CIMA methodology is termed in relation to continuous innovation in the product development process and a methodology for mapping learning behaviours (Hyland, Soosay and Sloan, 2003). As stipulated by Stamatis (2003), team management is important for the implementation of quality management in financial organizations operations. According to Edwards and Wilson (2004), virtual teamworking has been researched with networked teams, parallel teams, project development teams, production teams, service teams, management teams, and action teams. However, there is still room for research work relating to virtual teamworking in the retail-team banking sector in Australia. As mentioned by Nemiro (2004), computing and communications in Australia was dominated by telecommunication with voice and data transmission until about 1990. It can be noted that, at that time though telephone was used as a virtual interaction means, not much emphasis was felt about technology impact with regards to virtual teamworking on ‘quality management in supply chain management’. Virtual teamworking came afterwards with improvements in network operating systems where employees can be electronically connected (Nemiro, 2004) in the supply chain. The benefit that technology brought to the creative process of networked virtual teamworking, is the ability to link individuals who could not otherwise be included. Electronic links have widened the creativity pool of human resource abilities for team members, individual teams and external teams for being electronically connected when needed (Nemiro, 2004).

As mentioned by DeGori and Zhao (2008, pp. 191-194), one of the characteristics of virtual teams also includes face-to-face meetings where virtual teams also take on the same structure as natural teams with team members interactively seeing each other. Some experts suggest that 25% of team interaction should be spent in face-to-face meetings (George, 1996; Cantu, 1997 as cited by Degori and Zhao (2008, p.192). Team members in virtual teams are from different organisations or parts of the organisation. Edwards and Wilson (2004) identified trust, the shared or team mental model and the team boundary as of importance in virtual teams. Rura-Polley and Clegg (1999)
defined trust as a willingness for relying with confidence on an exchange partner which is a
determinant of relationship quality, member’s interactions, commitments and outcomes. DeGori
and Zhao (2008, p.195) attempted to explain leadership for team effectiveness in virtual teams.
They stated the purpose of leadership in virtual teamworking as follows:

- To create direction and the unified will to pursue it through the development of people’s
  thinking and valuing (Kent, 2005, p. 57)
- Success in virtual teams requires a change for the entire team, commitment from each
  member and strong leadership direction. Without strong leadership and role modelling,
  virtual teams will “founder or fail” (Conner et al., 2003; Kent, 2005; Mannion, Davies &
  Marshall, 2005).
- Conner et al. (2003) identified communications, establishing expectations, allocating
  resources and modelling desired behaviours for leadership behaviours to encourage virtual
  team performance. The ability of leaders to support individuals to be effective within their
  work structure is important.
- In a study of 500 virtual managers, 90% perceived managing from afar to be more
  challenging than managing people on-site (Hymowitz, 1999 as cited by Connaughton et
  al., 2004).

2.4.2 The human–computer interaction in the supply chain process

‘Virtual environments (Ves) offer a unique medium for human-computer interaction (HCI)’ (Jacko
and Sears, 2003, p. 622). The theory of human-computer interaction was originally developed by
David Kiaras from the University of Michigan and Peter Polson of the University of Colorado for
the usability parameters like training time and productivity (Carroll, 1989). The human-computer
interaction is becoming an important issue for organizations with sophistication and technology
advancement of electronic communication systems for better e-teamwork as described by Bermus
and Fox (2005). The importance of HCI and productivity is important in a competitive
environment. ‘One way of demonstrating the importance of HCI is by showing tangible benefits
that can be talked of in cash terms’ (Preece, Rogers, Sharp, Benyon, Holland and Carey 1994, p.
19). For instance, Malaga (2009) studied the retaliatory feedback for completing electronic
transactions. The effect of information quality management on supply chain performance was
researched by Zailani and Rajagopal (2009).

2.4.3 Technology usage in a collaborative team environment in SCM

E-network in E-SCM should satisfy customer demands through a seamless (fully connected end-to-
end) supply chain to serve end consumer (Boonyathan and Al-Hakim, 2007). As described by
Edwards et al. (2004), the term “virtual” was originally called virtual reality (VR) and used to describe a set of technologies that gave people a sense of being present and interacting in a space other than where they are physically situated. Within VR, a virtual environment is a computer-generated three-dimensional representation of objects, which the participant experiences visually, through a range of display devices from a desktop computer. Alternatively, as mentioned, staff in banking organizations, though co-located as observed in the participant observation study, are interacting and collaborating as a team through electronic working meeting, computer-supported cooperative work (CSCW) system (e.g., teleconferencing, group calendars and schedules, e-mail and bulletin boards, voicemail) and other virtual working support tools in the retail supply chain. Cooperation as described by Kollmann (2008: 145) as cited by Zhao (2008) is the aspect that deals with using an online offer to enable more efficient and effective interlinks of products and services. ‘Some consulting projects are carried out in virtual teams, which are networks of people sharing a common purpose and working across organizational and temporary boundaries by using information technologies’ (Karduck and Sienou, 2007, p.229). This is where computer supported team formation is important to facilitate virtual communication of team members as mentioned by Karduck and Sienou (2007). As mentioned by Lipnack and Stamps (1997), a virtual team also goes through the phases forming, storming, norming, performing and adjourning.

2.4.3.1 Online virtual group interoperability evolution

Futurists predicted the increasing use of virtual corporations, virtual teams, virtual desks and virtual employees as mentioned by Igbaria et al. (1998). ‘The constant and rapid development of Internet-related technologies in the accompanying net economy has inevitably had a significant influence on various possibilities for developing innovative online business concepts’ Kollmann (2008:141) as cited by Zhao (2008). As described by Hallberg (2005), the term networking relationships refers to two different concepts about how one computer makes use of another computer. Teleworking is about working from a distance with employers, colleagues or customers using information and communication technologies (Denbigh, 2003).

As mentioned by Sorli and Stokic (2008), E-working is a newly issued term that refers to working at a distance by using information and communication technologies (ICT). It also covers software/hardware tools, physical aspects including social behaviour and cultural change (Sorli and Stokic, 2008). This type of digital working enables team members’ group conversations to be captured electronically. The ‘online training revolution’ (Mitrione as cited by Jenning, 2006) has gained momentum in the last five years. It also provides more knowledge and greater flexibility especially where employees are time-poor. The same is presently occurring in the financial and banking sector operations where financial institutions are moving their business to employees...
(B2E) by providing everything through their online services, group software, internet and intranet online space. As stipulated by Hallberg (2003), the Open System Interconnection (OSI) is a reference model that conceptually describes how networks work. It also explains the International Standards Organization (ISO) body that defines many quality standards, including network standards that are also being related to online virtual networking operations.

2.4.3.2 Group work interoperability quality management standard

“Collaborative working among distributed teams is becoming a ‘must’ due to globalisation and ICT technologies (mainly Web based) are the key enablers of this new working paradigm; The so-called Collaborative Working Environment (CWE) objective is to develop new collaborative working platform to support collaboration among teams” Sorli and Stokic (2008 p. 325). The evolutionary process of Enterprise Integration in the manufacturing sector has led to the development of international quality management standards namely the ISO TC 184 started in 1979 as supported by academic and industrial research (Bermus and Fox, 2005). As described by Martin (2004) as cited by Bermus and Fox (2005), convener of ISO TC 184/SC 5/ WG 1 addressed a series of papers regarding group’s working electronic communication and working group collaboration in relation to the establishment of new international standards in automation also relating to some extent to virtual teamworking.

As mentioned by Dugmore and Lacy (2007), ISO/IEC 20000 was the first IT Service management process standard produced by the International Organization for Standardisation (ISO). ISO/IEC 20000 assesses whether service providers have best practice, reliable, repeatable and measurable processes applied consistently across their organization. The clause-by-clause guide to achieve ISO/IEC 20000 series includes management responsibility, PDCA Cycle, service level management, service reporting and continuity, supplier management, change management, problem management and many others (Dugmore and Lacy, 2007 pp. 8-9). All these will not be achieved without proper virtual teamwork where employees are physically separated by time and space in the same organization.

‘Integrated service management part of ISO/IEC 20000 promotes the adoption of an integrated process approach to effectively deliver managed services to meet the business and customer requirements’ (Dugmore and Lacy, 2007 p.9). Integrated service management is the integration of process, people and technology for effective service management (Dugmore and Lacy, 2007 p.11). As the banking sector is moving fast towards automation with new technological know-how and quality management systems, the interaction of human-computer is also becoming an important state of the art in enterprise integration. In the future we may have a similar ‘e-quality
management’ standard for organizational electronic teamwork with advance use of technology in the service sector in line with the continuous improvement philosophy.

2.4.3.3 Information and communication technologies in virtual teams

Competencies identified by Drew et al., (1997) as cited by DeGori and Zhao (2008) as required for virtual teams are information transmission and amplification (ensuring information is available any place, any time and to anyone who needs it within the network); and adaptivity and learning (promoting a continual process of reflection, learning and reinvention as new opportunities emerge and others fall away). DeGori and Zhao (2008) mentioned that without appropriate coordination of work through technology may result in losing regular contact with the team members’ host organization. They also identified several kinds of technology which can assist in making coordination of virtual teams relatively simple and highly effective. These are as follows:

- Teleconferencing
- Video-conferencing and desktop video conferencing: A camera is mounted to the monitor and team members are able to see and hear each other as though having meeting in an office (Lipnack, 1997 cited in Cantu, 1997).
- Group software: Enables multiple people to work on the same document at different times. Group software allows team members to work together on projects by sharing ideas and information, and taking part in discussions with all team members. Group software offers security capabilities so that important or confidential information is not compromised when working together with individuals outside of the organization (Cantu, 1997).
- Internet base: Newsgroups, bulletin boards and electronic mail.
- Intranets: Intranets increase the potential for collaborative work. Intranets provide team members with the ability to view each others’ progress and assist each other in trouble shooting (Lake, 1997 as cited by Cantu, 1997).
- Web-based conferencing: An asynchronous tool that may facilitate the considered reflection and dialogue that is often difficult to achieve through e-mail alone (Lipnack, 1997).

2.4.4 Organizational electronic teamwork and interactive working (e-Teaming)

‘Teamwork is very important in information systems development. Teamwork has been the norm for the development of many information systems (IS) (Wells, 2002 p.1). The introduction of a communication technology into a UK service sector organization, guided by the Learning Alliance has led to a virtual team of development staff providing support to over 100 organisations to solve the problem of wastage (Conner and Finnemore, 2006). With e-Business involving changes in five
interwoven factors namely people, process, organization, business models and technology, e-Teaming is a new sociotechnical issue regarded as the new form teamworking approach. The recent research work done by Conner and Finnermore (2006) suggests that e-Teaming is being used and that the e-Teaming methodology is built upon the model of effective teaming. The e-teaming methodology used was done as a pilot study by Conner and Finnermore (2006) in a highly functional digital team room, replacing the physical room whereby managing individual work, projects and team meetings were investigated. The alliance team pilot provided valuable results showing benefit for individuals, for the group, to the team climate and leadership. Dependence on face-to-face meetings has been reduced and the efficiency of virtual teaming improving continuously is being explored. Team work is reported to be more focused as everyone on the team is committed, their roles are clearly defined, norms of behaviour are fully set in advance and team members agree on how they will work together in the virtual workplace. e-Teaming’s approach to principles of adult learning and change management also relates to peer coaching, role modelling, action and situated learning.

Figure 2.5: e-Teaming LTD (adapted from Conner and Finemore, 2006).

As stipulated by (Conner and Finemore, 2006) the focus of e-Teaming methodology is on team processes which also triangulates teams, tasks and technology as shown in Figure 2.5 with changes in organization settings. By the convergence of teams, tasks and technology in the concept of e-teaming, there is improved productivity leading to better performance and results. The UK based service sector company’s experience is relevant to this literature review, as the interconnectivity of teams, tasks and technology has also been introduced in the banking sector which has been observed during the participant observation and other mixed methods. The Continuous Improvement Teamworking Approach is different to the e-Teaming concept as illustrated by Conner and Finnemore (2006) as it involves virtual teams and conventional teams, tasks and technology in a continuous improvement environment. Conner et al., (2003, p.81) as cited by DeGori and Zhao (2008: p.194), proposed a virtual team model which described the
combination of training and technology to produce consistent and defined group norms and
processes. They also mentioned that a proximal work group is a team in which team members
interact regularly in order to perform work-related tasks. Task orientation importance for effective
teamworking and good team climate was also supported in an exploratory study with 78 teams by

2.4.5 Group decision support systems, e-collaboration and groupware

As mentioned by Rura-Polley and Clegg (1999), collaborative quality in management is
important as new collaborative organizational forms bring together organizations with clearly
defined core competencies that outsource peripheral activities. Also, Australian competitiveness
relies on businesses collaborating in order to leverage their competitive position and to reduce risk.
As mentioned by Nemiro (2004), various works on collaborative work systems have been done
relating to the integration of Six-Sigma and high performance organizations for sustainable work
systems, building collaborative organizations, creativity in virtual working arrangements, the
have written on the move toward virtual working, technology for virtual teams, virtual team
complexities, managing virtual workers (using the “caring-daring and sharing” approach), success
strategies, communication strategies, change management aspects, and supporting systems for
virtual team. Kock (2005) studied the use of e-collaboration for business process improvement. His
work over recent years has led him to the definition of the term “e-collaboration” as a fast
emerging area where information and communication technologies support distributed teams.

The use of e-collaboration tools, when properly done, can improve the speed and reduce
the cost of implementing Six-Sigma, ISO 9000 quality management systems, and capability
maturity model (CMM) certifications (Kock, 2005). As described by Mandviwalla (1993), a
significant number of collaborative systems have been developed, documented, and researchers
refer to these systems with a variety of terms such as group decision support systems (GDSS),
computer mediated communication systems (CMC), group support systems (GSS), computer
supported cooperative work systems (CSCW), and groupware. Groupware is generically used to
describe information systems that support collaborative work groups and typically has a multiple-
user component (Mandviwalla, 1993). Collaborative computing is changing how information
moves and is managed in business. Emerging groupware environments enable workers to
collaborate through internet-worked computers and interact freely to achieve a common purpose
(Khoshafian & Buckiewicz, 1995). The collaboration in relation to virtual teamworking as
described by various authors is shown in Appendix 3. For instance, in the banking sector, the
collaborative group tool and computer-mediated interpersonal communication being used allows
the senior manager, in designing a meeting with other managers, to use the group support system and group software. In the online meeting, the chairperson gives instructions to staff on tasks to be done and main focus on a weekly basis to achieve set organizational objectives.

2.4.6 Business process improvement through e-collaboration

As mentioned by Duggan and Reichgelt (2006), since the Japanese quality revolution in the late 1970s to the latest invasion of quality goods from Korea and China has been the quality of information systems. In 1985, the world was just beginning to see the benefits of software development and IT systems. But since 2006 much change has been in the quality of IT systems. Most organizations need information systems quality but need improvement with competition and economical situations where organizations are reducing labour cost. How to manage the quality of software and systems for team members to continually work as a team in the process of Continuous Improvement Teamworking is important. As mentioned by Duggan and Reichgelt (2006) though the Information System (IS) discipline has been built on many of the concepts articulated by Deming and others, one of the major paradoxes of the present time has been the disparity between the many innovations that have been enabled by information technology (IT) and the failure of the IS community, comprising developers, managers and users to exploit these advances to consistently produce high quality IS that add value to organizations. This was mentioned as the “software crisis” as cited by Duggan and Reichgelt (2006). The Web-Based Supply Chain Integration Model, demonstrates the bottleneck process, and the gap between the ‘as-is’ and ‘to-be’ is defined. This shows whether Business Process Reengineering (BPR) should be used for change in process improvement (Al-Hakim, 2003 p.203).

2.4.7 INFORMATION SYSTEMS QUALITY IN SUPPLY CHAIN MANAGEMENT

The Information System (IS) community has embraced the underlying approach of continuous process improvement programs where process quality largely determines product quality (Deming, 1986 as cited by Duggan and Reichgelt, 2006). This was more evidenced in IS research in the field of ‘quality management’ by Harter et al., (1998), Khalifa and Verner (2000), Ravichandra and Rai (2000) as cited by Duggan and Reichgelt (2006). Internet based interaction for a quality management assistance programmes for SME’s was also mentioned by Dalrymple and Bottomley (2002). The current challenges, key issues, dimensions and implications of virtual teamworking in Information Systems Quality are reviewed and discussed in relation to the CIT Model/ CTIO Cycle.
2.4.7.1 Virtual teamworking for data and information dimensions

As illustrated by Al-Hakim (2007), to clarify the relationship between data and information, data are items such as activities, events, things, figures, numeric and transactions recorded, classified and stored but not organised to express specific meaning. Information on the other hand is data that have been organized in a way that gives them meaning for the recipient. Good data quality will give good information quality while poor data quality will give poor information quality. For example, the Barings Bank, where poor data quality had provided incorrect financial statements resulting in economic scandals (Maier, Muegeli and Krejza, 2007). Data collection for financial statement through a continuous improvement initiative, using effective teamworking and virtual teamworking approaches, instead of only relying on one way of networking, will enhance data and information quality.

Thus, different team members interacting face-to-face and virtually together in a continuous improvement environment, will lead to better communication on data quality and information quality collected to be used for further communication with other stakeholders. Juran and Godfrey (1999) as cited by Al-Hakim (2007), define quality as “fitness for intended use”. However, the emergence of the Continuous Improvement Teamworking Approach as seen in the financial institution is seeking to illustrate that consideration is being given for employees involved in retail operations, decision-making and planning and service quality to effectively use data and information through normal face-to-face interaction and virtually to conform to specifications while meeting and exceeding customer expectations. Al-Hakim (2007) mentioned that information quality (IQ) is multi-dimensional meaning that organisations must use multiple measures to evaluate the quality of data and information.

2.4.7.2 Virtual teamworking for information quality (IQ)

As mentioned by Koronios (2006) cited by AL-Hakim (2007), issues of information quality (IQ) is becoming very important in the modern organization to make decisions very quickly in order to gain information superiority and competitive advantage. The concept of information quality has been brought to management attention because the current era is associated with widespread and successive waves of technology-driven innovations in information and communication technologies (ICT). Enabling technologies bring with them widespread connectivity, real time access and large volumes of data and information for banking staff to be used in their daily interaction domains. It is also becoming a mandatory requirements that organizations provide quality information expected by their customers (English and Perez, 2003) as cited by Al-Hakim (2007). Hence, Australian Financial institutions also do not want to run the risk of legislation that is obliging them to provide quality.
information through their employees to their customers. Furthermore, many organizations have found that resolving their information quality (IQ) problems in a continuous process and not in a single-phase process is the right approach. It may be that one solution may lead to new problems and employees at all levels have to work together in solving the information quality problems. This is where the Continuous Improvement Teamworking Approach comes into play as it is a continuous process of handling information quality through each team member interaction with each other in resolving problems relevant to the organization. In the Continuous Improvement Teamworking Approach team members continuously uses both face-to-face and virtual interactions to handle information quality to alleviate problems and perform better.

For instance, as mentioned by Al-Hakim (2007), in the financial sector on the 9th December 2005, brokers at the Mizuho Securities tried to sell 610,000 shares at 1 yen (0.8 US cents) each. The “typing error” which is an information quality problem brought chaos into Japan market trading causing the company to incur a loss of 27 bn yen or US $21bn. Hence, the involvement of human interaction virtually to input data is very important for free-of-error (degree to which data and information is correct), interpretability and objectivity of information quality. In a Continuous Improvement Teamworking Approach both the involvement of the face-to-face and virtual interactions are important for providing information quality to limit as far as possible simple errors like typing.

Loshin, 2001 (as cited by Bobrowski and Soler, 2007) mentioned that there are a series of tactical missions of bad quality data which make organizations incur higher cost. However, Bobrowski and Soler (2007), used a Data Quality Scorecard in their research for possible assessment of the data’s current condition to identify the greater causes of problems as potential improvement areas. Nevertheless, this approach was focused on costs related to poor quality without providing a framework to analyse if the cost of improvement is justified. The team members working together face-to-face and/or virtually are in a better position to assess the data’s current condition due to their experience in the daily operational activities in the retail service sector. Team members are closer to the daily scene and understand the quality of data for quality information in a better way than any one new or outside of the organization.

2.4.7.3 CI for information quality process control

For customer satisfaction to be realised, people concerned should consider continuous process improvement as a key management practice (Evans and Lindsay, 2005 as cited by Al-Hakim 2007). As mentioned by Al-Hakim (2007) process and people are no longer enough for achieving the
required output without the continuously improved procedures, policies and regulations in line with
the concept of Continuous Improvement as a derivative of TQM that control the conversion process.
Information Quality dimensions need to be based on the same principles of Total Quality for Service
which as listed by Evans and Linsay (2005, p.18) are as follows: Firstly, to focus on customers and
stakeholders; secondly, to consider participation and teamwork by everyone in the organization; and
thirdly, to have a process focus with Continuous Improvement and learning. The Continuous
Improvement Teamworking Approach illustrates a more focused and in-depth study in the same line
of Total Quality for Service researching key issues directly related to interaction and participation
through teamworking, virtual teamworking and Continuous Improvement principles. Virtual
teamworking for achieving effective and efficient quality information need to be further researched
as more focus has been on teamworking and Continuous Improvement. The knowledge gap in
Quality Information is that the notion of integrating both virtual teamwork and teamwork and CI for
effectively achieving the required output to perform better.

The Continuous Improvement in an environment of Information Quality System as described
by Al-Hakim (2007) illustrates the mechanism of the Information Quality System Process which
emphasises the importance of leveraging process and people, the information quality (IQ)
dimensions and information orientation. The term people refer to staff and users and the process
means the operational activities being done effectively through interactions to achieve better
outcomes in service organizations. The process alone will not result in well achieved performance
intended from the process without the involvement of the employees (Al-Hakim, 2007). The system
and communication means for the employees to interact together are also important. The Information
Quality dimensions and the Information Orientation form the control dimension of the IT system
process. To have an Information Quality System both the IQ dimensions and Information Orientation
are important. The Information Dimensions relate to issues that are important to customers while the
Information Orientation refers to an organization’s capability to effectively manage and use
information. In relation to the CTIO Cycle, the Information Dimensions and Information Orientation
relate more to the virtual and routine interactions for employees in the banking sector to work
together as a team. To achieve Information Quality Systems, the Information Dimensions and
Information Orientation are crucial for team members to interact virtually and achieve quality
customer service.

Thus, the interaction of team members to meet the customer’s need is very important when
using quality information. Information quality is important with banking sector becoming
competitive. In the case of customers seeking for quality information from the bank, information is
defined as data which have been organised in a manner that gives meaning for the recipient (Turban
et al., 2005 as cited by Al-Hakim, 2007). This means that customers in the banking sector are looking for accurate, error-free, reliable, effective and efficient information in processing their transactions and addressing their concerns. To provide such information quality, people working in the banking sector need to interact together well by working effectively as a team, properly use the available interactive systems and technology, while adopting the concept of Continuous Improvement to eventually provide superior customer service.

2.4.7.4  **IQ using virtual networks in operational service sector**

As mentioned by Melkas (2007), networking and virtualization networks are calling for new ways of looking into information quality by utilizing well-being technology. There has been a growing use of virtual communication in many organizations. The real goal of information quality is to enhance customer satisfaction (English, 1999; Huang, Lee, and Wang, 1999 as cited by Melkas, 2007). Networking and virtualization is not only the concern of companies, but for public organizations, cooperatives and non-governmental organizations which are forming networks (Melkas, 2007). A study done by Melkas (2007) identified both weaknesses and strengths in network collaboration affecting management of information quality. There has been a rapid increase in networking and virtualization within many organizations. Boonyathan and Al-Hakim (2007) studied the procedure for modelling and improving E-Supply Chain Management Processes. Many researchers in recent years have also studied virtual organizations, virtual enterprises and virtual teams (Duarte & Tennant Snyder, 2001; Handy, 1995; Holton, 2001; van Hout & Bekkers, 2000; Kotorov, 2001; Lipnack & Stamps, 1997; Miles & Snow, 1992; Putnam, 2001; Rouse, 1999; van der Smagt,2000; Voss,1996 as described by Melkas, 2007). Nevertheless, very little work has been devoted to the requirements placed on the effective utilization of hybrid team, where a mixture of both conventional teamworking and virtual teamworking are used for better operationalization of the retail service sector despite the growing use of information technology.

As mentioned by Melkas (2007), the way the person on duty interprets the customer’s message and transfers the information forward to the collaboration network may have a major impact on service quality. Thus, the interaction of the staff on duty with other team members in the banking sector using the available information technology does have an impact on the quality of information and service to be provided to address customer’s concern. The research done by Melkas (2007) demonstrated that information quality planning by organizations or networks has been possible. Melkas (2007) research had been a first attempt to study quality in the branch of safety telephone services in Finland and that the results of the information quality analysis can also be utilized in individual organization’s quality management systems. An information quality analysis could form
one element of a general quality assessment at the networked collaboration level. The valuable interview data have contributed to the basis for action and scientific recommendations. The results of this investigation were incorporated into the general quality recommendations that were recently formulated for the whole branch safety telephone services in Finland. This research had opened up two new insights into the directions of analysis and management of information quality and service networks based on virtualization.

2.4.8 Problem-Solving approach using virtual teamworking

As explained by Quality World (2009), lean Six-Sigma is a systematic problem-solving approach to business improvement that uses iGrafx, Minitab 15, Enterprise Process Mapping/Library using SQL Server, Process Management Control System and other software to improve performance while communicating electronically with team members. These were used to a lesser extent previously in quality circle teams. For instance, as mentioned by Simpson (2008), the use of the PDCA problem-solving approach in ISO 9000, also involves codes of practice for information security management (Such as ISO/IEC 17799) to identify risks with the use of online services for team members to communicate virtually when working on quality projects.
2.4.9 Mapping literature to the research field

Figure 2.6: The mapping of a study into the problem-solving approach using the CTIO Cycle from three key knowledge domains.

The mapping of the research fields to position the research study is done. Routine teamworking, virtual teamworking and Continuous Improvement have been triangulated for positioning of this research study. Here the research tasks were at the interface between the three areas of relevant literature. Each of the three knowledge domain areas are distinct, but yet provide a focus for an area of study in the problem-solving activity and interaction medium of teams. For instance, relevant studies on CI to this research task have literatures on continuous improvement process, problem-solving cycles, human-sigma, teamwork, process improvement and so on. While relevant studies on teamworking have related knowledge domains on teamworking approaches, quality circles, problem-solving approaches and so on. Finally, virtual teamworking demonstrates relevant literatures on human-computer interaction, enabling technologies, electronic teamwork/e-teaming,
online virtual group interoperability, e-collaboration, information quality, virtual networks and the problem-solving approach. Between CI and teamworking, the PDCA Cycle and the Six-Sigma DMAIC Cycle problem-solving approach, seems to be more common. For CI and virtual teamworking, the Six-Sigma DMAIC cycle and information system quality, seems to be more related. However, between teamworking and virtual teamworking, virtual interoperability, information quality, PDCA and DMAIC problem-solving cycles, seems to be more related. Hence, the common overlapping field emerging from the three main areas of literature relevant for this research task has been the problem-solving approach and interaction medium used by team members in routine team working, virtual teamworking and CI. Figure 2.6 summarises the mapping exercise between the three key knowledge domains, which helps the research task to be more focused and discerning in the way the literature has been explored.

2.4.10 Conclusion

Continuous Improvement is an inherent part of TQM developed in the manufacturing sector and now shifted in the service sector. The PDCA cycle also has a linkage to the Six-Sigma DMAIC cycle though there are differences in their approaches. CI and TQM through Quality Circles, ISO 9000 and Six-Sigma have also been initiated in the banking service sector. Without teamwork, CI and TQM can not be implemented. Virtual teamworking is another knowledge domain being incorporated in the CI and ‘quality management’ philosophy where there is a gap in literature. A large amount of research on CI, teamworking and virtual teamworking have now been undertaken into the development of ‘quality’ and ‘information quality’ concepts for the service sector. The triangulation of CI, teamworking and virtual teamworking to show the mapping of the Continuous Improvement Teamworking Approach evidenced by the CTIO Problem-Solving Cycle is envisaged. Hence, the key theme relevant to this study, emerging from literature of the three core knowledge domains is the interaction medium and problem-solving approach. Figure 2.7 summarises Chapters 1 and 2. To further contextualise this research, the crafting of the CIT Model realised by the CTIO Problem-Solving Cycle framed from the various knowledge domains available from literatures will be described and discussed in the next chapter.
SUMMARISING CHAPTERS 1 AND 2

Figure 2.7: Summarising key features of the research from chapters 1 and 2.

1. Rationale for research from classificatory framework: Emergence of CIT Model.
   Deregulation ➔ Competitiveness ➔ CI ➔ Teamwork ➔ E-teamwork

2. From literature

Continuous Improvement (CI)

CIT Model: Interaction/Problem-solving approach

Virtual Teamworking (VT)

Virtual Interaction (VI) medium – GAP in literature

Face-to-face Interaction (FF) medium. Research performed by many researchers

Teamworking (T)

Continuous Interaction (COI)

3. Identifying two research questions: Interaction and problem-solving approach

4. Crafting of CTIO (Concern-Task-Interaction-Outcome) Cycle from other problem-solving cycles and determining team type using the work of Atkinson (1999) to be used in CTIO problem-solving approach in the next chapter.
Figure 2.7 summarises the key features of the research leading to the identification of two research questions related to interaction of team members and the problem-solving approach. This was achieved from the context of research in retail banking as explained in the research rationale and the triangulation of the three knowledge domains. Researchers have been focusing their research on CI and teamworking, where there has been a gap on research between CI and virtual teamworking. This is why this research will be focusing on the triangulation of CI, traditional teamwork and e-teamwork.

Firstly, the research rationale through the classificatory framework (Chapter 1) demonstrated the importance of CI, teamworking and virtual teamworking integrated together to show the emergence of the Continuous Improvement Teamworking (CIT) Model. Secondly, the classificatory framework facilitated the focus of the literature review on CI, traditional teamworking and virtual teamworking to identify the interaction medium and the problem-solving approach in the mapping of the two key themes. Thirdly, this had led to the identification of the two research questions to be refined in the methodology chapter. Fourthly, to evidence the CIT Model, the CTIO Problem-Solving Cycle was crafted and framed from other conceptual problem-solving cycles with more emphasis on the PDCA Cycle, DMAIC Cycle and action research cycle as will be demonstrated in next chapter. Eventually, the work of Atkinson (1997) was also further developed to show the approach of the Continuous-Task-Interacting-team (CTIT) type and structure used to implement the CTIO Problem-Solving Cycle. These are further explained in Chapter 3.
CHAPTER 3

CRAFTING THE CTIO PROBLEM-SOLVING CYCLE AND THE FRAMING OF CONTINUOUS-TASK-INTERACTING-TEAM (CTIT)

Eliminate barriers that rob hourly workers of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality. Deming (1982)

Create cheerful workplaces where humanity is respected, exercise people’s capabilities to bring out their limitless potential, change the shop floor attitude in aiming for ever increasing goals. Ishikawa (1989)

3. Chapter overview

This chapter elaborates on the framing of the CTIO Problem-Solving Cycle to evidence the CIT Model after the literature review on routine teamworking, virtual teamworking and CI. It illustrates the theory development of the CIT Model realised by the CTIO Cycle and CTIT. Firstly, the framing of the CTIO Cycle is developed and further demonstrated from other conceptual problem-solving cycles. Most of the cycles underpin the foundation for structuring the CTIO Cycle. Teams using the CIT Model realised by the CTIO Cycle with the effect of employee involvement through the consultative, participative and interactive approaches have been named Continuous-Task-Interacting-Teams (CTITs). Secondly, the problem-solving teams in the ‘total teamwork way’ following work done by (Atkinson, 1997) is further developed to illustrate the CTIO Cycle and CTIT. The CTIT has been defined as a team which is continually interacting together towards resolving a concern by addressing tasks within team control and working environment. This is achieved through face-to-face interactions and/or virtually relating to a common set of organizational objectives for achieving productive performance of operations. Finally, the proposed problem-solving model of the CTIO Cycle with key features and challenges are illustrated.

3.1 The Theory Development of the CIT Model Realised by the CTIO Cycle and CTIT

The theoretical development of the CIT Model evidenced by the CTIO Problem-Solving Cycle and CTIT is illustrated in next paragraphs. The CIT Model is part of the CTIO Cycle. Firstly, the foundation for structuring the CTIO Problem-Solving Cycle from other problem-solving conceptual cycles (such as PDCA Cycle, DMAIC Cycle, Ethnographic Research Cycle, Action Research Cycle, Integrative Research Review Cycle, Survey Research Cycle, Experience Learning Cycle, Data Evolution Life Cycle, Meeting Cycle and many others) has been demonstrated in this chapter to show their affinities and linkages. Secondly, the foundation for framing the problem-solving CTIT (Continuous-Task-Interacting-Team) from other problem-solving teams to be used in
the CTIO Problem-Solving Cycle has been further developed from the work of Atkinson (1995). Atkinson’s (1997) work has been more about problem-solving team type rather than problem-solving cycle approaches or methodologies.

3.1.1 FRAMING AND LINKAGE OF THE CTIO CYCLE FROM OTHER CONCEPTUAL PROBLEM-SOLVING CYCLES

Progress in social science comes from building on the efforts of those who have worked before.

Cooper (1989)

Firstly, the framing and linkage of the CTIO Problem-Cycle with other conceptual problem-solving cycles is demonstrated. Both CI with routine teamworking represented by face-to-face interactions and CI with e-teamwork represented by virtual interactions as shown in Figure 2.7 can assist for better performance in the service sector which is central in the CIT Model. The successful completion of any problem-solving team project to achieve good results can be facilitated by using both face-to-face and virtual interactions considering the CIT Model. The benefit of combining the CIT Model which triangulates the concepts of CI, teamwork and e-teamwork with key features of other conceptual cycles in grafting the CTIO Problem-Solving Cycle can assist the retail banking sector to achieve productive performance. Most of the conceptual cycles use more face-to-face interactions rather than virtual interaction media, but have some relevant features, tools and techniques, which, when linked with the CIT Model, can assist problem-solving teams to work as a dynamic team on quality projects. This will benefit the organization and problem-solving teams to save time in communication by also using group electronic communication, better team convergence with integration of enabling technologies, develop online team relationship, use of better network features with B2E, better quality of data and information, virtual networks, enhance trust, and many others.

3.1.1.1 Continuous Cycle

As mentioned by Dalrymple (1999), the numerous international business framework and quality models encompass and incorporate many of the Shewhart and Deming ideas including the PDSA cycle. When properly deployed, these will strengthen organizational efficiency, effectiveness and competitive position. ‘Applying the rotation of strategy formulation, deployment, and assessment on an annual or similar basis is essentially equivalent to implementation of Deming’s PDSA cycle at the organizational level, applied with the goal of organizational excellence in mind’ (Dalrymple, 1999). As explained by Booth (2008), the notion of a Continuous Cycle shows that the organisation recognises that nothing is ever unchanging and no sooner is a way found to satisfy customers than the customers’ requirements change. For organisations to succeed in the future, the challenge is to develop the ability to instantly respond to the changing environment in the process of a Continuous Cycle. To deliver the required products and service that flexibility and responsiveness are built in,
organisation should use the mechanism of constantly checking and reviewing using the Continuous Cycle. Exceed (2009), mentioned their approach of the Continuous Improvement cycle in their coaching plan for every project which consist of Deming four elements namely Plan-Do-Measure and Learn (PDML). ‘The PDML cycle is an effective team-involvement tool and forms the basis for a Lesson Learnt database and Best Practices, which are continually reinforced at leadership level and reflected in changed KPI’s, updated business processes, and continual modelling and monitoring’ (Exceed, 2009). For instance, Chetty (1999, p. 1), described the process of action research as a Continuous Cycle of planning, action and review of the action in the problem-solving approach. The different Continuous Cycles in the process of a problem-solving approach linked to some extent to the CTIO Problem-Solving Cycle are illustrated in the next few paragraphs.

3.1.1.2 Problem-Solving Cycles

Deming PDSA or PDSA Cycle or Deming Cycle for Integrated Operations Management

CTIO Cycle Linkage to Deming PDSA Cycle is illustrated. The variant PDSA Cycle of the traditional Deming-Shewhart PDCA Cycle is a simple methodology for Continuous Improvement (CI). This learning loop of planning, doing, checking, and acting stages in the Deming cycle is shown in Figures 3.1 and 3.2. ‘The P-D-C-A cycle is a set of steps to be repeated in the pursuit of continuous improvement’ (Hanna and Newman, 2007 p. 125).
The CIT approach adopts the philosophy of the PDCA Cycle with its systematic problem-solving method. The CIT approach integrates teamwork into the process improvement cycle inclusive of traditional (routine) teamwork and virtual teamwork. With globalisation, technological advances, virtual organizations, deregulation, and organizational competitiveness, the amalgamation of teamwork with virtual teamwork, as a hybrid team, is being envisaged. The use of hybrid teams has only recently emerged given technological and societal advances. However, it is important to note that the original quality circles, which in the 1980's used the PDCA problem-solving approach, placed increasing emphasis on teamwork rather than virtual teamwork in organizational importance, while using only telephone and faxes as virtual interaction media.

The PDCA cycle is also known as PDSA approach. As described by Sargiacomo (2002), the PDSA Cycle problem-solving approach was used in the service sector and had shown improvement in service delivery and also reduced customer complaints. The PDSA as demonstrated by Sargiacomo (2002) is illustrated in Figure 3.2. Some of the PDCA or PDSA cycle uses the same quality tools as described by (Quality Systems, 1996; Robson, 1988; Evans and Dean, 2003). The integration of these key quality tools in the CIT Model realised by the CTIO Cycle will assist in achieving better performance using the problem-solving approach.

3.1.1.3 Six-Sigma methodology (DMAIC cycle) for Integrated Operations Management

DMAIC Cycle, shown in Figure 3.3, is a problem-solving cycle related to improvement and achieving better customer service in the service sector. As mentioned by Pyzdek (2000), it is used by organizations to continuously monitor customer requirements and assess process performance. Six-Sigma is a derivative of TQM (Total Quality Management) emerging in the late 1980’s as a way for an organization to solve quality problems and maintain improvement. The successful completion of a Six-Sigma team project can be through the effective use of team members both virtuously (involving trust, integrity and virtue as mentioned by Ahmed, 2002) and virtually to work as a team to achieve good results linked to the CIT Model. Thus, this linkage can also be framed by combining the CIT Model with Six-Sigma in grafting the CTIO Problem-Solving Cycle. The benefit of integrating the CIT Model to the DMAIC Cycle will enhance the use of virtual interaction media and e-working in the CTIO Cycle through virtual teamwork. The CTIO approach illustrates the interaction of team members using both face-to-face and virtual interaction media with the manager and other team members to work better as a dynamic team on any available project in line with organizational objectives. As explained by Pyzdek (2000) and Spector (2006), a Six-Sigma Cycle problem-solving approach has two key methodologies, namely the DMAIC (Define-Measure-Analyze-Improve-Control) and DMADV (Define-Measure-Analyze-Design-Verify). Design for Six-Sigma (DFSS) is a systematic methodology deployed via a framework
known as DMADV which is derived from DMAIC as described by Pyzdek (2003).

Figure 3.3: The DMAIC methodology as a six sigma problem-solving application in the financial services (Evans and Lindsay, 2005 pp 488-491).

DMAIC is used to improve an existing business process while DMADV is used to create new product designs or process designs in such a way that it results in a more predictable, mature and defect free performance. Some people have used DMAICR (Realize). Another nomenclature for Six-Sigma is the DMEDI method which is similar to the DMADV process using a different acronym, DMEDI which stands for Define, Measure, Explore, Develop and Implement. However as mentioned by Pande, Newman and Cavanagh (2000), Six-Sigma has been helping leading international organizations save millions of dollars by producing more satisfied customers. Nevertheless, there has not been an in-depth step-by-step practical guide with simple real case examples, available to help managers fully implement Six-Sigma. The notion of completing a successful Six-Sigma project is the effective use of team members to achieve good results. This is why the Continuous Improvement Teamworking Approach through the CTIO Cycle illustrates the interaction of team members face-to-face and virtually with managers and other team members to work better as a team on any available project. Many companies had some problems with implementation of Six-Sigma, while others had trouble staying on track according (Pyzdek, 2000).

Examples of some key tools for Six-Sigma as illustrated by Pyzdek (2000) and Spector (2006) are 5 whys, annova, annova Gage R & R, axiomatic design, catapult exercise on variability, cause and effect diagram (a.k.a. fishbone/Ishikawa Diagram), Chi-Square Test of independence and fits, control charts, root cause analysis, pareto diagram, statistical process control, correlation, customer survey, design of experiments, failure modes effects analysis, histograms, process maps, regression, run charts, stratification, thought process map, general linear model, CTQ tree, Taguchi, homogeneity of variance and others. The integration of some common quality tools such as 5 whys, fish bone diagram, Pareto diagram, tree diagram, and some others as used in the PDCA cycle can be amalgamated in the CIT Model to frame the CTIO Problem-Solving Cycle methodology.
Some of these tools commonly used in the PDCA Cycle and Six-Sigma DMAIC Cycle have been used in the two case studies in Study 2 reported in chapter 6.

3.1.1.4 Ethnographic Research Cycle

The ethnographic research cycle is a problem-solving approach (Spradley, 1980). The cycle for collecting, recording and analysing ethnographic data is illustrated in Figure 3.4 using the Ethnographic Research Cycle. This method has been implemented in a major Australian banking organization through the participant observation study (chapter 5) by the researcher on the use of the CTIO Cycle. The process of showing the linkage and interaction media are illustrated in Figure 3.4. The mode of ethnographic inquiry was used on a topic-oriented ethnography (Spradley, 1980) which narrowed the focus to one or more aspects of CIT. The objective was to focus onto the selective observational process (Spradley, 1980) of participant observation regarding the adoption of virtual teamwork with routine teamwork in the retail banking sector.

Figure 3.4: The ethnographic research cycle as described by Spradley (1980 p.29) used for the participant observation in this study.

The process of narrowing participant observation was done by asking ethnographic questions using the 5W-1H (Why, What, Who, Where, When and How?) questioning skills common quality tool to find the core elements of the CIT Model/CTIO Cycle. Throughout the observational process over twelve months performed by the author as described in more details in chapter 5 (refer to Figures 5.2), several questions were asked using the 5W-1H quality tool (refer to Figure 5.3). The researcher analysed the responses to reach a reliable, relevant, focused and valid conclusion about the effectiveness of the CIT Approach. What the researcher felt and understood as part of the observational process was also considered while observing team members interacting virtually as a team. Both the Ethnographic Research Cycle and the CTIO Cycle have common problem-solving characteristics which have been used in the service sector. The Ethnographic Research Cycle may be considered as another linkage to the CTIO Cycle through the 5W-1H questioning technique, as there is a continual search through the participant observation study to diagnose and realize the CIT
Model. The Qualitative Research Cycle process adapted from Eckett, J. 1988, ‘Ethnographic research on ageing’, in Qualitative Gerontology, eds S.Reinharz & G. Rowles, Springer, New York, p.243 as cited by Minichiello, Aroni & Hays (2008) gives an illustration of how accumulated knowledge can be achieved by becoming increasingly deductive when the cycle continues to rotate clockwise until reaching saturation of desired knowledge. This reflects in some ways the Continuous Improvement cycle to continually look for incremental improvement. In doing the participant observation study, the 5W-1H Qualitative Continual Cycle Questioning Technique introduced by the researcher, was used in informal interviews while observing participants. Thus, the ethnographic questions using the 5W-1H questioning technique for the participant observation study as shown in the ethnographic research cycle followed the qualitative research cycle process is some ways.

3.1.1.5 Action Research Cycle

As described by Chetty (1999), the process of action research is defined as a continuous cycle of planning, action and review of the action. In the action research process cycle, the action is continually enriched by reflection, planning, generation of ideas, with creation of experiences and interventions which changes the way it is done and thought while working in the process (Chetty, 1999). As stated by Collis and Hussey (2003), action research is based within the phenomenological paradigm and it is an approach based on the assumption that the social world is constantly changing, and the researcher and the research itself are part of this change. The researcher being the facilitator in the two case studies of this research task as explained in chapters 6 and 7, was part of the change brought forward. They also mentioned that it was coined by Lewin (1946), who illustrated the process of inquiry as forming a cycle of planning, acting, observing and reflecting as shown in Figure 3.5. The planning stage is concerned with identifying an objective, which it is intended to achieve, and how this can be performed. After the first phase of action has been implemented, its effects are observed and reflected on before any modification of the overall plan. Action research as a type of applied research is a good tool to find an effective way of bringing about a conscious change in a partly controlled environment and monitor the results as performed in the case studies for this thesis work.

Figure 3.5: The action research cycle as a problem-solving approach (Collis and Hussey (2003, p.67), illustrated diagrammatically (kissoon, 2009).
Collis and Hussey (2003) stated the following important points which are very relevant to this thesis work especially with the use of the CTIO Problem-Solving Cycle to resolve the two major performance parameters in two retail branches of a major Australian banking organization. This further illustrates the linkage of the CTIO Cycle problem-solving approach to the action research problem-solving cycle. The crucial points as suggested by Collis and Hussey (2003) of the action research phenomenological methodology and applied in this research task undertaken by the researcher for the two case studies (chapters 6 and 7) are as follows:

- Problem-solving is better to be conducted in a single organization-(as performed in a major Australian banking organization) and is similar to a case study approach in many of its procedures.

- The main aim of the problem-solving approach is to enter into a situation and attempt to bring about change and review results-(The CTIO Problem-solving Cycle philosophy and methodology were twice implemented by the researcher in the major bank to bring change and review results before and after improvement).

- Improvement and team members` involvement seem central to all users of the term (Robson, 1993, p.349 as cited by Collis and Hussey, 2003)-(In the case studies team members were retail banking staff and management representatives from two poorest performing branches who participated in the CTIT and the CTIO Cycle methodology to achieve quality improvement).

- There is collaboration between the researcher(s) and practitioners. The researcher participates in the research process - (The researcher as the facilitator in case studies and member of the CTIT participated in this research task by collaborating with team members in field work).

- Some researchers prefer the term ‘action science’ which as stipulated by Gummesson as cited by Collis and Hussey, 2003). This refers to two main goals by solving a problem for the client and contribute to science – (The two case studies solved the two main problems in two least performing branches and contributed to new knowledge).

- The researcher investigates the whole, complex problem, but makes it simple enough to be understood by everyone - (By the combination of the PDCA Cycle and DMAIC Cycle quality management tools to develop the CTIO Cycle, the researcher investigated the problem of poor home loan sales referrals and poor customer satisfaction in the major bank and made banking staff understand the associated causes, root causes, solutions and implemented alternative solutions to remedy the two problems).

- Cooperation between the researcher and the client, feedback to the parties involved and continuous adjustment to new information and new events (The good association with the major bank and cooperation of team members in the two project works in two case studies
assisted to successfully obtain both tangible and intangible gains for both the organization and banking staff as explained in Chapters 6 and 7. The feedbacks given to participants in the retail branches by the facilitator assisted to continually adjust key issues which made both projects successful).

Following Chetty (1999) explanation about the continuous cycle of problem-solving approach, the researcher framed the CIT Model/CTIO Cycle for the purpose of justifying its problem-solving approach in the two case studies. As noted by Dicked (1992) cited by Chetty (1999), there are two aims of action research. Firstly, it has an action aim to bring about changes in the organization and secondly a research aims to increase knowledge and understanding for those involved in the research. The two case studies implemented in Chapters 6 and 7, using the CIT Model/CTIO Problem-Solving Cycle brought positive changes and the CTIO Problem-Solving Cycle Methodology using key quality tools have increased knowledge. This has shown the linkage of the CTIO Cycle with Action Research Cycle. However, the fully developed action research methods was not used as such in the two case studies because it was more about comparing the before and after improvement periods using quality management philosophy and tools. However, the Action Research Cycle problem-solving approach was found by the researcher to be a very effective methodology to be considered to justify the CIT Model/CTIO Cycle which involves more face-to-face interactions.

Figure 3.6: The action research cycle as a problem-solving approach for qualitative research (Cherry, 1999 p.2).
3.1.1.6 Integrative Research Review Cycle

Integrative research review can also be viewed from an integrated quality management view as described in Chapter 2, where common issues in problem-solving cycles can be integrated. The amalgamation of the common interaction measures from the face-to-face and virtual communication problem-solving cycles facilitate knowledge contribution through the emergence of the CTIO Problem-Solving Cycle. From Figure 3.7 the common issue is that the ‘problem formulation’ for the integrative research review is like the ‘concern’ stage of the CIT Model/CTIO Cycle. The issue of formulating the problem identified from the summarization of past research is a concern for the research community. This has been done in the literature review with focus on the problem-solving approach and interaction medium of the PDCA Cycle, Six-Sigma DMAIC Cycle and Information System Quality in relation to the CIT Model which triangulates the notion of CI, teamwork and e-teamwork.

Figure 3.7: The integrative research review cycle conceptualizing research projects as a guide for literature reviews (Cooper, 1989 pp. 13-16).

3.1.1.7 The Survey Research Cycle

The survey research cycle (also a problem-solving cycle) is shown in Figure 3.8. The CTIO cycle has a linkage with survey research cycle which is demonstrated in the personal survey conducted as Study 4 in Chapter 9. The personal survey cycle going through the stages of the research questions, CIT Model/CTIO Cycle conceptual framework, targeted population/sample, data collection, data analysis and findings presentation done, as explained in Chapter 9, has further evaluated the reliability of the CTIO Problem-Solving Cycle.
3.1.1.8 Experience Learning Cycle

Creed, Zutshi and Ross (2008: 330) as cited by Zhao (2008) stipulated that ‘E-learning and new forms of knowledge management are hallmarks of the global technology era and has described how IT literacy preconditions the current generation of learners toward acceptance of e-learning technologies as they are currently emerging’. Online learning tools as stated by Hegarty (2008: 347) as cited by Zhao (2008), ‘Enables reflection through public places of asynchronous (discussion boards) and synchronous chat rooms (multi-way) and personal spaces of Web logs or blogs, instant messaging and reflection journals; Online learning distributes online learning materials, involves interactive learning, good communication with two-way flow of information and ideas between e–tutor and e-learner and between e-learners’. In the experience learning cycle as a problem-solving cycle (Figure 3.9), there is a lack of e-learning usage, which can be evidenced by virtual interaction media using enabling technologies to facilitate online electronic learning. Thus, consideration can also be given by learning from experience involving both face-to-face (through routine teamworking) and virtual interactions (through virtual teamworking) in a CI initiative which can be realised by considering the CIT Model/CTIO Cycle.

Figure 3.9: The four stages of learning from experience showing a lack of virtual interaction through e-learning (Honey and Mumford, 2005 pp 1-7).
As explained by Honey & Mumford (2005), learning from experience is like a process and there are two different ways to have an experience. The first experience is what the person knows (reactive) and the second one is experience which is deliberately looked for (proactive). In the CIT Model/CTIO Cycle the experience of team members are of primary importance and needs to be shared among other team members. By keeping most of the team members in the team by acknowledging their valuable experiences is a key parameter for the success of the team. With team members experiences many factors affecting obstacles in the immediate place of work can be easily resolved through the CTIO Cycle rather than letting the problem growing from bad to worth. This is demonstrated in the two case studies.

3.1.1.9 Root Cause Hypothesis Analysis Cycle

The Root Cause Hypothesis Analysis Cycle (Hayler and Nichols, 2007) is illustrated in Figure 3.10, where the “Analyze” stage from any problem-solving cycle can itself be applied in Process Improvement as a cycle. The cycle is driven by generating and evaluating “hypotheses” (or “educated guesses”) to the cause of the problem. The causes are evaluated by using available data obtained from processes. Each of the hypotheses are refined or rejected according to severity of the causes. The vital causes leading to the root causes are selected and confirmed for affecting the process in the process improvement cycle, which can be found by team members using both face-to-face and virtual interactions. Hence, root cause analysis is used to analyse the source of quality problems for quality improvement. Similarly, in the “Task” stage of the CTIO Cycle, the Root Cause Analysis Cycle can be applied to detect the vital root causes using both teamworking and virtual teamworking interactions which shows a linkage of the two conceptual problem-solving cycles. The practical example as applied in the Case Studies 1 and 2 (chapters 6 and 7) demonstrates how the causes and root causes are precisely defined in the CTIO Problem-Solving Cycle. Root cause analysis had also been used in a typical closed loop system, for Zero Defects and PRIDE (Professional Results in Daily Effort) as a management tool (Wilson et al., p. 26).

Figure 3.10: The Root Cause Hypothesis Analysis Cycle to confirm the key causes in Process Improvement problem-solving approach (Wilson et al., 1993; Julisch, 2003 p. 11; Hayler and Nichols, 2007).
This shows the linkage of the CIT Model with the Root Cause Hypothesis Analysis Cycle in grafting the CTIO Cycle methodology which focuses more on the cause and root cause analysis. For instance, as illustrated by Infred and Sebastian-Coleman (2007), Galaxy data quality methodology combines elements of Continuous Process Improvement (CPI), Total Quality Management (TQM) and Six-Sigma methodologies to improve data quality where the root-cause analysis is used to analyse the source of quality problems for quality improvement.

3.1.1.10 Data evolution life cycle

The data evolution lifecycle, shown in Figure 3.11. At Credit Suisse, this conceptual model was used for illustrating information quality issues with improvements in the customer investigational process (Maier, Muegeli, & Krejza, 2007). The process consists of two connected data evolution lifecycles. The first evolution lifecycle is the customer inquiry process. It is specified by team member interactions. The second data evolution lifecycle is triggered by the application of the customer inquiry data. An illustration of this is: (1) An inquiry phase results in a new customer inquiry; and, (2) the reply phase produces a response to the customer inquiry.

Figure 3.11: The corresponding quality stages in the data evolution life cycle for data-oriented overview of the customer investigation process at Credit Suisse (Liu & Chi, 2002 as cited by Maier, Muegeli & Krejza, 2007 p. 57).

The CTIO Model implements a similar cycle in addressing customer issues and other concerns. The overall objective is the reliance on hybrid teams for resolution outcome. The data-oriented view of the customer investigation process relates mostly to data quality. There is nothing mentioned about team interaction in the data evolutionary life cycle. As such, it is unknown as to how a team utilizes the data generated by the use of the model in arriving at a valid outcome. The CTIO Model illustrates the interaction type being used in a CIT approach to effectively use quality data. The research conducted on CIT is important, as it has shown that using various media of communication, either or both face-to-face and/or virtually, is important for the effective operations of the organization. The Customer Investigation Process (CIP) is illustrated, as described by Maier, Muegeli and Krejza (2007) and carried out through banking staff interaction at Credit Suisse. Though there are many people from various departments, nothing is mentioned on how the team members from Credit Suisse interact as a team using the CIT approach in addressing the
concern raised by the inquirer. The CTIO model illustrates how team members interact routinely and interactively in addressing customer concerns to come to the right solutions.

3.1.11 The NEAT methodology data life cycle

Many problems have emerged due to poor quality data collected through team member interaction, to which many software engineers can attest. To address these problems, the NEAT Methodology provides a systematic way in determining data quality for developing an improvement plan (Bobrowski, Marre & Yankelevic, 2002). The improvement plan constitutes both corrective and preventive actions in order to maintain the quality standards eventually met. How these data are manipulated is of importance in terms of team members using the NEAT problem-solving methodology through face-to-face and virtual interaction. The latter, virtual interaction of team members, hinders incorporation of poor data into the system. The NEAT Methodology is aligned with the CIT approach in terms of acquisition of information in the concern stage of the CTIO Cycle. The methodology performs certain phases that are part of the CTIO Model including planning, measurement and diagnosis. The interaction phase of the CTIO Cycle involves aspects of the NEAT Methodology treatment and maintenance phases, where team interaction media offers critical support.

Figure 3.12: The Neat Methodology data life cycle (Bobrowski, Marre & Yankelevic, 2002 pp 135-162).

The only difference found between the NEAT Methodology and the CTIO Cycle is the team interaction aspect. The CTIO Cycle uses both face-to-face and virtual teamworking. It is unclear which type of interaction media the NEAT Methodology uses as part of any of the six stages.

3.2.20 Other conceptual cycle linkages using face-to-face and/or virtual interactions

Other problem-solving cycles having an affinity to the CTIO Cycle used in Table 3.2 and Figure 3.13 are illustrated briefly in Table 3.1. The Continuous Improvement Teamwork, realised through the CTIO Cycle using both face-to-face and virtual team interaction, is linked to other conceptual models (Table 3.1) such as: the Benchmarking Cycle; the Kolb’s Cycle; the Reverse Logistics and
Supply Chain Continual Cycle; the Approach-Deployment-Results-Improvement (ADRI) Cycle; the life cycle of risks (Read, 2009 p. 43) and many others. However, these cycles were not differentiated with other performance cycles in Table 3.1 and Figure 3.13. Table 3.1 presents a short description of each of these problem-solving cycles.

Table 3.1: Brief description of some other performance improvement cycles

<table>
<thead>
<tr>
<th>Problem-solving Cycle</th>
<th>Brief description of cycle</th>
<th>Interaction medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Action Learning Cycle (Booth, 2002 p.186)</td>
<td>Concrete Experience – Reflective Observation – Abstract Conceptualisation – Active Experimentation</td>
<td>More face-to-face interactions within group members</td>
</tr>
<tr>
<td>Data Quality Assessment Life Cycle (Bobrowski &amp; Soler 2007)</td>
<td>Problem Specification – Solution Design – Implementation – Results, Analysis &amp; Validation.</td>
<td>Face-to-face and/or virtual interaction not clear</td>
</tr>
<tr>
<td>The Information System life Cycle (Duggan &amp; Reichgelt, 2006)</td>
<td>Conceptualization – Creation – Consummation – Consolidation</td>
<td>More face-to-face between team members</td>
</tr>
<tr>
<td>RADAR Cycle (Al-Zamany et al., 2002)</td>
<td>Approach – Deploy – Assess/Review - Results</td>
<td>Interaction medium unclear</td>
</tr>
<tr>
<td>The Meeting cycle (Scholtes et al., 1992)</td>
<td>Design – Conduct – Carry Out- Collect</td>
<td>More face-to-face interaction. Virtual interaction gaining importance with technology</td>
</tr>
<tr>
<td>Cycle of Workplace Learning (Booth 2007)</td>
<td>Aptness – Adventure – Adherence – Art</td>
<td>Face-to-face interaction</td>
</tr>
<tr>
<td>The Analytic Cycle (Jorgensen, 1989 p.107)</td>
<td>Principles/Procedures- Analyzing-Theorizing</td>
<td>More face-to-face interaction from the standpoint of the methodology of participant observation</td>
</tr>
<tr>
<td>The project life cycle ( Hanna &amp; Newman, 2007 p. 201)</td>
<td>Conceptual study and organizational commitment – Development- Implementation- Project Completion and operation</td>
<td>Face-to-face and/or virtual</td>
</tr>
<tr>
<td>Other performance improvement cycles</td>
<td>not used for differentiation</td>
<td></td>
</tr>
<tr>
<td>Benchmarking Cycle (Goetsch &amp; Davis, 2000)</td>
<td>Measuring performance against that of best-in-class for development and realization of improvement goals.</td>
<td>More face-to-face</td>
</tr>
<tr>
<td>Kolb’s Cycle (Zete, 2002 p.318).</td>
<td>Experiential cycle (Experience-Reflect- Conceptualise-Experiment)</td>
<td>More face-to-face</td>
</tr>
<tr>
<td>Reverse Logistics and Supply Chain Continual Cycle (Chopra &amp; Meinhal, 2004)</td>
<td>Used for goods being return into the processes for re-manufacturing.</td>
<td>Face-to-face and/or virtual</td>
</tr>
<tr>
<td>Approach-Deployment-Results-Improvement (ADRI) Cycle (EFQM, 2009)</td>
<td>Of the Australian Business Excellence Framework representing international best practices evident throughout the company.</td>
<td>Face-to-face and/or virtual</td>
</tr>
<tr>
<td>Life Cycle of Risk (Read, 2009 p. 43).</td>
<td>Associated risk levels involved risk assessment</td>
<td>Face-to-face and/or virtual</td>
</tr>
<tr>
<td>The Holistic Care Model to care plans (Dalympole and Bryar, 2002 p.285)</td>
<td>Assess-Plan-Implement-Evaluate</td>
<td>Face-to-face and/or virtual interaction not clear</td>
</tr>
<tr>
<td>The Boyd’s (OODA) Loop (Lubitz &amp; Wickramasinghe, 2007 p.131)</td>
<td>Observation-Orientation-Determination-Action (depicting the processes for making critical decisions)</td>
<td>Face-to-face and/or virtual</td>
</tr>
</tbody>
</table>
3.1.2 Strengths and weaknesses of each of the cycles which underpin the foundation for structuring the CIT Model/CTIO Cycle.

The strengths and weaknesses of each of the conceptual problem-solving cycles have been demonstrated using the face-to-face and virtual interaction media. As reviewed, most of the conceptual cycles use more face-to-face interaction. Except the AIM Innovation Life Cycle, the Integrative Research Review Cycle, the Survey Research Cycle and the Data Evolution Life Cycle which use more virtual interactions. DMAIC Cycle and Meeting Cycle seem to be changing with the adoption of virtual interaction to communicate virtually with improvement in technology. The use of face-to-face and virtual interaction media was unclear in the Data Quality Project Assessment Life Cycle, the NEAT Methodology Data Life Cycle, the Radar Cycle and the Root Cause Hypothesis Analysis Cycle. Thus, the two key aspects in relation to the problem-solving approach and continuous interaction of teams in structuring the CIT Model/CTIO Cycle have been face-to-face interaction and virtual interaction.

3.1.3 Summarising related conceptual problem-solving cycles.

The various models (conceptual cycles) have been used from literature to show their inter-relationship, affinities and linkages to synthesize the framing of the CIT Model/CTIO cycle. These conceptual cycles are mostly used as a problem-solving approach in different settings, fields and organizations according to the specificity of the concern or issue or problem. For instance, the Total Safety Management Cycle is mostly used for aircraft maintenance where ‘safety’ is the key parameter and the NEAT Methodology may be more suitable in the medical sector where ‘diagnosis’ is the key domain. The CTIO cycle is suitable to the retail banking sector where ‘concern’ which relates more to customer satisfaction by addressing their concern is of greater importance. Similarly, the other conceptual cycles, have their linkages in different fields. However, most of these cycles use face-to-face interactions more than virtual interactions in the problem-solving approach. In using these conceptual cycles the affinity of CI and/or teamworking and/or virtual teamworking are of crucial importance. In this line of thought these conceptual cycles have a linkage in some ways with the CTIO Cycle. By considering the deficiencies in the current TQM/CI approach, the researcher has brought the conceptual understanding by articulating and proposing a synthesised and improved CIT Model evidenced by the CTIO Cycle relevant to retail banking sector derived from a variety of other relevant conceptual cycles. To discriminate between each conceptual cycle to the CTIO Cycle from literature, the problem-solving activity and continuous team interaction criteria are used to classify each one accordingly using a severity index (Zikmund, 2003) from 1 to 10. One is the lowest indicating a bad approach while ten is the highest severity score indicating a good approach in terms of continuous interaction and problem-solving approach. This is illustrated in Table 3.2 and Figure 3.13 (illustrating the different positioning of
the conceptual cycles). The different conceptual problem-solving cycles are demonstrated in the four quadrants in Figure 3.13.

Table 3.2: Showing the differentiation of the different problem-solving cycles relevant to the retail banking sector (1 is lowest and 10 is highest score).

<table>
<thead>
<tr>
<th>No.</th>
<th>Problem-solving cycles</th>
<th>Continuous team interaction level</th>
<th>Problem-solving level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PDCA Cycle (PDCA)</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>DMAIC Cycle (DMAIC)</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Kaizen cycle of growth (KCOG)</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Ethnographic research cycle (ERC)</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Action research cycle (ARC)</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>Group Action Learning Cycle (GALC)</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Integrative Research Review Cycle (IRRC)</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>Survey Research Cycle (SRC)</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>Experience Learning Cycle (ELC)</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>Root Cause Hypothesis Analysis Cycle (RCHAC)</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>Data Evolution Life Cycle (DELC)</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>NEAT Methodology Data Life Cycle (NMDLC)</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>13</td>
<td>Data Quality Project Assessment Life Cycle (DQPALC)</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>14</td>
<td>Information System Life Cycle (ISLC)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>Radar Cycle (RC)</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>NONAKA SECI Cycle (NSC)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>17</td>
<td>Total Safety Management Cycle (TSMC)</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>18</td>
<td>AIM Innovation Life Cycle (AILC)</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>Meeting Cycle (MC)</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>20</td>
<td>4A Workplace Learning Cycle (4AWLC)</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>CTIO Cycle (CTIO)</td>
<td>10</td>
<td>9</td>
</tr>
</tbody>
</table>
3.2 The Theory Development of CTIT from a Total Teamwork Way.

3.2.1 The framing and affinity of CTIT to the CTIO Cycle from a ‘Proactive Total Teamwork Way’ Approach.

The crafting of the CTIT to the CIT Model and CTIO Cycle as a ‘Proactive Teamwork Way Approach’ following work done by Atkinson (1999) is illustrated in Figure 3.14. Atkinson (1997) illustrated the development of problem-solving teamworking by suggesting that work is evolving from reactive problem-solving teams towards proactive process improvement teamworking. Atkinson (1995 p.32) drew an “analogy between a successful work team and a successful soccer team”. Atkinson (1995 p.33) illustrated the development of problem-solving teamworking and team type evolving in a multi-team operation. Atkinson (1995) mentioned the evolutionary process where the trend has been from voluntary improvement activities using quality circles, to workplace improvement teams where norms are expected. “A critical involvement mass is reached when participation in improvement activities becomes expected, rather than exception” (Atkinson, 1995 p. 33). The evolution in the workplace has continued to move on and developed teams with additional workplace responsibilities with self supervision and self-measured performance leading to self-management teams (Atkinson, 1995). As identified in a number of organizations in U.K by Atkinson (1995 p.33), two additional team types namely corrective action teams and process improvement teams were added to the
supportive triangle to eliminate problems continuously. As explained by Atkinson (1995), corrective action teams also referred to as “task forces” are inaugurated by management who define the problem and select the team members from appropriate work teams. Process improvement teams also known as re-engineering teams are proactive teams appointed by management, where team task is defined to examine part of the business rather than defining a problem. The team’s goal is to seek improvement to that part of the business. The new contribution to this total teamwork way is the virtual team, Continuous-Task-Interacting-Team (CTIT) and CTIO problem-solving approach as framed from other conceptual approaches.

3.2.1.1 The development of the CTIT from the CIT Model/CTIO Cycle as a ‘Proactive Total Teamwork Way’

It has been noted that there is a gap in literature regarding the Continuous Improvement Teamworking approach. A continuous improvement model was designed illustrating the voices of the customer and the process. However, in this model nothing was mentioned about the voice of the people as a team interacting face-to-face with digital electronic communication for running the business, which could be reflected in terms of the Continuous Improvement Teamwork approach. The effect of employee interaction, together with virtual teamworking through the consultative and participative approach of continuous improvement and teamworking led to the CTIT and CTIO Cycle as illustrated in Figure 3.14.

Figure 3.14: Showing the CTIO model and Virtual Teams new knowledge contribution to this total teamwork way (Kissoon, 2008a adapted from the work of Atkinson, 1997).
The first triangle in Figure 3.14 encapsulates the three workplace teams (quality circles, workplace improvement teams and self-management teams) evolved at different level and time (Atkinson, 1995). Then in the evolutionary process came corrective action teams followed by process improvement teams in the supportive triangle framework presented by Atkinson (1999). “Reactive problem-solving teams are continuously seeking to remedy current problems. Proactive process improvement teams are systematically reviewing and changing the way your business works, and also responding to ever changing customers’s expectations, should become the normal mode of business working” (Atkinson, 1995 p.34). Oviatt & McDougall (2007) mentioned the relevance of ‘Top Management Team’.

“The structure of the Total Teamwork Way positively supports the National Society for Quality through Teamwork (NSQT) concept of total quality - Everyone in an organization is personally managing and continuously improving their own process, and working together in teams to improve their service to the customer” (Atkinson, 1995 p. 34). In a model of teamwork as developed by Shapiro (1997), seven main factors were hypothesized for effecting teamwork. Also in another model proposed by Schermerhorn et al. (1995) as cited by Ingram et al. (1997), teamwork can be studied in a three-stage sequence, which identifies those inputs and throughputs leading to successful outputs. Nothing is mentioned about the continuous improvement and virtual activities of teamwork showing the gap in literature. The CTIO Cycle is different as it involves Team members interaction through the process of consultative, participative and interactive electronic communication networking. There has been a shift from quality circles to virtual teams through a proactive team approach as shown in Table 3.3 and Figure 3.14. The virtual team and the CTIT used in the CIT Model/CTIO Cycle in Figure 3.14, are incorporated as the new knowledge contribution to this total teamwork way as previously described by Atkinson (1997).
Table 3.3: Describing the types and differentiation of team with each team structure description (Kissoon 2007; 2008a). The problem-solving criteria and CTIT is the new knowledge contribution to discriminate between these team types.

<table>
<thead>
<tr>
<th>TYPES OF TEAM</th>
<th>TEAM STRUCTURE (Abbreviations: Time-T; Face-to-face-F; Continuous Interaction-C; Task-Oriented-O; Virtual Communication-V; Problem-Solving-P)</th>
<th>T</th>
<th>F</th>
<th>C</th>
<th>O</th>
<th>V</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Circle (QC)</td>
<td>QC is a group of employees who meet voluntarily to identify on-the-job problem causes and recommend solutions to management (Berk, 1995), while Goh (2000) talks of meetings of minds during a quality journey to attain customer satisfaction through continuous improvement and teamwork.</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Kaizen Team (KT) - DMAIC Define-Measure-Analyze-Improve-Control</td>
<td>Kaizen team (DMAIC) is evolved in the application of lean method in manufacturing settings. It is used for any intensive well-defined project with dedicated resources, where employees work 3 to 5 days full time away from their regular jobs with basic data collection already done and immediate implementation of typical team approach to cover desired work. Participant treated as if on vacation from regular responsibilities minimising handling of emails, voicemails etc…and spend 100% of their time on project (George, Rowlands, Price and Maxey, 2005).</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Self-directed work team or Self Managed Team (SMT)</td>
<td>Self-directed work team (SMT) are creative, problem-solving and empowered teams working on a day-to-day basis, setting their own goals and decide on the problem to be tackled (Conti &amp; Kleiner, 1997). Work teams empowered to make and control their own decisions (Evans and Dean, 2003).</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Corrective Action Team (CAT)</td>
<td>CAT is referred to as ‘task forces’ where management define the problem and select team members from appropriate work teams. Team is efficiently operational as members are practised problem solvers (Atkinson, 1997).</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Process Improvement Team (PIT)</td>
<td>PIT is a proactive team appointed by management with defined tasks for the part of the business to be examined. The team challenge is to seek improvement, working on the philosophy that there is always a better way of doing things considering time, knowledge gaining and improved technology. Members are re-engineering team, selected from appropriate workplace teams and include technology expert (Atkinson, 1997).</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Workplace Improvement Team (WIT) (Expected Norms)</td>
<td>WIT is supported actively by enlightened management. There is a growing degree of involvement by the workplace members. A critical involvement mass is reached when participation in improvement activities becomes as a norm. Common characteristics of team working involves induction processes, new staff selection relates to team working and enhancement of workplace team building activities (Atkinson, 1997).</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Virtual Team (VT)/e-Teaming</td>
<td>Virtual teams (VT) are groups of people who find themselves separated by distance and/or time, yet have common tasks to perform. The interactions of virtual team members will rely on electronic communications media such as e-mail, audio and video conferencing and web-based tools (Edwards and Wilson, 2004). Similarly as described by Conner and Finnemore (2003), virtual Teams unlike conventional teams, though physically apart, works across space, time, and organisational boundaries with links improved by webs of digital collaborative and electronic communication technologies. There is a reduction in dependency on face-to-face meetings through the use of phone and video conferencing and intranet as an important aspect of e-management. e-Teaming’s methodology is build upon the model of effective virtual teaming. Teams whose members communicate by computer using internet and electronic communication, take turns as leaders (Evans and Dean, 2003). Virtual teams are teams of people who are physically separated (by time and space), who primarily interact electronically and who may meet face-to-face occasionally (Gould, 2006 as cited by DeGori &amp; Zhao, 2008).</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>
Integrated Product Team (IPT) Customer driven team making substantial effort to collect customer-related information and maintain a high degree of focus on products and customers (Watson, 1998).

Problem Solving Teams (PST) Teams of workers and Supervisors meet to address workplace problems involving quality and productivity (Evans and Dean 2003).

Quality Improvement Team (QIT) Characteristics of QIT are cross-functional/multidisciplinary, voluntary, harness individuals’ energy and enthusiasm. QIT preconditions include trust strategy for TQM, commitment from senior management, clear aims with introductory workshop for facilitators and members (Koch, 1995 p.34)

Continuous Improvement Team(CIT) Continuous Improvement Team (CIT) was introduced by Edsoman (1995); Prajogo & Sohal (2004). They advocated CIT as a team using CI initiatives and teamworking in the organization, but nothing was mentioned about the virtual interaction of team members. Kissoon, (2008a) explained CIT as a team that is working towards resolving a concern through team face-to-face interactions and/or virtually relating to common goals set to achieve organizational objectives.

Continuous Task-Interacting Team (CTIT) (New revised definition in relation to CIT Model/CTIO Cycle) CTIT is a continuous problem-solving team which is continually interacting together towards successfully resolving team’s concern by addressing tasks within team’s control and internal working environment through face-to-face interactions and virtually relating to set targeted operational parameters and strategic objectives in achieving productive performance for the organization.

<table>
<thead>
<tr>
<th>Integrated Product Team (IPT)</th>
<th>Customer driven team making substantial effort to collect customer-related information and maintain a high degree of focus on products and customers (Watson, 1998).</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>CTIT is a continuous problem-solving team which is continually interacting together towards successfully resolving team’s concern by addressing tasks within team’s control and internal working environment through face-to-face interactions and virtually relating to set targeted operational parameters and strategic objectives in achieving productive performance for the organization.</td>
</tr>
</tbody>
</table>

**Table 3.3 (Continued)**

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3.3 Leading to the Continuous Improvement Teamworking Model related to the CTIO Problem-Solving Cycle

3.3.1 The proposed Continuous Improvement Teamwork Model.

The proposed CTIO Problem-Solving Cycle has been the interest of the researcher for more than a decade by working with different types of team as illustrated in Table 3.3. The researcher had won several Industry-Based Excellence Awards with some of the types team put into practical application for improving productivity and performance. The Continuous Improvement Teamwork Model/CTIO Cycle as shown in Figures 3.13, 3.14 and 3.15 is proposed based on the followings: (i) the classificatory framework to show the emergence of the CIT Model and to introduce the context of the research done in addressing only a problem in a major retail banking organization with some further development done; (ii) the framing of the CTIO Problem-Solving Cycle to evidence the CIT Model from other conceptual problem-solving cycles; (iii) the structuring of the CTIT to be used in the implementation of the CTIO Problem-Solving Cycle; (iv) author’s previous practical experience working in teams for nearly 15 years coupled with 10 years as lecturer in different management fields; (v) a gap in literature on continuous improvement and virtual teamworking aligned with virtual teams practice; (vi) observing what is really occurring in the workplace after working in a major leading retail Australian’s Bank for nearly three years;
(vii) the deductive and inductive reasoning approach; and (viii) the participant observation study conducted for 12 months (in two phases for a period of 9 months and followed by three months), and other qualitative and quantitative methodologies used in the mixed methods.

The following model is presented according to up-to-date understanding and observation presently being made in the retail banking sector. The focus is mainly in the retail banking sector as there are various interactions between team members especially when there is a concern. Thus, the CTIO Cycle is a virtuous and virtual circle which reflects the Concern (Issue)-Task (Action)-Interaction (Involvement and Connection)-Outcome (Result) phases. The CTIO cycle is illustrated in Figure 3.15.

### 3.3.2 Unique Features and Challenges of the Continuous Improvement Teamworking Model.

Firstly, the framing and linkage of the CTIO Problem-Cycle with other conceptual problem-solving cycles is demonstrated. All problem-solving cycle methodologies used in various projects need to have interaction of team members to achieve good results. Most of the interaction medium has been face-to-face to work on particular projects. With the advent of enabling technologies, the interaction medium has been changing with incorporation of virtual interaction media. Virtual interaction media are used in virtual teamworking with electronic communication technology providing ability to work together at a distance. Some of the enabling technologies used in virtual interaction media are conferencing, teleconferencing, video conferencing, web-based conferencing internet/intranet, electronic mails, group software, newsgroups, bulletin boards and others. Both traditional teamworking realised by face-to-face interaction and virtual teamworking realised by virtual interaction media relates to improvement and achieving better customer service in the service sector. The successful completion of any problem-solving team project is through the
effective use of team members both virtuously (face-to-face interaction involving trust, integrity and virtue as mentioned by Ahmed, 2002) and virtually to work as a team to achieve good results considering the CIT Model. The benefit of combining the CIT Model with the other conceptual cycles in crafting the CTIO Problem-Solving Cycle will save the team and management time, effective use of virtual interaction media, lead more towards B2E, team convergence, information quality, virtual working arrangement, e-training, e-learning, e-working, e-quality management, centralised backup with virtual networking, collaborative group tools and other computer mediated communication rather than just focusing more on face-to-face interaction of team members to work on a quality project. The CTIO Problem-solving approach illustrates the interaction of team members using both face-to-face and virtual interaction media key features with the manager and other team members to work better as a dynamic team on any available project and in their daily operational activities in line with organizational objective.

To further illustrate the practical unique nature of the CTIO Cycle due to its problem-solving approach, the following example is presented. The focus is mainly in the retail banking sector as there are various interactions between team members especially when there is a concern. A concern is an associated issue or problem or complaint raised by a customer. The emergence of virtual groupworking in banking organizations is an issue which has been observed beyond routine teamworking. To give an illustration of the CIT Model/CTIO Cycle, a customer perspective will be described as an example. A concern is raised by a customer to the Customer Service Officer (CSO) or front liner or other person representing the banking organization. When the concern is not within the level of the CSO to handle it, this is normally referred to other members of staff including the manager for possible action or task to be immediately done. The other party or team members in assistance and interacting together can be within the same place of work or co-located from another location outside the immediate place of work from the same company and may not be of the same hierarchical level. The online functional services, telephones, faxes, voicemails, emails, intranet, groupware and other interactive electronic communications media are used to resolve the customer query as soon as possible. In the context of the CTIO Problem-Solving Cycle, the organization managerial hierarchy and structure are normally followed. This means that staff does not interact with other persons in the organization at senior managerial levels as it is only the managers who communicate with the senior managers. After plausible alternative solutions have been proposed and effective action implemented by team members regarding the concern under investigation, the results achieved will be addressed by team members to resolve the problem. This will provide a suitable outcome by satisfying the issue or concern raised by the customer. Quality management issues such as problem-solving activities, cost control and brainstorming techniques to generate ideas are followed in the CTIO Cycle. Tangible and intangible benefits associated with the concern are normally considered. For positive results, the implementation phase needs to be successfully
completed. The result can be immediate or take a longer time according to the interactivity, connectivity and severity of the concern. The concern may be raised back in team meetings for possible follow-up, sharing of knowledge or as a good example to continually improved upon in line of Continuous Improvement. When a team is working to resolve a concern, then the CTIT can be used, as demonstrated in the two case studies (chapters 6 and 7).

The continuous improvement teamworking approach is presently being used in a major Australian banking institution where the concepts of teamworking, virtual teamworking and Continuous Improvement are amalgamated to foster better productive performance and improve customer service. By using a blend of both face-to-face interaction and virtual interaction together with Continuous Improvement, there is better productivity and improved performance. The retail banking sector has been chosen for the purpose of this study as it is the engine of the banking sector especially in an environment of severe competition and improvement in technological know-how. However, there are various other issues and challenges such as the reduction of process, operational and social awareness with virtual teams, data storage, and security aspects, communicating digitally, reduced nonverbal feedback mechanisms, emotions, trust, and feelings during virtual networking, leadership characteristics, change management for resistance to change, employees job rotation, induction of new employees, environment and office set-up, confidentiality, compliance issues, future regulations related to online services, cultural and connectivity issues, convergence of technology, future technology change, individual differences in e-teaming, human-groupware operating support systems, and some other concerns, which may crop up later but need to be further addressed. All these are areas of future research. The good thing noted from this research is that the combination of consultative, participative, and interactive ways of communicating results in better outcomes whereby senior managers and managers are constantly seeking improved teamwork activities. In fact, with the usefulness, up-to-date, peripheral, reliable, flexible, suitable, practical, and perennial effects of the Continuous Improvement Teamworking Approach, improved performance, and profitability have been achieved.

3.4 Implications

The successful completion of a quality team project is achieved through the effective use of teams. Team members, both virtuously and virtually, work together as a team to achieve organizational outcomes (e.g., process efficiencies, quality customer service). For instance, the benefit of combining the CIT Model with PDCA Cycle, Six Sigma formal processes or other non–virtual team interaction includes team efficiencies in job performance, effective use of virtual interaction media, convergence of team members into high performance, business-to-employee (B2E) teams, information quality, virtual working arrangements (e.g., telecommuting), e-training (electronic
training), e-learning (electronic learning), e-working and effective use of collaborative tools and
other computer-mediated communication. This breadth of benefits is typically not achievable by
face-to-face interaction of team members working on process improvement associated with a
project. The CIT approach illustrates the interaction of team members face-to-face and virtually
with managers and other team members to work better as a dynamic team on any available project.
The Continuous-Task-Interacting-Team (CTIT) will support this integration to effectively
amalgamate virtual interaction media in more face-to-face interaction conceptual cycles.

3.5 Chapter summary

The emergence of the CIT was theoretically built from the three knowledge domains namely CI,
teamworking and virtual teamworking and shown in the classificatory framework. The CIT Model
evidenced by the CTIO Cycle was framed from the different conceptual problem-solving cycles.
Two key parameters were themed out from available literature which were: the problem-solving
activity and the continuous team interaction for the problem-solving cycles as shown in Figure
3.13. The strength of the CTIO Problem-Solving Cycle compared to some other conceptual cycle is
in the aspects of continuous problem-solving teamworking as illustrated in Figure 3.13. The face-
to-face interaction and virtual interaction in the continuous problem-solving teamworking approach
have been used to discriminate between the different conceptual cycles. Eventually, the CTIT to be
used for implementation of the CIT Model/CTIO Problem-Solving Cycle in two case studies was
framed for the problem-solving team “Total Teamwork Way” to enhance the work of Atkinson
(1999). The CTIT is differentiated from other team type in Table 3.3. Figure 3.16 summarises the
research rationale, literature review, research questions emerged, conceptual frameworks used for
structuring CIT.
Figure 3.16: Summarising the research from research rationale, literature review and conceptual frameworks used to structure the CIT Model, CTIO Problem-solving Cycle and CTIT

1. Rationale for research from classificatory framework: Emergence of CIT Model in retail banking operations.
   (From Chapter 1)

2. Literature on CI, V & VT
   (From chapter 2-mapped themes interaction and problem-solving approach)

3. Crafting and framing of CTIO Cycle (from Chapter 3)
   (a) Continuous interaction and problem-solving linkages from other conceptual cycles focusing on face-to-face and virtual interactions. (b) CTIT evidenced from a proactive total teamwork way approach (Atkinson, 1997) to be used in implementation of the CTIO Cycle.

4. Two research questions identified which relate to new interaction medium and the problem solving approach of the CTIO Cycle. Research Questions (RQs): First RQ: On FF and VI interaction medium of CIT Model/CTIO Cycle as new form of teamworking. Second RQ: On problem-solving approach implementation of CIT model/CTIO Cycle to yield positive outcomes.
CHAPTER 4

RESEARCH METHODOLOGY

4.1 Chapter overview

Chapters 2 and 3 researched the literature to identify knowledge gaps and developed the CIT Model/CTIO Cycle viewed through the lens of the service sector. The major component of this research task is the justification of the CIT Model realised by the CTIO Problem-Solving Cycle, specifically in a major Australian retail bank. The investigation has four distinct areas of data collection employing a mixed-method research design. Qualitative data have been first collected using the participant observation study, case studies, and face-to-face interviews. Quantitative data were also collected using a personal survey with retail banking staff. The sequential exploratory design as described by Creswell (2003) has been used in this study for the integration of the four different types of data in the four steps of the research process. The less dominant quantitative methods have been used to support the dominant qualitative methods.

4.2 Describing the nature of the problem

As explained earlier, with severe competition Australian retail banking organisations are looking for improved ways for team members to work as better and more dynamic teams. As identified from a major Australian retail banking institution, the problem-solving approach to resolve key issues needs further improvement to enhance performance. There is a lack of understanding amongst management representatives about why and how to use an effective problem-solving approach, which properly combines ‘quality management’ philosophy with available technological know-how. A number of knowledge domains on teamworking, virtual teamworking, and CI made available by scholars are underestimated and underutilised by retail branch managers as practitioners. This investigation will demonstrate the importance of using the CIT Model/CTIO Problem-Solving Cycle amalgamating these three key knowledge domains.

4.2.1 The research questions

For the purpose of this research only two research questions (one main and one sub-question) as mentioned in Chapter 1 have been envisaged. The research questions are as follows:

Research question 1 (main research question answered by Studies 1, 2, 3 and 4)
‘Is there a new form of problem-solving team working approach in a major Australian retail banking operational sector involving face-to-face and virtual interactions?’
‘Does the CIT Model/CTIO Problem-Solving Cycle methodology implemented yield positive outcomes in addressing the two major problems in two least-performing retail branches strategic supply chain of the major bank?’

4.3 The methodology selected

A mixed-method research design was adopted in this investigation to show the emergence of the CIT Model—a design that used the qualitative methodology in conjunction with the quantitative methodology. The advantage of using a mixed-method research design is that it enhances the examination of multiple arrays of data that can impart added rigour, breadth and depth to the research (Saule 2000). Qualitative research is related with the using of words to provide a descriptive meaning and understanding of experiences and situations of individuals which are part of the phenomena being investigated (Denzin and Lincoln, 2000). Quantitative research, focuses on numerical data, which can provide an overview of relationships, patterns and trends (Zikmund, 2003).

4.3.1 Mixed methodology

As explained by Tashakkori and Teddlie (1998), there has been growing interest in research methodologies such as mixed-method and mixed-model studies in many fields. Nevertheless, there has been a lack of conceptual clarity and not enough examples of the mixed-methods being used (Tashakkori & Teddlie, 1998). As described by Tashakkori and Teddlie (1998), a few authors (for example Creswell, 1995; Miller & Crabtree, 1994; Morse, 1991) have attempted to develop taxonomies of mixed-methods. Tashakkori and Teddlie (1998) describe mixed-methods as a combination of qualitative approaches (the constructivists/phenomenological) and quantitative approaches (the positivists and post-positivists) in the methodology of a study (such as in the data collection stage). Tashakkori and Teddlie (1998) mentioned mixed-model studies as the combination of these two approaches across all phases of the research process (such as conceptualisation, data collection, data analysis, and inference). However, they stated that, although the growth of the mixed-method or mixed-model has been retarded by the vestiges of the paradigm wars, researchers are now free to use the methods in their research questions. In fact, the research questions are best answered with mixed-method or mixed-model research designs, rather than with a sole reliance on either the quantitative or the qualitative approaches. A multi-methodological approach to study systems development (Ovaska, 2009); analysing the use of information systems in logistic industry (Pokharel, 2009); and applied multi-case research in a mixed-method research project (Jansen, 2009) were conducted in the field of Information Systems.
The positivists view reality as a concrete structure, whereas the phenomenologists view reality as a projection of human imagination in the continuum of core ontological assumptions (Collis & Hussey, 2003). As defined by Cavana, Delahaye and Sekaran (2001), a paradigm reflects a basic set of philosophical beliefs about the nature of the world, by providing guidelines and principles concerning the way research has been conducted within the paradigm. As stated by Allen (1990, p.893) and cited by Collis and Hussey (2003, p.53), the ‘phenomenological paradigm is the science of phenomena where the phenomenon is a fact or occurrence which is perceived with the cause in the question’. They mentioned that the phenomenological paradigm is concerned with understanding human behaviour from the participant’s own frame of reference and assumes that reality is within us, where the act of investigating reality has an effect on reality.

Thus qualitative research considers the subjective state of the individual and aspects of human activity by focusing on the meaning, rather than the measurement, of social phenomena. Tashakkori and Teddlie (1998) describe the positivistic (also called logical positivism) paradigm as dating back to the nineteenth-century French philosopher August Comte. Different authors have ascribed several ‘axioms’ to the three most important paradigms in business research which are illustrated in Appendix 4. Assumptions of paradigms, as by Collis and Hussey (2003), were adapted from Creswell (1994, p.50). The basic aim of critical research is to empower people to create a better world for themselves by uncovering the real meaning behind the observable, revealing hidden meanings and going beyond the surface. It assumes that people have a great deal of unrealised potential and have the ability to adapt and transform themselves (Cavana, Delahaye & Sekaran, 2001).

Appendix 4 gives an overview of the possible approaches to the problem identified for this study using the mixed-methods approach from the literature. However, to match the problem diagnosed to the mixed methodology selected and relevant to this investigation, only the suitable axioms have been considered, as it is difficult and time-consuming to perform the various axiomatic tasks in this research. Hence, as demonstrated in Appendix 4, the focus of the mixed-methods considered for the purpose of this study has been on the conceptual, methodological, ontological, and epistemological axioms.

**4.3.2 The evolution of methodologies and emergence of mixed methods**

For the purpose of this mixed-methods study, the Dominant-Less Dominant paradigm design with a two-phase sequential study QUAL/quan (as highlighted/underlined in Table 4.1) was used. As stated by Tashakkori and Teddlie (1998, p.47) in the QUAL/quan sequence, the researcher starts with the qualitative data collection and analysis on a relatively unexplored topic, eventually using the results to design a subsequent quantitative phase of the study. This is further explained in later
sections (4.5 and 4.6). This is what has been done in this study, as is sequentially demonstrated in the mixed-methods approach.

Table 4.1: The evolution of methodological approaches in the social and behavioural sciences as described by Tashakkori and Teddlie (1998, p.47).

<table>
<thead>
<tr>
<th>Period</th>
<th>Paradigm orientation</th>
<th>Sources /Phases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Monomethod or ‘purist’ Era (Circa the nineteenth century through 1950s)</td>
<td>A. The Purely Quantitative Orientation</td>
<td>1. Single Data Source (QUAN) 2. Within One paradigm/Model, Multiple Data Sources (a) Sequential (QUAN/QUAN) (b) Parallel/Simultaneous (QUAN + QUAN)</td>
</tr>
<tr>
<td></td>
<td>B. The Purely Qualitative Orientation</td>
<td>1. Single Data Source (QUAL) 2. Within One Paradigm/Method, Multiple Data Sources (a) Sequential (QUAL/QUAL) (b) Parallel/Simultaneous (QUAL + QUAL)</td>
</tr>
<tr>
<td>2. The Emergence of Mixed Methods (Circa the 1960s to 1980s)</td>
<td>A. Equivalent Status Designs (across both paradigms / methods)</td>
<td>1. Sequential (i.e., two-phase sequential studies) (a) QUAL/QUAN (b) QUAN/QUAL</td>
</tr>
<tr>
<td></td>
<td>B. Dominant – Less Dominant Designs (across both paradigms / methods)</td>
<td>2. Parallel / Simultaneous (a) QUAL + QUAN (b) QUAN + QUAL</td>
</tr>
<tr>
<td></td>
<td>C. Designs With Multi-level Use of Approaches</td>
<td>1. Sequential (a) QUAL/quan (b) QUAN/qual</td>
</tr>
<tr>
<td>3. The Emergence of Mixed Model Studies (Circa the 1990s)</td>
<td>A. Single Application Within Stage of Study (There must be a mixing such that each approach appears in at least one stage of the study)</td>
<td>1. Type of Inquiry – QUAL or QUAN 2. Data Collection/Operations-QUAL or QUAN 3. Analysis/Inferences-QUAL or QUAN</td>
</tr>
<tr>
<td></td>
<td>B. Multiple Applications Within Stage of Study (There must be a mixing such that both approaches appear in at least one stage of the study)</td>
<td>1. Type of Inquiry – QUAL and/ or QUAN 2. Data Collection/Operations-QUAL and/or QUAN 3. Analysis/Inferences-QUAL and/or QUAN</td>
</tr>
</tbody>
</table>

The investigator started first as shown in Figure 4.1, with the participant observation qualitative study to identify the six key elements of the CIT Model and CTIO Cycle. The case studies and the content analysis dominant qualitative design used the less-dominant quantitative methods to enlarge on the qualitative study (Ulin et al., 1996, as cited by Tashakkori & Teddlie 1998, p.44) to illustrate the importance of the two most important variables identified from the key components of the CIT Model/CTIO Cycle. The personal survey as the next quantitative phase was used to sustain
further the two most important variables related to the core components of the CIT Model/CTIO Cycle.

4.4 Methods adopted within selected methodology

As mentioned by Cooper (1989), even methodologists differ in the subtlety of their definitions for research stages, but the crucial distinctions in stages can be identified with a gratifying degree of consensus. Thus the *sequential mixed-methods* can illustrate the crucial distinction in the different methodology sequential stages. The *sequential exploratory design* as described by Creswell (2002) has been used for the purpose of this study to integrate four different types of data with four steps, in two stages of the process of the research. It has been conducted in two stages by starting with the first stage as *qualitative methodology*, and then followed by the second stage of the *quantitative* approach. The two stages in four sequential steps of the research are explained.

4.4.1 Stage 1: Qualitative methodology

4.4.1.1 First step of the first stage: The participant observation study

Research Issue

To identify the essential elements of the Continuous Improvement Teamworking Approach in a major Australian retail banking organisation using the moderate *participant observation* study by applying the systematic *ethnographic research cycle* (Spradley, 1980). The *participant observation* study addresses the first *research question*.

Defining Ethnography and Participant Observation

*Ethnography* is the description and interpretation of a cultural or social group or system. Simply put, ‘Ethnography is a written representation of a culture (or aspects of a culture). The method most often used to create ethnography is fieldwork, where a researcher goes “into the field” to study a group of people and events in their natural setting. Ethnographic fieldwork has gained more prominence as a method of research across all social sciences’ (Schlotzhauer, 2007 as cited by Keeran et al., 2007).

As described by Collis and Hussey (2003), *ethnography* is a *phenomenological methodology* which stems from anthropology and is an approach to observe patterns of human activity. Ethno means folk and graphy means description. The main method of collecting data is *participant observation* where the researcher becomes a full working member of the group being studied.
'Ethnography is the art and science of describing a group or culture. Ethnographic research begins with the selection of the problem or topic of interest' (Fetterman 1989, pp.11-13). ‘Participant observation is the situation in which an observer gains first hand knowledge by being in or around the social setting being investigated’ (Zikmund 2003, p.739). As explained by Jorgensen (1989), participant observation methodology is concerned with human meanings and interactions viewed from the insiders’ perspective, where the researcher is able to gain access to an appropriate setting. When little is known about the phenomenon (for example a newly formed group or a new type of team approach), participant observation is relevant and appropriate for scholarly problems and the participant role involves establishing relationships with natives in the field by using direct observation with other methods of gathering information.

According to the investigator, the ethnographic research cycle has been the best qualitative methodology for this particular research and specific context of Continuous Improvement Teamworking Approach. Participative inquiry which is also a phenomenological methodology and is about research with people rather than research on people (Collis & Hussey, 2003) was not selected for this research as participants were not involved as fully as possible, because they were just being observed by the researcher and not being involved in data gathering and analysis. The investigator also considered using action research but had not followed the full protocol which facilitates evaluation and reflection in order to implement necessary changes both for individuals working in the bank and within the financial institution. This is a piece of further research which the author is doing in a case study relating to the problem-solving approach of action research as described by Cherry (1999). Action research creates new knowledge based on inquiries conducted within specific and often practical contexts (Koshy, 2005). Though the action research spiral (Koshy, 2005) is an inquiry undertaken with rigour, participatory in nature and understanding, the ethnographic research cycle was more appropriate to justify the Continuous Improvement Teamworking Model. By being an insider in the major Australian banking organisation, the moderate participation type was the best approach and is also well-suited to conduct the research in the particular financial institution involved.

**Participant Observation Study**

The participant observation study was used to develop further the CIT Model/CTIO Cycle from the classificatory framework based on an ethnographic research cycle using a participant observation study. This research task was done over a period of 12 months which represented about 290 hours that the investigator spent using the substantial and systematic ethnographic research problem-solving cycle in nine busy retail branches of a major Australian bank. The findings have shown that the conventional teamworking approach (using face-to-face interactions) is relevant and being productively integrated with virtual teamworking (using virtual
interactions), together with *Continuous Improvement* initiatives, to perform better in retail banking, as established in the classificatory framework from Figure 1.1. Findings also demonstrated that the six elements were found to be associated with the face-to-face and virtual interactions. Thus, from this study, as reported, team meetings, online functional services, synchronous/asynchronous conferencing, and teleconferencing, continuous improvement, consultation and participation, and virtual communications form the essential six core elements of the selective observations out of 59 elements of the descriptive observations of the CIT Model evidenced by the CTIO Cycle. This is illustrated in Figures 5.4 and 5.5 (Chapter 5). Face-to-face interactions are mostly related to consultation and participation, team meetings, and continuous improvement, while virtual interactions are related to online functional services, synchronous and asynchronous conferencing/teleconferencing and virtual communications. The *participant observation* assisted to complete the CIT Model/CTIO Cycle and perform Study 2 using the problem-solving approach of the CTIO cycle, where the two main problems affecting retail banking operations were resolved to further confirm the relevance of CIT Model/CTIO cycle.

### 4.4.1.2 Second Step of the First Stage: Two Case Studies

**Implementation of the CTIO Cycle by integrating the problem-solving approach of using the key quality tools from Deming PDSA Cycle and Kaizen Six-Sigma DMAIC Cycle.**

Two case studies for implementing the CIT Model realised by the CTIO cycle using the Continuous-Tasks-Interacting-Team (CTIT) were put into practice in two different retail branches, involving different banking staff who were not involved in any of the *qualitative* and *quantitative methodologies* of the mixed-methods approach. Informed consent for ethical purposes was obtained from all participants before starting both case studies. Case Studies 1 and 2 were done simultaneously over the same six months. Findings from Study 1 were used to some extent in Study 2. Both *case studies* confirm the reliability and validity of the CIT Model/CTIO Cycle. Case Study 1 was put into practice with nine team members working in one of the busiest Melbourne CBD retail branches to improve home loan sale referrals. The researcher acted as the facilitator of the CTIT for both case studies with the approval of senior management in the bank.

The integrated approach of the problem-solving quality tools from the *PDCA* and *DMAIC Cycles* related to the *qualitative* approach intensified the problem-solving techniques and added value to the Continuous Improvement Teamworking Model and CTIO Cycle. Case Study 1 (Chapter 5) develops a unique framework of a problem-solving approach which leads to an integrated problem-solving approach realised by the CTIO cycle. The integrated quality tools and techniques in the CTIO Cycle methodology were incorporated for team members to work as a dynamic team using available face-to-face and virtual interactions to resolve any concerns related
to the issue of home loan sale referrals. All the six key components of the CIT Model/CTIO Cycle were considered and assessed. It was noticed that there was a positive correspondence between the two key variables: face-to-face interaction and virtual interaction, in resolving the concern of poor home loan sales referrals which was further validated in Studies 3 and 4. In Case Study 2, the problem of poor customer satisfaction was resolved by using the CTIO Problem-Solving Cycle. Nine team members were involved in Case Study 2 (Chapter 6). Case Study 2 shows the reliability and uniqueness of the integrated problem-solving approach, represented by the CTIO cycle.

4.4.1.3 Third step of the first stage: Face-to-face interviews using content analysis

The Content Analysis of the Face-to-face Interviews

In driving service delivery, the major difference has been the advance in technology with enabled email, web chat, and voice-operated interactive phones in order to facilitate the traditional forms of fax and telephone (Anton, 2000). Content analysis represents a formal approach to qualitative data analysis and is mainly associated with a positivistic approach (Collis & Hussey, 2003). ‘Content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of communication’ (Berelson 1952, p.18, as cited by Neuendorf 2002, p.10). Thus, content analysis was used as a systematic way to understand meanings and discover regularities through the words spoken by managers and the notes recorded by the researcher, which were analysed. The materials analysed were classified into various coding units which were pre-constructed. Everything was based on analysis and theoretical understanding of the substance and materials of the face-to-face interviews. The first stage of the analysis was the sampling of the large volume of written materials the researcher collected during the face-to-face interviews.

By doing the qualitative participant observation (Study 1 in Chapter 5) first, the researcher was able to visualise and simplify the face-to-face interviews to be conducted to extract the information relevant to the six core elements of the CIT Model/CTIO Cycle. Editing reduced the qualitative data ready for coding. Abbreviations were used in data collection when the researcher asked for clarification. Coding units such as particular words like: team meetings, conferencing, intranet, online functional services, six sigma, continuous improvement, voicemails, faxes and many others were used by the researcher to code the word in relation to the CIT Model/CTIO Cycle. A coding frame was then constructed which listed all the coding units vertically. This permitted the analysis of the communication process and wording being used in the interviews with the managers.

The content analysis was a very useful technique to analyse the 29 interview scripts obtained from management representatives. This helped to determine and further justify the main
factors and components of the Continuous Improvement Teamworking Model. Each of the essential core elements of the CIT Model were summarised over the main body of the CTIO Cycle. The *content analysis* offered a number of advantages, such as dealing with the valuable information given by managers, being an inexpensive method of data collection, and having the data as a permanent record which can be revisited and re-examined. The most difficult part was the data reduction at the early stage of the research. However, the *participant observation* study done through the *ethnographic research cycle* was useful in the reduction of the data, as the researcher observed practices in the field.

Findings of studies 1 and 2 were used in Study 3. In Study 3 face-to-face *interviews* were performed by the investigator with 29 retail managers including branch managers, home loan managers, business managers, and financial planning managers who were also working in retail branches. The *content analysis* was used to justify further the six core elements of the CIT Model/CTIO cycle in relation to the association of the face-to-face and virtual interactions. ‘*Content analysis* is one of the most important, but complex research methodologies in the social sciences’ Neuendorf (2002, p.1). *Content analysis* was also defined by Weber (1990, p.25) as cited by Neuendorf (2002) as a research method that uses a set of procedures to make valid inferences from text. Using the qualitative interviews and *content analysis* confirm the reliability of the CIT Model/CTIO Problem-Solving Cycle. Findings are outlined for the positive correlation between face-to-face and virtual interactions.

**4.4.2 Second stage: Quantitative methodology (Study 4)**

**4.4.2.1 Fourth step for the second stage: Personal survey**

Following the qualitative stage, a personal *survey* was conducted by the researcher with retail banking staff where a response rate of 79 per cent was obtained for the 189 *questionnaires* distributed in two major regions in Victoria. The two regions were the Melbourne CBD and the Geelong regional area. By handing over questionnaires to a small number of populations which are represented by the two major regional areas of Victoria, all the group elements in the major regions, which are represented by all branches, and the majority of the staff present at the time of conducting the survey were subjected to selection in the sample. The retail staff members, including both male and female, were selected from the two regions. Thus the target population was the staff working for the Melbourne CBD retail branches and Geelong metropolitan retail branches. The samples represented (mostly) all staff working at that time in the 35 retail branches. For the personal *survey*, *questionnaires* were distributed to all banking staff, who were present when the researcher visited their retail branch. This demonstrates how the sampling units for selecting the sample in the two regional retail branches were defined.
Summarising the four methodologies in the mixed-methods approach

The summary of the research methods for mixed methodology approach is illustrated in Table 4.2. Morse (1991) as cited by Tashakkori and Teddlie (1998) gave several examples of studies in which one paradigm and its methods are dominant. In this sequential mixed-method design, the researcher performed a qualitative phase of a study, followed by a separate quantitative phase. Creswell (1995) as cited by Tashakkori and Teddlie (1998) mentions that mixed-methods designs serve beyond triangulation by providing the convergence of results. Thus the other purpose of the mixed methods as described by Tashakkori and Teddlie (1998) are as follows: (a) to examine overlapping and different facets of the phenomenon of face-to-face interaction and virtual interaction (complementarily); (b) to discover paradoxes, contradictions, and fresh perspective of the CIT Model (initiation); (c) to use the methodologies sequentially from qualitative as the first method to inform the quantitative method as the second one (development); and (d) to add breadth and scope to the project (expansion).

Table 4.2: Summarising the research methods for the mixed methodology for this study

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Study</th>
<th>Phase</th>
<th>Step</th>
<th>Methods</th>
<th>Data Collection Technique/Analysis</th>
<th>Period/Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Participant Observation</td>
<td>Ethnographic Research Cycle</td>
<td>12 Months/290 hours</td>
</tr>
<tr>
<td>Qualitative</td>
<td>2 (a)</td>
<td>1</td>
<td>2</td>
<td>Case Study 1</td>
<td>Problem-Solving Technique (PDCA &amp; DMAIC Cycle)</td>
<td>6 Months</td>
</tr>
<tr>
<td>Qualitative</td>
<td>2 (b)</td>
<td>1</td>
<td>2</td>
<td>Case Study 2</td>
<td>Problem-Solving Technique (PDCA &amp; DMAIC Cycle)</td>
<td>12 months</td>
</tr>
<tr>
<td>Qualitative</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>Face-to-Face interviews</td>
<td>Content Analysis</td>
<td>2 months</td>
</tr>
<tr>
<td>Quantitative</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>Personal Survey</td>
<td>Questionnaires/Microsoft Excel</td>
<td>4 months</td>
</tr>
</tbody>
</table>

This study evaluates the validity of the CIT Model/CTIO cycle. The six key components of the model in relation to the two key variables face-to-face and virtual interactions were assessed. Findings also explicated the positive correspondence of face-to-face and virtual interactions.
4.5 Quantitative methods to enlarge on the qualitative study for Study 2 and Study 3 only

Figure 4.1: Illustrating the scenario for using the less dominant quantitative approaches to give more rigour to the dominant qualitative methodology for the case study and content analysis.

Only in the case studies and content analysis, the less dominant quantitative methods such as (Microsoft Excel, and (or) SPSS) were added to enlarge on the dominant qualitative study as explained by Ulin et al. (1996) as cited by Tashakkori & Teddlie, 1998. For instance, this approach as shown in Figure 4.1, as described by Tashakkori and Teddlie, (1998, p.54) is a Pure-Holistic-Inductive Paradigm used in the case studies from the mixed-methods paradigm. This is further explained in the case study.

4.6 The research cycle using both inductive and deductive logic

As mentioned in Appendix 1, the methodological axiom description illustrates the inductive and deductive types of reasoning which are relevant to this study. This is illustrated in Figures 4.2 and 4.3 to demonstrate the data collection process which is incorporated in this investigation of the CIT Model/CTIO Cycle in the major retail banking organisation. ‘Except for some postmodernists, most scholars believe that many well-conducted studies by diverse, independent, open-minded, and freely communicating researchers will get closer to the reality’ Newman (1997, p.46). This can be beneficial and relevant when both qualitative and quantitative methodologies are adopted. Thus using deductive and inductive theorising as mentioned by Newman (1997, pp.46-47), we can
develop theory with the level of social reality that it explains. The research cycle, using both the inductive and deductive logics of data collection, leads towards empirical social reality for justifying the CIT Model/CTIO Cycle as shown in Figures 4.2 and 4.3.

Figure 4.2: The Research Cycle (Cycle of Scientific Methodology) using approach derived from Tashakkori and Teddlie (1998).

Table 4.3: The taxonomy of the data in the mixed-methods to justify the CIT Model in retail banking

<table>
<thead>
<tr>
<th>Data Collection Technique as sequence of research paradigm</th>
<th>Setting (Controlled or Natural)</th>
<th>Manipulation (Yes or No)</th>
<th>Orientation (Confirmatory or Exploratory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Participant Observation study (12 Months - 290 hours)</td>
<td>Natural</td>
<td>No</td>
<td>Exploratory</td>
</tr>
<tr>
<td>2. Two case studies (6 months and 1 year each for two cases) with banking staff</td>
<td>Natural</td>
<td>No</td>
<td>Exploratory</td>
</tr>
<tr>
<td>3. Face-to-face interviews (29 retail banking managers)</td>
<td>Natural</td>
<td>No</td>
<td>Exploratory</td>
</tr>
<tr>
<td>4. Personal Survey study (149 banking staff)</td>
<td>Natural</td>
<td>No</td>
<td>Exploratory</td>
</tr>
</tbody>
</table>
According to the definition given by Collis and Hussey (2003, p.10) ‘exploratory research is conducted into a research problem or issue when there are very few or no earlier studies to which we can refer for information about the issue or problem’. Case studies and observation are commonly used in exploratory research where quantitative and (or) qualitative data may be generated. Thus the taxonomy of the data collection techniques as explained by Tashakkori and Teddlie (1998) in the mixed-methods had natural settings, no manipulation, and an exploratory orientation depicted in Table 4.3.
4.7 Triangulation in the mixed methods and challenges

As mentioned by Tashakkori and Teddlie (1998), in 1978 Denzin applied the term ‘triangulation’ in a book on sociological methods. Denzin’s concept of triangulation involved combining data sources to study the same social phenomenon. He discussed four basic types of triangulation: data triangulation (the use of a variety of data sources in a study), investigator triangulation (the use of several different researchers), theory triangulation (the use of multiple perspectives to interpret the results of a study), and methodological triangulation (the use of multiple methods to study a research problem). For this research task mixed methods, data triangulation and methodological triangulation were used. By using different sources of data from the qualitative approaches (participant observation, case studies, face-to-face interviews), and the quantitative approach (personal survey), data triangulation was achieved to justify the CIT Model. The use of the ethnographic research cycle in the participant observation study; the use of the CTIO Cycle Problem-Solving approach by integrating the quality tools of the PDCA Cycle and DMAIC Cycle in the two case studies; the content analysis for the face-to-face interviews; and eventually Microsoft Excel for the analysis of the personal survey justified a methodological triangulation.

The challenges of taking a mixed methodology in terms of data collection were: to handle a large amount of data and information which took time to be reduced to facilitate analysis; to deploy methods to answer the two research questions; to validate the model using different methodologies; to yield an array of data to present a coherent story; to evaluate the reliability of the model with the quantitative methodology to provide a substantial basis for in-depth treatment; to implement the CIT concept using the CTIO problem-solving cycle; to address the impact of teamwork, e-teamwork and CI in the retail banking sector. This was dealt with by the researcher: using the dominant qualitative approach to understand the actors, objects and activities, and dimensions; accounting for various roles as participant observer, trainer, coach, facilitator, and investigator to develop mastery of the philosophy of inquiry and discourses in the complex retail banking environment; using appropriate methodologies for data collection and analysis; using quantitative methods to sustain the dominant qualitative approach; and using an abundance of appropriate data and information from a variety of sources for effective synthesis.

4.8 Qualitative data analysis software

For the purpose of this mixed-methodology approach, qualitative software has not been used. It is more about how to make a team work better practically using relevant problem-solving knowledge domains. The use of any qualitative software is not appropriate or necessary. Furthermore, participating with the actors was a primary aim of this study for building a strong researcher-participant relationship to understand the CIT Model/CTIO Cycle properly in practice. By using the
powerful ethnographic cycle (Spradley, 1980); using the CTIO cycle methodology (integration common quality tools from Deming PDSA and DMAIC cycles); and using the human-coding in the typical process of content analysis research as described by Neuendorf (2002, pp.50-52), this research focused qualitatively on the funnelling effect as described by Minichiello, Aroni and Hays (2008) and Zikmund (2003) about the research question, key aspects, and main focus of the research task.

4.9 Validity and reliability in mixed methods

As mentioned by Tashakkori and Teddlie (1998), internal validity can be conceptualised as to the degree to which we can trust the conclusions and inferences of the researcher regarding the causal association between variables or events. The mixed-methods results when combining the qualitative and quantitative methods further contribute to the validity and reliability of key issues. The correspondence of the two key variables ‘face-to-face’ and ‘virtual’ interactions from the six key components of the CIT Model/CTIO cycle has been used to justify the reality that the major banking organisation has been using both variables. This is demonstrated in the mixed-methods.

Creswell (2003) mentioned a mixed-methods design format, where the investigator brings approaches that are included in both quantitative and qualitative formats related to the purpose and the research questions. This assisted to deploy a solid methodology to collect data from multiple sources to answer the two research questions by following the research purpose. The mixed-methods, though challenging and involving a great amount of work, followed the sequential exploratory design strategy (Creswell, 2003). There had been no ‘mixing’ of data from each methodology, as each data item from each method was analysed separately and presented in different chapters; then there was an interpretation of the entire analysis. But each of the methodologies deployed was sequentially linked to one another. For instance, the participant observation study (Study 1) assisted to find in the next sequential two case studies as the two main problems to be resolved. These were home loan sales referrals and customer satisfaction.

The implementation of the two case studies validated the CTIO Problem-Solving Cycle, which was first justified by the participant observation study. The participant observation study and two case studies assisted in the structured interview design to conduct face-to-face interviews with managers to evaluate the validity of the model, and questionnaire design for the personal survey with banking staff to evaluate the reliability of the model. Thus, this study is characterised by an initial phase of qualitative data collection and analysis, which is followed sequentially by the phases of quantitative data collection and analysis. The strategy used by the researcher was to use qualitative data and results to facilitate the quantitative data collection and analysis, where the focus was to explore the phenomenon of Continuous Improvement Teamwork. Data analysis was
done for the qualitative approach using observation, description and thematic text, while numerical data was used for the quantitative analysis. The validation and reliability procedures for the mixed-methods were as follows:

- The physical presence for 12 months representing 290 hours spent in nine different retail branches by the researcher himself as ethnographer, investigator, and observer in the participant observation study
- The themes and specific statements obtained from participants in the participant observation study and case studies were used to improve the face-to-face interview structured instrument and personal survey questionnaire
- The implementation of the two case studies (for 12 months) in two different branches where the researcher was the facilitator
- Data collected and provided by the team leader and manager in retail branches in two case studies
- Training provided to team members for the two case studies
- Verification and integrity of data physically through observation, face-to-face interaction, and collected from other sources
- Team members from CTIT who make the effort to achieve collective performance and productivity improvement for two case studies. The challenge of making team members work as a dynamic team
- For the face-to-face interviews, qualitative data collection using structured interview. The qualitative data were quantified. This involved the use of codes and themes created from the participant observation study in the taxonomic analysis step; the counting of the number of times they occur in the text data from interview scripts.
- Researcher follow-up qualitative interviews with management representatives and returned for clarification when analysing interview scripts
- Collect data from qualitative face-to-face interviews first to explore the phenomenon of the CIT concept with the management representative before doing the personal surveys with staff on a larger scale. Managers are more knowledgeable in understanding the phenomena as they guided the researcher.
- The validation of model with a larger sample representative of a targeted population as done in personal survey
- Questionnaires done on a trial basis to improve the data collection process
4.10 Accuracy and integrity of data and information

To collect data to confirm the situation for resolving the problem to be addressed by this study in the bank, the accuracy and integrity of data were seriously considered to understand the Continuous Improvement Teamworking concept properly. Each of these approaches, as described, was counter-checked for integrity of the data obtained. This was achieved as follows: (1) Using the Mixed Methods, (2) Using the Ethnographic Research Cycle in the Participant Observation study, (3) Integrating the two most important problem-solving cycles, namely Deming PDSA Cycle and Six-Sigma DMAIC Cycle common tools and technique used in the CTIO Problem-Solving Cycle, (4) Involving the researcher in different roles in the data collection process, (5) Using management representatives in the data collection process, (6) Using triangulation of data, (7) Using cross examination of metadata, (8) Using the quantitative methods to enlarge on the dominant qualitative study.

4.11 Ethical issues

This investigation has been conducted under the guidelines of the ethics code of conduct in research and with the RMIT Human Research Ethics Committee’s (HREC) approval to perform the mixed-methods in the major Australian retail banking organisation.

4.12 Conclusion

The problem to be tackled has been described. The mixed-methodology overview has shown the match of the problem with the relevant methods selected. Thus, the CIT (Continuous Improvement Teamworking) Model evidenced by the CTIO (Concern-Task-Interaction-Outcome) Cycle demonstrates the integration of CI, teamworking, and virtual teamworking using a mixed-methods research design. The mixed-methods strategy adds rigour to this investigation where the research question is answered in a better way by the use of different sources of data, and different research methods to justify the CIT Model. The sequential exploratory design was used starting with a dominant qualitative methodology (participant observation, case studies, content analysis), followed by a less dominant quantitative methodology (personal survey). Within the dominant qualitative methodology for the two case studies and content analysis, quantitative methods analysis were used. The research cycle using both the inductive and deductive reasoning approaches was considered to lead towards an empirical social reality in justifying the CIT Model. The taxonomy of the data collection techniques was also demonstrated. The next chapter describes the first step of the first phase of the qualitative methodology to illustrate the participant observation study in determining the essential core elements of the CIT Model/CTIO Cycle.
Few definitions from his divine A.C. Bhaktivedanta Swami Prabhupada (1971 pp. 801-810) which aspired me before going into industry for research

‘Karma – fruitive activities or their reactions’

‘Jnana-yoga – the path of spiritual realization through a speculative philosophical search for truth’

‘Avatar – an incarnation of Godhead who descends from spiritual world’

‘Bhagavad-gita- the book that records the spiritual instructions given by Krsna to His friend Arjuna on the greatest Battlefield of Kuruksetra’ ever happened on planet earth - about 5000 years ago’

YOGA (a scientific method for GOD (SELF) realization) is the process by which we purify our consciousness, stop further pollution, and arrive at state of perfection, full KNOWLEDGE, full BLISS’

‘The tastes of the fruits are of four kinds: religiosity, economic development, sense gratification and, ultimately, liberation. According to the different associations in the three modes of material nature, the living entities are tasting different kinds of religiosity, different kinds of economic development, different kinds of sense gratification and different kinds of liberation. Practically all material work is performed in ignorance, but because there are three qualities, sometimes the quality of ignorance is covered with goodness or passion. The taste of these material fruits is accepted through five senses. The five senses organs through which knowledge is acquired are subjected to six kinds of whips: lamentation, illusion, infirmity, death, hunger, and thirst. This material body, or the material manifestation, is covered by seven layers: skin, muscle, blood, marrow, bone, fat and semen. The branches of the tree are eight: earth, water, fire, air, ether, mind, intelligence and ego. There are nine gates in this body: the two eyes, two nostrils, two ears, one mouth, one genital, one rectum. And there are ten kinds of internal air passing within the body: prana, apana, udana, vyana, samana, etc… (Bhaktivedanta Swami Prabhupada, 1971 pp. 26-27)
PARTICIPANT OBSERVATION STUDY IN RETAIL BANKING OPERATIONS

The development research sequence method for the ethnographic research cycle is based on the problem-solving principle. Spradley (1980)

Academics, consultants and managers must collaborate to intersect their paradigms and develop models of change that are rigorous (valid, and reliable) and relevant to practice. Terziovski (2002)

5. Chapter Overview

Quantitative evidence as opposed to qualitative evidence has been under debate for long time. Both have their distinctive research strategies, limitations, benefits and reasons for being applied. By applying a qualitative methodology through a moderate participant observation (moderate degree of involvement of researcher) study, the emergence of a Continuous Improvement Teamworking Model was recognised as the researcher was more closely related to the scene. As a participant observer, the researcher was able to use both the role of being an outsider and also an insider to detect the phenomena under study. The participant observer believes that it would not have been so easy to understand the Continuous Improvement Teamworking concept being justified by the ethnographic research cycle (Spradley, 1980) qualitative methodology if a quantitative methodology was firstly used. The hidden principles, components and measures of the Continuous Improvement Teamworking Model/CTIO Cycle were identified by starting with a dominant qualitative methodology. The Continuous Improvement Teamworking Approach is revealed through the CTIO (Concern – Task – Interaction – Outcome) Cycle. By being well informed from a review of literature and having observed in the retail banking, it became clearer to illustrate the CIT Model/CTIO Cycle. This study was conducted over a period of 9 months followed by another study for 3 months to show how the CTIO Cycle has emerged and evidenced by applying the systematic ethnographic research cycle. The finding over the 12 months period (290 hours) identified the six core elements of the CIT Model/CTIO Cycle from 59 descriptive observations. Four elements mainly team meetings; online functional services; synchronous/asynchronous conferencing and teleconferencing; and quality improvement were identified in the 9 months participant observation study. Virtual communication; and consultation and participation were researched in another 3 months participant observation study. This approach was continually assisting Australian retail banking operational activities to achieve productive performance.
5.1 The Ethnographic Research Cycle to Justify the CTIO cycle.

The Participant Observation Study

In exploratory research empirical evidence is based on observation, experiment or experience as distinct from theory (Collis and Hussey, 2003). The two main ways in which exploratory research can be used in this business research is to find out what is going on through the participant observation and understand the way the group works in the retail branch. The essential core element of ethnography in qualitative research is the concern with the meaning of actions and events we seek to understand (Spradley, 1980). The researcher for the purpose of this study has used ethnography as an approach as described by Spradley (1980) to socially acquire and share knowledge for understanding the observe pattern of human-computer, telecommunication technologies and other objects used in a major retail bank by team members in their daily work activities interacting together face-to-face and virtually to work as a team. The main method of this phenomenological methodology of collecting data has been participant observation. All team members who were branch managers, business service representatives, team leaders and customer service staff in a major Australian banking organization have been used as the units of analysis. The aim of the participant observation study was to interpret how team members communicate together synchronously and asynchronously with their immediate superior or other team members to report and share operational, technical, employee issues, sales, customer service objectives and targets. Though there are a number of different styles of ethnography, the researcher has used a medium degree of involvement with a moderate participation type (as described in Section 5.1.1) according to his skills and training to provide insights and offer an opportunity to see the real occurring of the Continuous Improvement Teamworking activities.

As summarised by Collis and Hussey (2003), the researcher has adopted the following approach in performing the participant observation methodology by building trust with participants involved with the phenomena, gathered data and views from team members as far as possible including researcher own experiences, captured team member experiences in their own words, thoughts and feelings, writing and synthesizing of all field notes recorded. At the start of the study, the researcher started the descriptive observation with a conscious attitude of almost complete ignorance. After obtaining approval from the bank as the single social institution unit undergoing this study, observations were done for about four to eight hours weekly for nine months where team members were observed interacting together face-to-face, over the phones and computers in different retail branches. What activities (such as teleconferencing, faxes, e-learning, use of intranet and company’s website etc…) team members were doing and the objects (such as computers, printers, telephones, memos, newsletters etc…) they made use of in that communication process were observed. Hence, the participant observation data collection process
explained the regularity of team members interacting together regularly to share and alleviate concerns for a common organizational goal.

5.1.1 Moderate participant observation type

As described by Spradley (1980), participant observers reveal great differences in the style of their research. One important contrast is the degree of their involvement, both with people and in the activities they observe. Spradley (1980), classified five types of participation namely as non-participation (with no involvement), passive (Low degree of involvement), moderate, active and complete (high degree of involvement). Moderate participation occurs when the ethnographer seeks to maintain a balance being an insider and an outsider, between participation and observation. As the author had worked part-time in a banking institution and also been a researcher doing the participant observation study, he has chosen the moderate type. Being a moderate insider to the major banking organization has been the best approach to identify and design the CTIO cycle by observing its practical occurrence in real life work situations. The moderate participant observation type was more relevant, reliable, valid, flexible and conceptually appropriate to research on the Continuous Improvement Teamwork model than using any of the other four types of participant observation.

5.1.2 Triangulation.

Triangulation can overcome potential bias and data triangulation is collected at different times or from different sources in the study of a phenomenon (Collis and Hussey, 2003). To overcome any bias in the participant observation study, the data triangulation methodology has been used. The descriptive, focused and selective observations have been done at different times and in nine different places in the major Australian banking organization to further develop the CTIO model. By observing at different times and locations, it was becoming clear and precise to the researcher as the ethnographer about the major domains of the Continuous Improvement Teamworking Model. The domains are illustrated in Figure 5.4. At every time and in different places where team members and their superiors were interacting regarding a task to meet the concern of any customer, the CTIO cycle was emerging which the investigator witnessed personally many times in all the nine different locations over the twelve months period. The author was observing without saying anything, so as not to disturb anyone in order to capture the right picture especially when staff including managers were interacting with each other to work as a team to address any issue or problem. As described by Spradley (1980), participant observers increase their introspectiveness by looking within themselves how they feel about particular experiences. In this participant observation study, the author as the moderate participant observer used
introspection by using himself as a research instrument. This is further explained in the next paragraph. Triangulation was also used by the investigator for the ethnographic questions asked and observations simultaneously done progressively from the descriptive observations to the selective observations process to come to the right observation pattern and conclusion.

5.1.3 Introspection

‘Many people look within themselves to assess how they feel about particular experiences. However, when unexpected event occurs, we engage in more introspection’ (Spradley, 1980). Normally, the researcher usually had informal debriefing conversations with banking staff working with him. For instance, one team member shared his experience he had with a customer asking him for information and advice about financial planning issues. This was normally the job of the financial planner and the customer had to be referred according to the branch procedures for an appointment on another day to the right person who should be accredited to give such advice. The lady customer did not want to meet the financial planner as she was in a rush and wanted to have quick information. Other banking staff mentioned at that time that they also had similar issues with a few customers. In that case, as everyone mentioned, so as not to lose the esteemed customer valuable to the bank, the team leader or branch manager was called to immediately assist the customer on the spot. This is another way of a Continuous Improvement Teamworking initiative to satisfy the customer. The introspection had been used as tool to understand new situations and gain skills relevant to the CIT model. The introspection carried out by the researcher as a participant with other banking staff had tremendously enriched the data gathered through the participant observation. This had also assisted the ethnographer to narrow the large volume of data obtained into relevant and specific ones desired for this research task.

5.1.4 The Verbatim Principle.

“Thick description and verbatim quotations are the most identifiable features of ethnographic field notes, reports, articles, and books” Fetterman (1989). Above the various languages used in the field situation as explained in step 3, the investigator made a verbatim record of what exactly banking staffs were saying. The basic principle was to record in writing word-to-word conversation of banking staff with the researcher. It was obvious that during the various ethnographic conversations and interviews, the researcher had the tendency as far as possible to record what banking staff said in their natural contexts and what they said instantly without too much thinking. This is so because as banking staff do things routinely, it becomes like a daily habit of doing things without much thinking and the information is captured in its real sense.
5.1.5 The Expanded Account

The expanded account described the second type of field notes which represented an expansion of the condensed version of the primary field notes taken by ethnographer while being present in the retail banking branches. The key words such as “team meetings”, “conferencing” and phrases such as “team meeting every Friday morning to discuss compliance issues” which were jotted down had been used as useful reminders to create the expanded account. Every afternoon the investigator was expanding these key words or phrases in his field notes book as it was fresh in his mind, keeping in mind the language identification principle and the verbatim principle. On each field work in the retail branches, the investigator observed patterns and activities that appeared similar and also about what was written in the field notes. The investigator selected the social setting and situation in the retail branches with an eye to see recurrent events whereby the repetitions of key domains became evident.

5.1.6 The Fieldwork Journal

A fieldwork journal was kept by the researcher in addition to the field notes of what had been directly observed and from ethnographic interviews with participants. The journal was like a diary which contained a set of records of experiences (e.g. use of latest enabling technologies, improvement in dealing with customers), dilemmas (e.g. problem of poor home loan sales referral, poor customer satisfaction, customer complaints, compliance and ethical issues), ideas (e.g. ideas given by team members about proper ways to handle bank cheques), errors (e.g. cash errors from tellers), confusion (e.g. customer asking for advice from unaccredited staff), fears (e.g. fraud issues), breakthrough (e.g. improvement in technologies such as linking transactional summary), happiness (e.g. staff happy when reach performance targets), and other key issues which arose during the fieldwork. This ethnographic journal included reactions to informants and the feelings the ethnographer felt from the retail banking staff including management representatives. The date, time, key domains and special remarks were jotted down and highlighted. The investigator constantly re-read the journal and referred back many times, over the months as more information was gathered. The amount of information was significant. The systematic methodology of the ethnographic research cycle as presented in this research task, precisely followed Spradley (1980) and the systematic way of recording field notes assisted the investigator in determining the key components of the CIT Model.
5.2 The Ethnographic Research Cycle used

In contrast to the linear sequence research process, the ethnographic research cycle was used for conducting the participant observation. The cycle begins with the selection of the project of Continuous Improvement Teamworking approach. The ethnographic research cycle was chosen due to its practicality, adaptability, reliability, relevance, adhesiveness and linkage to the CTIO cycle. The scope of the investigation which was to focus on diagnosing the evolving CTIO cycle, was considered by the investigator before doing this study. Thus, this study was confined mainly to the CIT approach, which also relates to e-teamwork, evolving as a virtual process workgroup aligned with desired groupware structure. The research scope can be classified between the micro-ethnography and macro-ethnography as team members were observed from one major organization.

5.2.1 Collecting, recoding and analysing ethnographic data

The mode of ethnographic inquiry used was mostly a topic-oriented ethnography on Continuous Improvement Teamworking which narrows the focus to the selective observation process of participant observation regarding the adoption of virtual teamwork in the retail banking sector. The narrowing process was done by asking ethnographic questions. Throughout the observational process of nine months and then three months, several questions as shown in Figures 5.1, 5.2, 5.3 and 5.4 were asked. The researcher looked for possible answers to come to a reliable and valid conclusion about the Continuous Improvement Teamworking Approach. However, at the beginning phase of the observational cycle, several implicit questions were asked without realizing many issues such as; the researcher who was new to the banking organizational systems needed some time for adaptation. Progressively the questions became more relevant and focused to the pre-requisites of the Continuous Improvement Teamworking Approach. Both the question and answer discoveries in the ethnographic research cycle allowed the researcher to discover more about the phenomena under study. What the researcher felt and understood as part of the observational process was also considered while observing team members interacting as a virtual team.

During the observational process, the types of observation changed from descriptive to focus and eventually to selective as illustrated in Figures 5.2, 5.3, 5.4 and 5.5. Descriptive observations were done where the general overview of team member’s interaction were observed including leadership, communication, team meetings, e-teamwork, conferencing, teleconferencing, use of intranet and online functional services, engagement, consultation and participation, relationship building, delegation and so on. After recording and analysing the initial data from field notes after each period of field work done in the descriptive observation, the
investigator started narrowing the questions by looking at focused observations which were more related to team meetings, sales meetings and operational meetings which involved team member interactions, training and e-learning, sharing information, synchronous and asynchronous conferencing, teleconferencing, use of company website, intranet, internet, continuous monitoring and so on. The narrowing process was done by the author by using the 5W-1H questioning skills technique as described by Berk (1995). After more analysis and repeated observations in the field, the investigator narrowed the investigational process further to make selective observation which related to team meetings, synchronous conferencing, teleconferencing, using of intranet, organizational website, online functional and portal services and so on.

5.3 The Developmental Research Sequence

5.3.1 Ethnographic Inquiry Unit

The domain, taxonomic, componential and theme forms of analysis were simultaneously used throughout the research period. As mentioned by Spradley (1980) and Jorgensen (1989), the basic unit of all ethnographic inquiry is the question-observation style as neither exist in isolation from the other. While making observation, the investigator always kept in mind that each thing he was seeing and recording in the retail branch was influenced by something else. In this line of thought the investigator was able to detect the right components of the CIT model realised by the CTIO cycle. In the different ethnographic research cycle steps the descriptive observation questions, focused observation questions and the selective observation questions were used. However, the following key twelve steps were followed:

5.4 ETHNOGRAPHIC ANALYSIS STEPS

The ethnographic analysis steps as described was used to locate the CIT Model through several observations at the start of the participation observation study as shown in Figure 5.1

Figure 5.1: The observational process firstly used in the participant observation study to locate the CIT Model
5.4.1 Step One: Locating the Continuous Improvement Teamwork activities as a social situation.

Figure 5.2: The ethnographic research cycle as described by Spradley (1980) used for this observational study conducted over one year. The 5W-1H questioning skills technique using the qualitative continual cycle questioning skills technique has been introduced by the researcher to better focus on the selective observational aspects.

The three elements which were firstly identified were the retail branches of the bank as the places, the team members as the actors and the use of computers, telecommunication
technologies, faxes, newsletters, memos, downloaded information to team from company’s website and intranet, team meetings, conferencing, video play, quiz, role play, training etc… as activities. Questions were developed throughout the observational process and assessed by the undermentioned selection criteria (also refer Figure 5.4). The questions depicted had addressed the concern related for the phenomena contributing to the Continuous Improvement Teamwork Approach. The 5W-1H questioning skills technique as introduced by the investigator was used to fully understand and situate the relevant questions as shown on the ethnographic research cycle.

Figure 5.3: The 5W-1H qualitative continual cycle questioning skills technique used in the ethnographic research cycle to confirm the key components of the CIT Model/CTIO Cycle.
Funnelling or funnel technique as described by Zikmund (2003) which refers to the process of questioning in which the researcher controlled the flow and type of information starting with questions of a general and broad nature to the questions which narrows the area was used. Eventually, the most relevant, specific and appropriate questions were then selected. The selection of the most suitable questions to be analysed under the participant observation study was further determined using the Solution Matrix with selection criteria giving a weighted index using the Paired Comparison Analysis Chart (PCA) as illustrated by Quality Systems (1996). The selection criteria used for ranking the most important questions which had undergone the selective observation research were related to time, face-to-face communication, continuous interaction, contextual, task-orientation, virtual communication, simplicity, applicability, relevance, accessibility, unobtrusiveness and permissiveness.

A score was then given to each question multiplied by the severity score obtained from each of the selection criteria where the most important questions addressing the Continuous Improvement Teamwork Approach were ranked accordingly in order of priority and selected for performing the selective observational study. The 5W-1H questioning skills technique in the centre of Figure 5.3 from the ethnographic research cycle was used with the qualitative research cycle process adapted from Eckett (1988) in a continual process for formulating and focusing on the right question relating to the Continuous Improvement Teamworking Model. The qualitative continual cycle questioning technique used by the researcher was used as a verification process to see repetition of the key components of the CTIO Cycle. An example on how the ‘online functional services’ component of the CTIO Cycle was determined by the researcher during the participant observation using this questioning technique is shown in Figure 5.3. Similarly, the same 5W-1H qualitative continual questioning skills were used to determine the five other key elements of the CTIO Cycle. Repetition of the key components established a sort of key word mining linked to the CTIO Cycle being unearthed from the participant observation study. “With related observations individual acts begin to fall into recognizable patterns of activity” Spradley (1980).

5.4.2 Step Two: Doing the Participation Observation

Practical field observation was done to see team members in action. The investigator has also used the role of a participant observer rather than an ordinary participant. Introspection as mentioned before was used by the researcher by being more engaged and regularly involved in the observational process by not missing important activities as described in step one. The investigator was always punctual so as not to miss any team working activities. For instance, the researcher on specific days especially in the beginning and end of the week had to go to the retail
branches very early, by fifteen minutes past eight in the morning, so as not to miss the team meetings. Team members performed early team meetings for nearly half an hour to forty-five minutes where all team members interacted together through the leadership of the manager. Issues such as customer satisfaction, customer complaints, new products and services, operational activities, technical issues, technological change in management information systems, changes on company intranet online functional services, employee transfer, frauds, leave, important notices from head office, compliance, staff surveys, company’s results, sales target, objectives for the week, functional training, e-learning, accreditation for staff role and others were normally discussed. Brief statements relating to questions for assessing the Continuous Improvement Teamworking activities were asked with specific tasks to be done. For example, the researcher had to record a statement after asking each manager the teleconferencing related question. Question asked to each branch manager by the researcher was “Can you please tell me what are you actually doing?” The answer given by all branch managers were “teleconferencing!” The statement was written as “Before starting teleconferencing all managers informed their subordinates and team leader that he or she will be doing teleconferencing meaning that he or she will be busy and not to be disturbed.” Normally it was observed that the teleconferencing can last from one hour to two hours. The task set by the researcher was to ask each manager what were they doing before starting the conferencing activities? He then wrote the statement for observation done and also what key words were mentioned by the managers.

5.4.3 Step Three: Making the Ethnographic record

A field note book as explained before was set up by the researcher relating to the study. Many of the researcher field notes were written in ordinary language used in everyday life situations. This included meanings drawn from childhood as this facilitated quickly taking important notes and not to think too much and miss many valuable practical scenes. Informants’s actual statement were also entered into the field notes book. At the end of the day the language used in the field notes was amalgamated using the ethnographer’s own languages with unidentified mixture of usages from others sources and also available from other banking staff. The language used was mostly English language used by the observer to employees in the bank. The observer’s native language ‘French and Hindi’ was also used to a few employees of the banking organization. The other language used was an ice breaking exercise to easily interact and communicate with some bank employees. For example, the researcher firstly introduced himself with his name and by shaking hands in first meeting. This was the moment of truth between the researcher and the bank staff. This really helped as it has allowed the researcher to be easily and friendly associated with branch managers and some staff especially when showing empathy in the communication process. This assisted the capture of more information from participants. Some technical words
e.g. batching and balancing, treasury, flat and bundle of notes, cash docket, planner, accreditation, e-academy, e-learning, connect and so on were used which the researcher needed to have clarification later with persons working in the major banking organization. Statements were written as condensed notes for each task done relating to questions set by the researcher progressively in the research observational cycle.

### 5.4.4 Step Four: Making Descriptive observations

Table 5.1: Showing the three dimensions in the descriptive question matrix

<table>
<thead>
<tr>
<th>ACTOR</th>
<th>OBJECT</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team members were the actors.</td>
<td>Team members use computers and telecommunication technologies through teleconferencing.</td>
<td>Team members communicate to superior and other colleagues through conferencing, faxes etc.</td>
</tr>
<tr>
<td>While doing teleconferencing, branch managers use online computer software, telephones and intranet.</td>
<td>All the objects includes telephones, faxes, computers, memos, emails, voice-mails, newsletters, courier, manuals, floppy disc, computer manage learning etc.</td>
<td>Computers are used by branch managers to input sales figures achieved to target, objectives to meet for week, listen to teleconferencing, takes notes, print etc…</td>
</tr>
<tr>
<td>Team members need to listen, take notes, type to give feedback and communicate to everyone doing teleconferencing. Also refer to manuals, webpage menu, weekly planner etc…</td>
<td>Computers provide information to access webpage, weekly planner, Manuals to refer to operational activities and telephones for listening, Sales forecast and achieved targeted actions etc…</td>
<td>Teleconferencing, e-learning, virtual networking, team meetings, Faxes, ATMs, emails, Intranet, manuals, Planners, Operational activities, Memos, Newsletters, Documents downloaded, Video conferencing, Online functional services etc.</td>
</tr>
</tbody>
</table>

A descriptive questions matrix with three major dimensions (namely object, activity and actor) as described by Spradley (1980) were used to facilitate the formulation of initial “grand tour” questions and making the relevant observations. Table 5.1 illustrates the three major dimensions used.

### 5.4.5 Step Five: Making the Domain Analysis

After having collected and recorded many pages of the descriptive observations in the researcher notebook, patterns relating to the Continuous Improvement Teamwork Approach were systematically examined. It was noted that during team meetings, team members were sitting around a rectangular table or in a triangle or circle facing each other. However, when the manager played video tapes regarding compliance, security, frauds on third party cheques etc… in team meetings all team members were facing in one direction towards the T.V set. The branch manager or the team leader was always the one to chair the team meetings. Brainstorming
sessions were used where each team member views in general or about a specific issue (e.g. such time-out and log-in problems, filing, security issues, sales, referrals etc…) were asked individually by the branch manager or team leader. During synchronous conferencing, the branch managers were always in the office in front of their computers and telephones. Otherwise some branch managers were sitting in an open area together with staff. Only branch managers, team leaders and business service officers were seen to be doing teleconferencing. Customer service operational staff, who were mostly interacting with customers, were not using teleconferencing.

The manager or team leader was a kind of leader, coach, mentor, guide, support member and ready for information and advice to team members all of the time. Continuous supervision and monitoring were regularly seen to be done by superiors to address any concern or issues raised by staff or customers where their concerns were beyond the capacity of the customer service staff to address. More experienced staff also tried to assist their colleagues whenever there was any problem arising during the normal daily operational activities. When the concern was not within the capacity of the branch to handle, intranet/online services, telephones, faxes, groupware operating support systems, and so on, were used to contact other staff in other offices for network support. On the job mentoring and coaching were also given by superiors to staff during the normal routine job whenever there was any free time. Override facilities were seen to be given by superiors for better monitoring of transactions being done. Authorisation for approval of cash advances were done by the interactions of the customer service representatives with an automated voice telephone system and using the computers. Intranet online functional services which resemble the B2E activities were used for e-learning, accreditation, people directory, general information, forms, job applications and career opportunity, training and development, employee personal details and positions with contact details, salary slips, leave applications, sick leave, extra hours, rostered weekend work, shift work, overtime % loading, timesheets, job transfers etc…

In the second observation for another 6 months, major changes were implemented in the retail banking where better ways were introduced to “put customers first”. This was done after listening to feedback from customers and employees so that it becomes easier to do business. It was thought that by improving the bank’s service to customers by widening the skills of retail branch resources, telephone banking team so that the customers can be brought back closer to the bank. These enhancements were to improve relationship with customers and bank staff. For instance, the relationship for home loan customers was managed by the branch staff including personal bankers, home finance managers and branch managers. Branch staff with their intensive experience and skills would be more able to assist customers and to build a stronger customer base while at the same time control cost by reducing number of staff from main office looking
only at home loan customers. This has also been done by another major bank as advised to researcher by managers.

Figure 5.4: Participant observation starting from a wide descriptive to focused and selective observations as designed by Spradley (1980).

![Selection Criteria Used: Contextual, applicability, relevancy, accessibility, unobtrusiveness, cost, time permissiveness, face-to-face, continuous interaction, task oriented and communicating virtually.]

**59 DESCRIPTIVE OBSERVATIONS**
- There is interaction of team members over the phone
- Use of computers
- Managers doing teleconferencing
- There are team meetings
- Managers reporting to superior via email and over the phone
- Senior manager leaving messages to team members and managers to be listened over the phones (Voicemails)
- Using Video play, T.V and DVD sets
- E-learning/e-training accreditations over the intranet being done
- Using Video conferencing
- Using Faxes, Services on line, photocopy machine etc...
- Use of online functional services
- Use of newsletters
- Superior providing coaching/mentoring
- Superior providing continuous support/supervision/monitoring
- Continuous Improvement
- Continuous Innovation in operational activities
- Interactive multimedia communication
- Computer-mediated communication
- Information Quality
- Virtual working environment
- Trust in virtual interaction
- Team structure/leadership/integration
- Online/virtual face-to-face communication
- Ambient Intelligence
- World Wide Web communication

**29 FOCUSED OBSERVATIONS**
- Team meetings
- Asynchronous Conferencing
- Synchronous Conferencing
- Video conferencing
- Use of Intranet/Internet
- Interactive media
- Teleconferencing
- Voicemails
- Visuals/drawings
- Whiteboards/Flipboards/ Charts/ graphs
- Continuous reinforcement
- Role plays/training/coaching
- Newsletters/memos/circulars
- Continuous Improvement
- Continuous coaching/supervision/monitoring
- Faxes/Photocopying/Emails
- Security Aspects
- Verificational processes (Blacklight).
- Use of Headsets for audio-graphic and visual training
- Floppy Disc/CD Rom/Operational Disc technology
- Hypertext Mark-up language (HTML)
- Hyper transfer protocol (HTTP)
- Electronic learning and training/E-Academy.

**6 SELECTIVE OBSERVATIONS**
- Conferencing & Teleconferencing
- Intranet Online Functional Services
- Quality Improvement
- Team meetings
- Consultation & participation
- Virtual communication

Start Project: Nov 06

End Project: Dec 07

12 months (290 hours)

Figure 5.5: Demonstrates how the CTIO model is weaved out, developed and systematically refined in the process through the participant observation study.
All the customer accounts and profiles were the same except they were being looked after by retail branch staff. This was also being implemented for business and financial planning customers. This level of service was also being delivered by the telephone banking team who work in close collaboration with the retail branch staff. Customers were given more choice as they can go at any time in the retail branch or phone branch staff or telephone banking team and be dealt with by more expert and skilled staff. All customer requirements were being met including home loans, investment and insurance, personal loans, credit card, as well as all customers’ transactional needs. There was also more banking specialist like financial planners and business banking managers to deal with financial planning and business banking. Hence, customers were more encouraged to go to retail branches to have a better face-to-face interaction and address customers’ needs. Throughout the twelve months of participant observation study, everything was observed as far as possible to fully understand patterns and key features of the Continuous Improvement Teamworking Approach model. As illustrated in Figures 5.4 and 5.5, at the beginning of the study 59 descriptive observation domains were made by physically and visually observing what was really happening in the major retail Australian bank. Progressively over time and when the investigator had adapted to the banking environment, selective observations were done using questioning with a set of selection criteria as illustrated in Figure 5.4.

After a systematic review and fine tuning approach, 29 focused observations were made. With more practical experience over time and proper understanding of what was really occurring in the organization, the researcher made selective observations where only six core elements of the Continuous Improvement Teamworking Approach were discovered and summarised. The six elements of the CTIO model are further explained in detail in the taxonomic analysis of the six major researched domains. As the researcher gained experience in grasping the present situation, Steps 6 to 9 were used concurrently and were performed during the first nine months as the first phase of the study. Steps involving cultural themes, cultural inventory and writing the ethnography were done in the extra 3 months as the second phase, when the observer went back to do further field work. This second phase of participant observation was a sort of verification for further justification and clarification after reflecting on the field work, used for the same purpose and scope of this study.

5.4.6 Step Six: Making Focused Observations

After spending around two months doing initial investigations by doing descriptive observations, the investigator used the in-depth investigation to decide on what questions to focus on. Kinds of objects such as computers, telecommunication technologies and devices, manuals, faxes, newsletters being used by team members, and so on, started to be observed more as from second
to fourth months. Similarly, for kinds of activities such as synchronous and asynchronous conferencing, teleconferencing, video conferencing, team meetings, and so on, more focused observations were done. The same was done for kind of acts, kind of relationships, kind of actors, kind of goals, kind of time, kind of places to further narrow the observational process. An understanding of any cause and effect relationship between the domains was sought by the investigator. Figure 5.4 illustrates the focus observations.

5.4.7 Step Seven: Taxonomic Analysis

To illustrate this step, the taxonomic analysis of the six major domains and measures of the CIT Model/CTIO Cycle are shown below in Figures 5.6 to 5.12. From Figure 5.6, the main domain or component of the CIT Model/CTIO Cycle was conferencing. While the measures for conferencing were synchronous conferencing and asynchronous conferencing. Similarly, the other key domains and respective measures of CIT are demonstrated in the other taxonomic analysis.

Figure 5.6: A taxonomic analysis of the conferencing domain

Figure 5.7: A taxonomic analysis of the teleconferencing domain.
Figure 5.8: A taxonomic analysis of the intranet online functional services domain.

Figure 5.9: A taxonomic analysis of the quality improvement domain.
As mentioned by Bobrowski and Soler (2007), error prevention relates to effort to understand the root cause of errors, process improvement activities, tools and quality training. While, quality assessment relates to inspections, peer reviews and testing; and product quality metrics. All of these refer to quality improvement initiatives (Figure 5.9) as already seen in the retail banking sector to illustrate real improvement.

Figure 5.10: A taxonomic analysis of the team meetings domain.

Figure 5.11: A taxonomic analysis of the consultation and participation component.
The measures as observed from the taxonomic analysis of the participant observation study were used qualitatively in Study 3 (face-to-face interview using content analysis) as created codes and themes. These codes and themes were counted for the number of times they occurred in the text data (interview scripts). This quantification of qualitative data enabled the researcher to compare quantitatively the qualitative data. These six key domains or component and measures of the CIT Model/CTIO Cycle had also enabled to create the survey questionnaires for the face-to-face interviews (Study 3) and personal survey (Study 4) grounded in the views of the participants in retail banking. All the measures were used in the personal survey and analysed quantitatively. Further explanation is given in Chapters 7 and 8.

5.4.8 Step Eight: Making Selected Observations

As from the fourth month onward selected observations were done. In the first phase of the participant observation, the researcher focused mainly on the synchronous conferencing, team meeting, teleconferencing and intranet domains for depicting the right ingredients for the new
issues relating to the emergence of Continuous Improvement Teamworking Approach. During the first two to four months more descriptive questions were asked such as: “Can you describe how do you work as a team?” In the following four months more structured questions were asked. For example branch managers were asked in-depth questions specific to a particular domain such as: “What do you do during teleconferencing?” The ethnographic interviewing process assisted the observer in shaping and positioning the CTIO Cycle better in the Continuous Improvement Teamwork Approach adopted and being practically used by team members in the retail banking sector. Selective observations were done with the structured questions asked of team members. In fact, team members were doing Continuous Improvement Teamworking activities without themselves realizing its presence and what they have been doing. They were doing a new form of team working approach with no definition in the literature and books. At that stage the researcher felt the presence of TQM and Continuous Improvement approach which was continually being used to address problems or issues in team member`s immediate place of work. Surprisingly, only a few branch managers were aware of the TQM concept though this concept has been adopted and practically implemented in form of Six-Sigma in the major bank. However, it was confirmed by senior management that the bank in this study adopted change management and Six-Sigma with a few black belts and many green belts who were normally quality practitioners working on projects to implement quality management philosophies.

5.4.9 Step Nine: Making Componential Analysis

Table 5.2: Paradigm chart illustrating the componential analysis of intranet online functional services, team meetings, teleconferencing, quality improvement, consultation and virtual communication key domains.

<table>
<thead>
<tr>
<th>DOMAIN</th>
<th>Usefulness</th>
<th>Dimensions of Contrast</th>
<th>Feeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intranet online functional services</td>
<td>Very good</td>
<td>Business/Personal</td>
<td>Taken seriously</td>
</tr>
<tr>
<td>Team meetings</td>
<td>Good</td>
<td>Minutes of meetings</td>
<td>Good</td>
</tr>
<tr>
<td>Teleconferencing</td>
<td>Good</td>
<td>Business</td>
<td>Delight</td>
</tr>
<tr>
<td>Quality Improvement</td>
<td>Brings quality</td>
<td>Delegation to staff</td>
<td>Interesting</td>
</tr>
<tr>
<td>Consultation and Participation</td>
<td>Poor</td>
<td>Senior manager intervention</td>
<td>Frustration</td>
</tr>
<tr>
<td>Virtual communication</td>
<td>Good</td>
<td>Business</td>
<td>Exciting</td>
</tr>
</tbody>
</table>

A componential analysis as described by Spradley (1980) includes the entire process of searching for contrasts, sorting them out, grouping some together as dimensions of contrasts, and entering all information onto a paradigm worksheet. This is illustrated using the internet online functional
services, team meetings, teleconferencing and the continuous improvement major components as illustrated in Table 5.2 as the domains with usefulness, action and feeling of team members as the dimensions of contrast. Spradley (1979:199-201 as cited by Ryan and Bernard (2003) themes must characterize the experience of informants-researchers in understanding how qualitative data illuminates questions of importance and information about how people solve problems in organizations. The dimension of contrast shown in Table 5.2 characterizes the experience of the participants as informants and researcher performing this study.

5.4.10 Step 10: Making a Theme Analysis

The researcher also included an overview of the cultural scene and statements that conveyed a sense for the existence of CIT. It was important to understand what team members in the retail branch have learnt, their social relationships, and using the six core elements of the CTIO Cycle to connect. The recurrent and repetitive occurring of a number of domains, tacit and/or explicit, served in building social relationship between team members in the retail branch, to use the CTIO approach. From these patterns of cultures, the general theme under the umbrella of the CTIO Cycle was realised. The making of a theme has a high degree of generality (Spradley, 1980), the examination of the dimensions of contrast from several domains as demonstrated by the participant observation study, have allowed discovery of the main theme. For instance, Rohlen (1974) as cited by Spradley (1980 p. 143), an ethnographer studied a Japanese bank whose official motto was “Harmony and Strength”. So, in the case for this retail banking branch, the main theme as emerged and justified from this ethnographic research task has been “Continuous Improvement Teamworking”. The Continuous Improvement Teamworking Approach linkage to CI, teamwork and e-teamwork connect different subsystems of the retail banking culture to make everyone work as a better team to address customers’ needs and wants.

5.4.11 Step 11: Making Cultural Inventory

“All ethnographic problem-solving begins by identifying the problem, identifying the cause and then listing a large number of possible solutions” (Spradley, 1980). Thus, the ethnographic research cycle is a problem-solving approach as mentioned Chetty (1999). As the researcher had collected qualitative data systematically, Spradley’s systematic ethnographic research cycle was chosen rather than using available qualitative software. The researcher believes that the qualitative software would not have identified what has really been occurring through observation and attentively listening to participants by constantly verifying immediately in the branch and further confirmation later on. The ethnographic research cycle by Spradley (1980), though time consuming, is powerful in its form and can be benchmarked against many other methodologies. The field notes created by the researcher were easily managed to depict the six core components of
the Continuous Improvement Teamworking Model. By the ninth month, the researcher had forgotten most of the information gathered from the first seven months. But following the Spradley (1980) systematic approach which is a very practical qualitative approach assisted the investigator in not forgetting the key components as they appeared again and again. This is, in fact, the best quality aspect of qualitative research which brought the researcher to real facts, units of analysis, phenomena under study and causes of problems in organizations as we do not only rely on feedback, surveys, interviews and other inherent methods, but we see for ourselves what really happening in practice. This is why the extra three months was important to re-confirm findings and it also confirmed the two additional core elements from literature which were already detected in the first phase of the participant observation study.

The investigator needed extra time to be able to assess the two extra components of the CIT Model/CTIO Cycle as it was impossible to cover it in the first nine months of the study. Thus, writing the ethnography would not have been an easy task without using the invaluable, systematic, problem-solving and disciplined approach of Spradley (1980). As explained by Jorgensen (1989), participant observation may proceed in defining a problem. In fact, two case studies emerged from doing this participant observation study in the retail banking branch which were then addressed using the CTIO Problem-Solving Cycle. Using qualitative ethnographic tools has also assisted the ethnographer in the following ways: to save time; to identify the gap his research has filled in; to see the cultural scene as a whole; to see how the CTIO Problem-Solving Cycle can be implemented in retail banking as demonstrated in chapters 6 and 7.

5.4.12 Step 12: Writing the Ethnography

“Writing an ethnography can appear to be a formidable task if seen as a single task while for a thesis, it is the central message for the point to be made” (Spradley, 1980). In writing the ethnograph, the tasks considered were to create an outline of the main topics, to write and edit a rough draft revisited many times, to write the introduction and conclusion, to reread the manuscript several times for synthesizing with concrete examples and concluded the final draft which is as follows:

“To the customer or general public any concern is a problem or issue which need to be addressed continuously as soon as possible through the various tasks to be done by team members working for the organization or institution with face-to-face and/or virtual interactions means as the communication medium in achieving successful and productive outcomes for the firm and stakeholders.” This is an ongoing process.

In writing the ethnograph for the CTIO Cycle, the researcher identified several important areas for future research in light of the discoveries made from the participant observation study. The
relationship between face-to-face and virtual interactions was identified and demonstrated in the case studies, content analysis and personal survey studies in (Chapters 6, 7, 8 and 9). The implementation of the CTIO Cycle as a systematic problem-solving approach was stressed by my supervisor, which has been demonstrated in the two case studies as this study could have been justified by the participant observation itself. Further justification of the six core elements would bring more in-depth information about their relevance to the CIT Model. The two main problems in retail banking as found from this participant observation study were “home loan sales referrals and poor customer satisfaction”. Both main problems were identified for improvement for implementation of the CTIO Cycle in two different retail branches. Team leadership, team communication, team structure, team convergence, Six-Sigma philosophy and approach, enabling technologies for virtual teamworking, Ambient Intelligence, Information Quality, collaborative group tools and computer mediated communication, virtual working arrangement and environment, B2E, e-training and e-learning, inter-organization e-collaboration and some others were found as other areas of further research in retail banking.

5.5 Implications

As illustrated by Edwards and Wilson (2004), virtual communication and virtual teamworking are not the only solution for productive communication and teamworking. Virtual communication may not work as well as face-to-face meetings or vice versa. Considering the negative aspects of virtual teamworking, financial organizations are still maintaining the use of face-to-face teamworking on top of virtual teamworking. This is why through the Continuous Improvement Teamworking Model, organizations are making use of both face-to-face contact to build trust and virtual teamworking for better, efficient and smooth running of their operational activities. However, nowadays people in organizations not only need to work face-to-face but also virtually in addressing some concerns or issues or problems. This is why the CTIO Cycle involves both face-to-face and virtual communication. In the past, it was possible to work only face-to-face in the immediate place of work. But nowadays, with the advent of advance technological know-how, using virtual interaction amalgamated with face-to-face communication is becoming important for organizations to run smoothly. Organizations need both face-to-face and virtual communication media to run effectively, efficiently and achieve productive performance of their firm. Virtual communication in virtual teamworking may not work as well as face-to-face communication in routine teamworking. In the case of this study both complemented each other for team members to work better in retail banking.

In this major bank, it has been observed that there was once to twice daily face-to-face interaction every week in form of team meetings, huddles, coaching, training and induction
programmes. Subsequent meetings also use the intranet, internet, emails, memos, faxes, audio, video/T.V sets, voicemails, teleconferencing, newsletters, weekly planner, online services, e-academy websites and other sources for better virtual communication. In the process of continuous improvement, many operational manuals, surveys, catalogues, quality management methodologies and tools, e-learning and e-academy for accreditations, online certifications, people directory, products and services library, employee settings, results, key performance indicators and many others have been individualized to each employee on their computer screen and virtual desk through the company’s online functional services. By applying the conceptual model of Continuous Improvement Teamworking financial institutions are performing better than before by providing superior and quality customer service. This has been justified in the two case studies showing measurement before and after improvements. In the two case studies, the two least performing branches were selected to work on two projects for six months each, to compare the before and after periods. In the before period retail banking staff were left working as they used to do. Training was provided to staff and CIT Model/CTIO problem-solving Cycle was implemented. Substantial improvement was obtained in the two retail branches as explained in Chapters 6 and 7.

Recently, it was broadcasted in the media that all major Australian banking organizations have been doing much better in terms of profitability by achieving productive performance. The CIT Model/CTIO Cycle is relevant for managers and senior managers to make their organization gain productivity, performance and competitiveness. The qualitative methodology used has been effective in understanding these practical observations to depict the CTIO Cycle. By focusing on the artifacts, the investigator has determined many issues by cross-analysing facts to gain a holistic picture of the various activities underlying the conceptual model of Continuous Improvement Teamworking. The key informants relating to the social science fields are better accessible and understood with this qualitative approach constrained to the quantitative research. However, this study using the participant observation on the Continuous Improvement Teamworking could have been ended for submission of the thesis work. As the CIT Model realised by the CTIO Problem-Solving Cycle is of importance to the research community, practitioners, managers, retail banking and following advice of my senior supervisor, a mixed method as already approved by the ethic committee and participating organization had been completed as previously planned. The researcher found that by starting first with a qualitative methodology, it facilitates the task of doing the research as the he was closer to the scene and reality. It would have been more difficult to understand the CIT Model and CTIO Cycle occurrence in the banking sector if a quantitative methodology was used first. The next stage of the sequential mixed method is to implement the CTIO Problem-Solving Cycle. Then conduct face-to-face interviews with management representatives, followed by a
quantitative survey to further investigate the CIT Model in the same organization. The participant observation has further confirmed the CIT Model/CTIO Cycle, the face-to-face interviews using the content analysis will be evaluating the validity of the model and eventually the personal survey will confirm reliability of the model.

5.6 Observations and conclusions

Banking organizations are adopting Continuous Improvement and Six-Sigma as change management programs since the banking sector is becoming more competitive. This research has focused on the adherence of the virtual interactive communication process to the normal teamworking and continuous improvement activities in a bank. Team members adopting the Continuous Improvement Teamwork Approach are defined as a Continuous-Task-Interacting-Team (CTIT). The essential six core elements, as observed through this observational study, are the intranet online services, team meetings, conferencing/teleconferencing, consultation and participation, virtual communication, and quality improvement, have led to the emergence of team convergence in the Continuous Improvement Teamworking Approach as a hybrid team approach (Kissoon, 2008a). The conventional teamworking continuous improvement strategies are being innovated and have become creative with the amalgamation of virtual teaming for the smooth running of organizations especially when under competitive pressure. Total dependence on face-to-face interaction is being reduced by effectively and efficiently using the combination of face-to-face meeting amalgamated with e-teaming. The systematic moderate participant observation used has been helpful in understanding many issues which would not been diagnosed without the indepth study carried out.

The researcher was awarded the best refereed paper by a PhD candidate with a plaque and cheque by AQR for presentation of part of this chapter for the study conducted only for 9 months, where only four key elements of CIT were identified. Hence, the participant observation has assisted the researcher to construct, de-construct and reconstruct through reflexivity to come to an effective outcome to identify the four core elements of the CIT Model/CTIO Cycle. The real occurring of the domains under investigation by using the ethnographic research cycle helps in confirming the six key elements of Continuous Improvement Teamworking to effectively illustrate the phenomena being studied. The author has clarified understanding of the Continuous Improvement Teamworking Approach; by arguing the importance of both face-to-face and virtual communications; and by articulating and proposing a synthesised and improved model by the ethnographic research cycle. Hence, the finding of this chapter is that the participant observation using the ethnographic research cycle has resulted in describing the CIT Model/CTIO Cycle and shown the benefit of the model in assisting the retail banking sector to achieve productive performance.
CHAPTER 6
STUDY 2

QUALITATIVE STUDY – CASE STUDY 1

6. TO IMPLEMENT THE CTIO PROBLEM-SOLVING CYCLE IN A MAJOR AUSTRALIAN RETAIL BANKING OPERATIONS USING THE CIT CONCEPT

Case study is a methodology which focuses on understanding the dynamics present within a single setting: often used in the exploratory stages of research. Collis & Hussey (2003)

Research done with the intention of applying the results to solving specific problems currently experienced in the business is called applied research. Cavana, Delahaye & Sekaran (2001)

Problem-solving is the process of identifying a difference between the actual and the desired state of affairs and taking action to resolve the difference. Anderson, Sweeney, Williams & Martin (2008)

6.1 Chapter overview

This chapter illustrates the implementation of the Concern-Task-Interaction-Outcome (CTIO) Problem-Solving Cycle, using the Continuous-Task-Interacting-Team (CTIT) in a major retail banking branch located in the Melbourne CBD in Victoria, Australia. This implementation provides an in-depth examination of the CTIO Problem-Solving Cycle and, in order to give a better insight into its practicality in problem-solving, further developments and a new approach are brought by integrating the common quality tools of the Deming PDSA and Six-Sigma DMAIC problem-solving cycles into a simplified but versatile one. The six core elements of the CTIO Cycle as found from the participant observation study have been used. Problem-solving research commences by defining a particular problem ‘in the real world’, creating methods involving theories of identifying original problem solutions (Phillips and Pugh, 1987 pp.45-46).

Similarly, the objective of this case study has been to confirm the importance of using the CTIO Cycle as a team problem-solving approach in resolving concerns or problems in the immediate place of work, using both face-to-face and virtual interactions. A pure Holistic-Inductive Paradigm as mentioned by Tashakkori & Teddlie (1998, p. 54) in the methodology chapter was used in this case study from the mixed method paradigm. This is illustrated to facilitate understanding of this case study. The naturalistic inquiry was considered for collecting and analysing both qualitative and quantitative data as shown in Figure 6.1. As explained previously in the methodology chapter, the less dominant quantitative data and methods (applied in the Outcome stage of the CTIO Cycle) were used to enlarge on the dominant qualitative study (applied in the
Concern-Task-Interaction Stages of the CTIO Cycle) to assess the relationship of the two most important variables as found by using the CTIO Cycle for this case study.

Figure 6.1: The pure Holistic-Inductive Paradigm as described by Tashakkori & Teddlie (1998, p. 54), used to perform the case study to improve home loan sales referrals in a retail banking branch

6.2 Summary of Case Study 1 to improve home loan sales referrals in a major banking branch

Business research can be undertaken to solve a current problem faced by the manager in the work setting that demands a timely solution. For example, a particular product may not be selling well and the manager may want to find the reasons for this in order to take corrective action. Cavana, Delahaye & Sekaran (2001)

6.2.1 Setting the scene for the case study

According to managers of the bank under study, quality management philosophy with the introduction of Six-Sigma was launched in the organisation in 2004, following its successful application within the Bank of America and a major Canadian bank. Since Six-Sigma had not yet been introduced in the major retail branches and was still in the implementation stage in the others banking sectors and mostly implemented in other states, the researcher applied the CIT Model realised the CTIO Cycle. However, according to quality managers from the bank’s Quality Program Team, it would take more time and resources than expected to properly implement their Six-Sigma program throughout the retail branches. None of the team members of the CITT, including management representatives and the team leader, was aware what quality management, Continuous Improvement, Six-Sigma and Continuous Improvement Teamworking were all about.
They had never acquired knowledge of ‘quality management’ and ‘operations management’ even though most of them had undertaken university studies in various fields. One of the team members, although without any tertiary qualification, easily participated in the CTIO Cycle implementation. The CIT Model known only to the facilitator was implemented according to the bank’s mission, vision, core values and quality model. The important quality management tools and techniques used in the CTIO Cycle for this problem-solving case study are derived principally from the informative writings of ‘quality’ pioneers Shewhart (1931), Deming (1982), Juran (1988), Feigenbaum (1991), Crosby (1984) and Ishikawa (1989), from whose work the foundations of the PDCA Cycle and DMAIC Cycle have emerged.

For retail banking to be profitable and to contribute to better profitability, not only is customer service important; selling banking products and services such as home loans, credit cards, opening accounts, financial planning and business accounts are also important. In fact, these form the major components of a bank staff member’s role in achieving targeted sales forecasts in their daily quality sales referrals. Sales referrals are leads that bank staff members need to identify as opportunities for selling home loans, credit cards and business accounts among other bank products and services. The more sales referrals received from banking staff, the greater the opportunity for referrals to be converted into home loan sales to customers. This generates financial activity for increasing future revenue to the bank. For the purpose of this case study research, only sales referrals for home loans were considered and researched, as indicated by the participant observation study described in Chapter 5.

However, the same CTIO integrated problem-solving approach can be used for researching the bank’s other products and services. The home loan sale has been selected as the major parameter of all the sales areas, since it offers a larger sales portfolio and a greater financial contribution in relation to profitability. In addition, home loan sales involve a longer repayment commitment by customers to the bank – a period of 20 to 30 years, in contrast to simple personal loan accounts for which monies are borrowed over shorter periods.

### 6.3 Practical application of the Continuous Improvement Teamworking Model relevant for the case study

The poor rate of home loan sales referrals (HLSR) as the most important operational parameter in the retail branch was tackled using the CTIO Cycle. The case study was conducted in the busiest and poorest performing retail branch and the participants involved in this study were not involved in the other mixed methods. This study was performed over a period of six months by the researcher, acting as the facilitator of the CTIT. This study was compared over two equal periods of three months each – before using the CTIO Cycle and after using the CTIO Cycle – to assess the level of productive performance achieved.
6.3.1 The Continuous Improvement Teamworking (CIT) philosophy used in the case study

The CIT Model is a Continuous Improvement (CI) philosophy involves consultation and participation of the CTIT team members to achieve the smooth running of operational activities in order to obtain productive performance for the organisation. By contrast, the CTIO Cycle places equal emphasis on the concepts of CI, teamworking and virtual teamworking. Thus, the CIT Model uses the CTIO Cycle to continuously attend to the tasks to be completed during daily operational activities with effective interaction between team members, both face-to-face and virtually.

In the consultation and participation area, the CIT Model considers that the manager, facilitator or quality practitioner involved in the daily operational activities of the organisation is the one who is knowledgeable about Total Quality Management (TQM) concepts such as PDCA Cycle, Six-Sigma, process improvement, process management, CI, benchmarking and so on. This means that, as the different quality management tools are more relevant to people working at management level, they should be well-known by the manager and/or facilitator and/or quality professional who will do the in-depth analysis to compare the before and after improvement. This is not the role of the employees, as illustrated in this case study.

The focus of the CIT Model is more on the tasks and interactions of team members in their daily operational activities which enable them to work effectively in achieving daily productive performance. This is achieved by regular interventions and interactions by the knowledgeable manager or facilitator of TQM/CI concepts, who guides his or her employees through their daily task-by-task operational activities employing a problem-solving approach. The manager, team leader, facilitator or quality practitioner should be close enough to the scene in order to capture actions and settings as they occur. They should properly understand what is really happening in practice by reflecting and using the PDCA Cycle and DMAIC Cycle amalgamated problem-solving tools and thus bring the manager closer to the employees. The various stages of the CTIO Cycle are illustrated in more detail in this case study.

6.3.2 The Continuous-Task-Interacting-Team (CTIT) used in the case study

As mentioned earlier, the Continuous-Task-Interacting-Team is a new defined team approach that involves a team using the CIT Model evidenced by the CTIO Cycle.

In this case study, the facilitator and the team leader continuously monitored and assisted team members. Constant face-to-face and virtual interactions with someone at senior level using the continuous improvement problem-solving approach served to guide team members using their informal ideas brainstormed for decision-making. For instance, the female team leader (as the management representative of the bank) was not spending most of the time sitting at her desk and
doing paper work; instead she worked together with the team in the CTIT to support front-liners in delivering quality customer service. As the facilitator, the researcher provided guidance, training, openness to information, support for the implementation of solutions, assistance in addressing the team’s concerns and a CTIO Problem-Solving Cycle technical approach throughout the project by continuously driving the team towards the main goal of achieving a better sales referrals and quality customer service.

6.3.3 Major components of the CIT Model/CTIO Cycle and CTIT considered

The six key components used in the CIT Model/CTIO Cycle and by the CTIT as revealed from the participant observation study were team meetings, consultation and participation, continuous improvement, online functional services, conferencing and teleconferencing, and virtual communication. The key aspects of all these major components were their interaction medium in the CIT Model, CTIO Cycle and CTIT which were normally related either to face-to-face communication or virtual communication. ‘Interaction Quality’ is one of the three components of ‘Service Quality’ where the emphasis is more on attitude, behaviour and expertise (Brady and Cronin, 2001). Team meetings, consultation and participation and continuous improvement were more related to face-to-face interactions. Online functional services, conferencing and teleconferencing and virtual communication were more related to virtual interactions. This case study explains in more detail how these key domains were used in the CIT Model.

6.3.4 The CTIO Problem-Solving Cycle procedures for implementation in the case study

6.3.4.1 CTIO Cycle objectives

At the start of the project the researcher set the CTIT objectives to implement the CTIO Problem-Solving Cycle as follows:

(a) To provide a better quality product or service to the next process or customer (whether an internal and/or an external customer).

(b) To improve overall productivity and productive performance in relation to the project being worked on.

(c) To reduce any associated costs and enhance the company’s performance.

(d) To motivate and enhance employees’ consultation and participation through better leadership style, training, coaching, communication, interpersonal skills, morale, teamwork, personal job enrichment and personal job engagement.

(e) To integrate the Continuous Improvement Teamwork efforts of the CTIT in problem-solving and decision-taking with or without any pre-required or formal training of team
members. The facilitator will monitor and integrate the relevant problem-solving tools and techniques to assist team members.

(f) The facilitator with the knowledge of the CTIO Cycle will make effective use of the quality tools to perform all analysis to drive the team systematically in decision-making in order to attain productive performance and quality customer service.

(g) To value all team members’ ideas and views equally to achieve operational improvement, as they are closer to the scene and more experienced in daily operational activities. For example, in this case study, personalised problem identification questions (using the 5W-1H questioning technique) relevant to the problem under investigation (poor rate of home loan sales referrals) were asked informally by the facilitator of each team member in order to gain knowledge of each person’s views and the reason underlying them.

(h) To use a maximum of fifteen essential quality tools to save time and also make the process easier to follow.

(i) To place emphasis on the tasks and team member interactions rather than on the process, and also to conduct informal team interactions as this brings team members closer.

(j) To follow the CTIO Cycle methodology focusing mainly on the concern or main issue or problem, followed by identification of its causes and root causes, finding solutions and alternative solutions. Establish the procedures for monitoring productive performance.

(k) To encourage team members to use both face-to-face and virtual interactions to work better as a team to effectively address concerns, tasks and better team interaction. Also to consider any team concern as a team issue for action.

(l) To make use of the KISS (‘keep it simple, stupid’) approach and the versatile tool of informal brainstorming sessions.

(m) Considering the essentials characteristics for assessing project success and failure in project management as explained by Lock (2007).

6.3.4.2 Ideas contributed by CTIT team members

All team members were involved in the CTIT exercises and the KISS approach was used. All the ideas contributed by team members, whether good or bad, were considered and recorded by the facilitator as the team members operate within the organisation every hour of every working day throughout the year. Experienced team members are very close to the daily practical scene and know how to make operational activities simple due to some commonality in different approaches,
scenarios and routine work. The ‘idea writing’ from the perspective of a facilitator as explained by Moore (1994) was used with the group techniques for idea building and recording. The 5W-IH technique (namely: Why? What? Where? When? Who? and How? – Quality Systems, 1996; and Who? What? By When? How? and Know Accomplished? – Moore, 1994 p.44) were integrated and used in the brainstorming sessions to generate ideas which were employed and systematically improved upon.

The facilitator worked on each of the ideas generated by using a tree diagram. After analysing the various ideas brainstormed, the key ideas for improving home loan referrals were streamlined down through a ranking exercise, with criteria assessed using a paired comparison analysis chart. Those ideas which were improved further with quality tools and techniques were assessed regularly by the facilitator/researcher with constructive criticism, validation and the combination of team members’ ideas with the management representative’s views. All of these are explained in the CTIO Cycle methodology section of this chapter. Most of the team members involved in this project work had retail banking experience ranging from six months to 25 years, with the exception of two new trainees.

6.3.4.3 No external contribution

No external assistance was sought to work on this challenging project. As mentioned, the focus of the Continuous Improvement Teamworking (CIT) Model using the Concern-Task-Interaction-Outcome (CTIO) cycle implemented by means of the Continuous-Task-Interacting-Team (CTIT) is a completely new approach adopted by the researcher/facilitator, after having previously worked on about 15 successful projects using the Deming PDSA Cycle and the Six-Sigma DMAIC Cycle. As mentioned, the facilitator guided the team in decision-making and the type of approach needed for each particular situation within the time available for improving home loan sales referrals.

6.3.4.4 Training, quality management tools and techniques

Training was given to team members on the CIT Model. In a meeting lasting one hour, the branch manager gave the researcher an opportunity to explain the tools and techniques in relation to improving home sales referrals using CTIO Problem-Solving Cycle. The CIT model, CTIO cycle and CTIT key features were explained to everyone during this meeting. The facilitator explained the CTIO Cycle objectives so that all team members would understand what contributions were needed from them in order to achieve success in this challenging case. In the daily operational activities where the researcher/facilitator was present, constant support was given on how the team could perform better from a quality management perspective. The facilitator also used this informal approach to training all team members including management representatives.
Since the bank’s retail branches (including the one where the study was conducted) are busy with customers and short of staff, time was a very crucial parameter for the proper implementation of the CTIO Cycle. The researcher was advised not to take up too much staff time in carrying out the work on this project. The researcher therefore had to consider time, cost, processes, people, systems, informal training and technology to complete the case study successfully within the time frame allowed.

6.4 The four stages for CTIO Cycle implementation in case study

STAGE 1: CONCERN STAGE

Figure 6.2: showing the Concern Stage of the CTIO Cycle

6.4.1 Step 1: Defining the most important problem

The concern stage of the CTIO cycle (Figure 6.2) was largely the stage for identification, definition and understanding of the problem of poor home loan sales referrals in the branch. If the numbers of customers taking up home loans does not increase, the lower level of business activity will lead to poor profitability since it is costly to run a retail branch. Therefore, the front-liners such as customer service officers and customer specialists dealing face-to-face or by telephone with most of the customers are key employees of the bank. Management representatives of the bank emphasised to the researcher that retail banking is expensive in terms of the rent, security aspects, facilities provided to customers, staff salaries, maintaining up-to-date technology and software and several other factors. Thus, using the problem-solving research to alleviate the problem of poor home loan sales referrals to improve the productivity and profitability of this retail banking branch is crucial.

6.4.1.2 Researcher involved with team members to work as a team

The facilitator collected data on a weekly basis and constantly analysed them to understand what was really happening. He notified team members informally what was really occurring in relation to sales referrals each week. By keeping them informed, it became clear in the team members’ minds where the team was situated and whether more effort was required from each member for a
better cumulative team effect to generate more sales. As everyone shared the common organisational goal to generate more sales, this reporting to team members was a fruitful exercise. The facilitator was constantly communicating face-to-face and virtually with all team members including management representatives. Any concern was immediately raised and tasks that needed to be done were immediately addressed, so that the right medium of team interaction was used to have the best possible outcome in achieving the organisational goals. The facilitator’s presence in the team drove the CTIT, using the CTIO Cycle to address issues relevant to improving home loan sales referrals. Thus, by not waiting for issues to be addressed at a later stage, issues related to the problem of poor home loan sales referrals did not accumulate. Only the most difficult and time-consuming issues were placed in a file on the team leader’s desk; the file showed action dates, a schedule of activities, possible outcomes progressively achieved and the name of the team member who was following the particular issue every day. The team leader checked the outstanding issues every morning and reminded team members of their daily tasks and interactions in order to achieve progress in resolving those issues. The facilitator’s assistance was helpful in making the team aware of whether they were really addressing the right causes for implementation of right solutions of the identified issues. This assistance is further explained later in the chapter.

### 6.4.1.3 Evaluation of team members’ capabilities for solving problem

All team members had been previously trained at the bank’s head office on how to generate home loan sales referrals. The facilitator worked through all these materials to gain an understanding of the training involved and then assisted the team members where needed relevant to the present case study with additional training from his side. In addition, at the weekly team meetings conducted by the branch manager, home loan sales referrals results were formally communicated to all team members and their views were sought as the manager considered necessary. The actual figures compared to the branch and regional targeted figures were also formally communicated. The team members were versatile as they were involved in a range of tasks throughout retail banking operational activities and most of them were experienced.

### 6.4.2 Step 2: Grasping the operational process of home loan sales referrals

To fully understand the process of retail banking operations, a flow chart is characterised in Figure 6.3. The ‘moment of truth’ between the bank’s front-line team members (who are normally the tellers, customer service officers and customer service specialists) and their customers, is the key aspect for quality customer service – especially in the face of severe competition.
Figure 6.3: Service blueprint (Flow chart) showing the operational process of retail banking for converting a home loan sales referral (HLSR) into a sale

The retail banking service blueprint (Hanna and Newman 2007 p. 277) for HLSR in Figure 6.3 illustrates that customers come to retail bank branches to perform transactions and seek information, advice and any other personal banking issues they have. After performing the customers’ transactions, the front-liners will try to identify any opportunity for making a home loan sales referral according to the customer’s profile. If a sales referral is identified, the customer is referred to the personal banker. The personal banker will view the home loan specialist or home
finance manager’s diary on the intranet website to confirm the exact day, date and time of the appointment. If the personal banker is having any difficulty in assessing the customer’s eligibility for a home loan, the customer is normally referred to the branch manager or the team leader, or a phone call is made to the home loan head office or mortgage centre where another staff member will talk to the customer. Until that date, if there is any other concern the customer will come to the bank and be re-directed to an appropriate staff member as indicated by the arrows in Figure 6.3.

6.4.2.1 Informal brainstorming/ 5W-1H questioning skills with team members

The facilitator conducted informal brainstorming sessions with team members on the poor rate of home loan sales referrals within the branch. These sessions were held during tea breaks, at lunch time, before opening and after closing of the branch, as staff were free at these times. The researcher also approached staff members whenever they were not attending to customers or performing some other important task. These informal brainstorming sessions were very important as they gave the facilitator a holistic picture of the real settings and what was really happening. After this stage, the researcher examined in more details each of the main issues raised by team members by using the 5W-1H questioning technique. The 5W-1H questioning skills as described by Quality Systems (1996) was used throughout this project as it is a very powerful tool. For instance, in the data collection phase of this case study, in order to grasp the problem of poor home loan sales referrals the technique was used as follows: What data to collect? When and until when data will be collected? Where to collect data? Who will be collecting data? Who else would relevantly be involved in the data collection phase? How will the information be collected and how much data will be collected? The 5W-1H questioning technique was very useful when applied together with many of the crucial quality tools used in this project and was employed during various stages of the project.

6.4.3 Step 3: Project planning and setting standards

A schedule of activities as explained by Summers (2000) was prepared by the facilitator for follow-up of the project work. This was a very important tool for monitoring the CTIT closely and discovering where the team was situated at any point of the study. The actual team interaction using the CTIO Cycle with regard to achieving better sales referrals was also monitored by the facilitator. The actual tasks and interactions of the team against the targeted forecast were very helpful in understanding how effectively the CTIO Problem-Solving Cycle was working to address the concern under investigation.
Table 6.1: Schedule of activities to illustrate the CTIO Cycle in addressing the problem of poor home loan sales referrals

<table>
<thead>
<tr>
<th>STEPS / ACTIVITIES FOR CTIO PROBLEM-SOLVING CYCLE (Weeks)</th>
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<th>4</th>
<th>6</th>
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<td>TREE DIAGRAM &amp; SOLUTION MATRIX WITH CAUSES, ROOT CAUSES, SOLUTIONS &amp; ALTERNATIVE SOLUTIONS</td>
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<td><strong>INTERACTION STAGE (EXECUTION OF ALTERNATIVE SOLUTIONS)</strong></td>
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<td>FACE-TO-FACE INTERACTION (eg. TEAM OR INFORMAL MEETINGS ETC)</td>
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**THEME:** To improve sales referrals in a major retail Australian branch.

Project started

Targeted end
Table 6.1 illustrates the Schedule of Activities (an approach similar to the Milestone Chart or Gantt Chart as explained by Quality Systems, 1996) which shows the four stages and different steps of the CTIO Cycle. Each step in the CTIO cycle had a targeted week for its completion in order to maintain the CTIO Cycle’s smooth running. Some concerns were very time-consuming to resolve and the CTIO Cycle took longer to resolve those problems. However, simple issues were easily and quickly resolved by the CTIO Cycle.

**STAGE 2: TASK STAGE**

6.4.4 Step 4: Determination and selection of causes

**Figure 6.4: The task stage**

<table>
<thead>
<tr>
<th>ONLINE INTERACTION</th>
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<tbody>
<tr>
<td>(USE OF INTRANET)</td>
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<tr>
<td>VIRTUAL INTERACTION</td>
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<td>(USE OF VIRTUAL TEAM WORKING)</td>
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<tr>
<td>CONSULTATION AND PARTICIPATION</td>
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**STEPS FOR OUTCOME STAGE**

- MEASURE RESULTS ACHIEVED
  - (DATA ANALYSIS BEFORE AND AFTER IMPROVEMENT)
- DATA COLLECTION FOR CAUSES AND ROOT CAUSES
- CAUSE PARETO ANALYSIS
- STANDARDISATION OF PROCEDURES
- MONITORING CHART
- SELF EXAMINATION & FUTURE PLANS
- ASSESSING QUANTIFIABLE AND UNQUANTIFIABLE BENEFITS
- SUMMARISING THE CTIO CYCLE

**TASK STAGE:**
Defining tasks, Systematic use of quality tools & techniques, determination of causes, root causes, solutions and alternative solutions, root cause verification, evaluation of alternative solutions using tree diagram, dimension of contrast between alternative solutions, corrective action and implementation of tasks for alternative solutions, Continually attending to tasks with assistance from experienced team members.
Figure 6.4 illustrates the different steps of the task stage of the CTIO Problem-Solving Cycle. During the informal *brainstorming* through face-to-face interactions with all the team members about the possible causes of poor home loan sales referrals, the facilitator was memorising the various key causes mentioned which were recorded in his notebook later the same day. The 18 possible causes as informally mentioned by team members are summarised below in Table 6.2.

**Table 6.2: Possible causes of poor home loan sales referrals informally brainstormed using CTIT**

<table>
<thead>
<tr>
<th>Cause No.</th>
<th>Causes of poor home loan sales referrals identified by CTIT from informal brainstorming sessions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No verbal offering to customers (more need-based conversation)</td>
</tr>
<tr>
<td>2</td>
<td>Unpractical transition statements (Show personal benefit statement to customer).</td>
</tr>
<tr>
<td>3</td>
<td>Relationship building with customers</td>
</tr>
<tr>
<td>4</td>
<td>Opportunity identification from customer’s transaction and profile</td>
</tr>
<tr>
<td>5</td>
<td>Too much to do (transactions) with complex nature of tellers and customer service officers’ jobs</td>
</tr>
<tr>
<td>6</td>
<td>Lack of management support</td>
</tr>
<tr>
<td>7</td>
<td>De-motivational factors</td>
</tr>
<tr>
<td>8</td>
<td>Retail banking operational process</td>
</tr>
<tr>
<td>9</td>
<td>Available systems and support</td>
</tr>
<tr>
<td>10</td>
<td>Communications network (transactional networking)</td>
</tr>
<tr>
<td>11</td>
<td>Use of home loan questionnaire</td>
</tr>
<tr>
<td>12</td>
<td>Not enough feedback from customers</td>
</tr>
<tr>
<td>13</td>
<td>Quick to respond to customers need</td>
</tr>
<tr>
<td>14</td>
<td>Busy retail branch</td>
</tr>
<tr>
<td>15</td>
<td>Lack of staff</td>
</tr>
<tr>
<td>16</td>
<td>Lack of individual leads</td>
</tr>
<tr>
<td>17</td>
<td>Not enough prospecting (use of posters and brochures)</td>
</tr>
<tr>
<td>18</td>
<td>Proper use of weekly referral worksheets</td>
</tr>
</tbody>
</table>

**6.4.5 Step 5: Evaluation of causes using PCA Chart and Cause Solution Matrix**

The 18 causes were then stratified into major and minor causes using the *Paired Comparison Analysis Chart* and *Solution Matrix* concept (Quality Systems, 1996). A better explanation about the PCA chart and Cause Solution matrix and other quality tools used are given in the next Chapter. Most of the quality tools used are explained Case Study 2. This case study is just explaining how the CIT Model/CTIO Problem-Solving Cycle was implemented using the CTIT. The *Paired Comparison Analysis Chart (PCA)* was used for weighing of the selection criteria and the Cause
Selection Matrix was simultaneously used by the facilitator to determine the order of ranking. In the PCA chart, the selection criteria were contrasted and compared with each other to see which one was more significant.

6.4.5.1 Using the cause and effect diagram to identify common root causes

From the cause and effect diagram the six major causes stratified were: use of home loan questionnaire, communication network, lacks of individual lead, quickly responding to customer’s need, no verbal offering of home loan services available and lack of home loan opportunity identification. These major causes were categorised under the headings of ‘Questionnaire Use’, ‘Individual Lead’, ‘Customer Respond’, ‘Communication Network’, ‘Verbal Offering’ and ‘Opportunity Identification’ on a cause and effect diagram. The 5W-1H questioning technique was used to enhance the quality and quantity of ideas generated to work out root causes from the fishbone diagram. The 5W-1H questioning technique helped to verify the relevance, validity and reliability of information provided by the team members. The cause and effect diagram (cause pursuit type – Quality Systems, 1996) as used in this case study also helped to sort out (narrow down) and expose the team’s interactions between the several factors affecting the operational process of home loan sales

6.4.5.2 Summary of the CTIT’s solutions

The solutions as illustrated in the Tree Diagram in Figure 6.8 and determined by the CTIT using the CTIO Problem-Solving Cycle were as follows:

1. To **empathise** with customers, banking staff expected to properly greet customers, listen attentively to their concerns and always be positive towards them.

2. To show their **willingness** to help customers, banking staff were expected to project themselves first as willing to help and also to continue serving customers all the time.

3. To generate a need-based **conversation** with customers about a home loan, as an interaction medium to satisfy the customer’s needs and wants.

4. To constantly look at the **customer’s profile**, where the customer’s available online details are searched for possible home loan suitability.

5. To **continuously interact** with internal staff (other banking staff not in the immediate place of work) and also with external customers (customers who come into the retail branch with their concerns) for follow-up of home loan information.

6. To continually use the available banking **online services** and online banking software programs to address customers’ concerns.
6.4.5.3 *Barriers and Aids Chart to anticipate difficulties in implementation of solutions*

Table 6.3: Barriers and Aids Chart to anticipate some constraints before implementation of solutions.

<table>
<thead>
<tr>
<th>Alternative solutions</th>
<th>Barriers</th>
<th>High Medium Low</th>
<th>High Medium Low</th>
<th>Aids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introducing first by staff name</td>
<td>– Serving many customers at a very busy retail branch</td>
<td>High</td>
<td>High</td>
<td>– Ice-breaking exercise</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Make customer feel important</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Assure customer of good service</td>
</tr>
<tr>
<td>Body language</td>
<td>– Each person is different</td>
<td>High</td>
<td>High</td>
<td>– Relate to the customer</td>
</tr>
<tr>
<td></td>
<td>– Cannot change ways of doing things overnight</td>
<td>High</td>
<td>High</td>
<td>– Improve communication</td>
</tr>
<tr>
<td></td>
<td>– Difficult to separate from emotions</td>
<td>High</td>
<td>Medium</td>
<td>– Good mannerisms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Clothing/uniforms</td>
</tr>
<tr>
<td>Resist distractions</td>
<td>– Not listening carefully</td>
<td>High</td>
<td>Low</td>
<td>– Listen for specific facts</td>
</tr>
<tr>
<td></td>
<td>– Need to ask customers to repeat themselves</td>
<td>Medium</td>
<td>Medium</td>
<td>– Focus on key words related to customer’s concern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Prevent disruptions</td>
</tr>
<tr>
<td>Meet the need of the customer</td>
<td>– Other team members involved not in same immediate place of work</td>
<td>Medium</td>
<td>High</td>
<td>– Immediate assistance from other team members and team leader from same place of work</td>
</tr>
<tr>
<td></td>
<td>– Complicated process to address concern</td>
<td>Low</td>
<td>High</td>
<td>– Customer pleased by quality service can convert a referral conversation to a sale</td>
</tr>
<tr>
<td>Information</td>
<td>– Unavailable information for customer concern</td>
<td>Low</td>
<td>High</td>
<td>– Giving right information may lead a referral conversation to a sale</td>
</tr>
<tr>
<td></td>
<td>– Customer asking for advice without having information first.</td>
<td>High</td>
<td>Medium</td>
<td>– Help to build rapport with customers.</td>
</tr>
<tr>
<td>Advice</td>
<td>– Not easy to always give right advice in all situations as customer may come back to complain</td>
<td>Low</td>
<td>High</td>
<td>– Good advice leads to a sale</td>
</tr>
<tr>
<td></td>
<td>– Not all staff qualified and accredited to give advice</td>
<td>High</td>
<td>High</td>
<td>– Need to give information first, then advice for customer to decide.</td>
</tr>
<tr>
<td>Face-to-face</td>
<td>– During busy time customers still want to see banking staff.</td>
<td>High</td>
<td>High</td>
<td>– Keep information flow and conversation ongoing</td>
</tr>
<tr>
<td></td>
<td>– Customers waiting in long queues</td>
<td>High</td>
<td>High</td>
<td>– Easy to understand customers</td>
</tr>
<tr>
<td>Appointment</td>
<td>– Customers want to be served immediately without appointment.</td>
<td>High</td>
<td>High</td>
<td>– Banking staff can organise in better ways to serve customers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Spent more time addressing customer concern.</td>
</tr>
</tbody>
</table>

The CTIT anticipated some difficulties which could be encountered in the process of implementing the solutions. Problems were anticipated and observed for side effects, with observations and records taken by the facilitator throughout the implementation process. These implementation problems were assessed by using a Barriers and Aids Chart prepared by the facilitator and shown in Table 6.3.
STAGE 3: INTERACTION STAGE

6.4.6 Step 6: Face-to-face and virtual interactions

Figure 6.5 illustrates the interaction stage divided into its two most important steps, namely face-to-face interactions and virtual interactions. All team members used face-to-face interactions and virtual interactions in the full process of the CTIO Problem-Solving Cycle from the beginning to the end of the project in solving the problem of poor home loan sales referrals.

Figure 6.5: CTIO cycle showing the interaction phase for execution of alternative solutions

6.4.6.1 Face-to-face interactions

(a) Team meeting (informal meeting)

The symbolic interactionist theory as mentioned by Minichiello, Aroni & Hays (2008) deals with the nature of reality that people experiences daily. The interaction phase of the CTIO cycle was a key aspect of the CIT Model to properly unearth the realities face by the banking staff in their daily routine work. The CTIT was meeting informally every Friday morning from 8.30a.m to 9.30a.m (Number of meetings held = 19) chaired by the branch manager, to discuss new issues, areas of continuous improvement, improvement in processes, how the home loan sales referrals could be further increased through brainstorming sessions and on-the-job training for staff. At times during the informal team meetings the team leader, home finance manager and the facilitator were involved for 10–15 minutes to briefly go over issues relevant to home loan sales referrals in the retail banking operations. All team members were allotted about 15 minutes to express any concern important to the operational aspects of the business. Issues relevant to the CIT Model, CTIO cycle and CTIT were mostly highlighted by the facilitator within the limited time provided by branch manager. The branch manager or team leader also communicated important information from senior management, including issues such as compliance, fraud, new products and services, customer complaints, information technology information, staff leave, new operational procedures and so on, were communicated.
The home finance manager was communicating sales figures for home loans and shared any good home loan sales experiences achieved. There was no reporter to formally record team meetings as previously done by management representatives. Also, there was no need for team members to formally sign the typed and circulated minutes of each meeting after reading them, (they were normally kept in the branch manager’s office). However, the facilitator recorded team members’ ideas in his personal notebook with their permission. He took personal notes mentioned in informal team meetings and during the ensuing week evaluated them using the quality tools and techniques. In fact, good ideas tended to come from the front-line workers rather than management representatives in the retail branch, as they were close to the scene and were routinely doing home loan sales referrals every day. The attendance rate at the meetings averaged 92%, as some team members were absent from work through illness on five Fridays (out of the 19 meetings held) or were seconded to other branches. Team members who were absent through illness were later informed by the facilitator what had been discussed. This was a very important exercise for all team members who missed any informal meeting, as they needed to be informed of any issues that had arisen and any follow-up course of action decided upon. With the support of the branch manager and team leader, the facilitator regularly assigned tasks to each team member to satisfy the three functions of the informal team meetings, namely: production, facilitation and control.

Production of team meetings was mostly related to the preparation of an agenda and what needed to be communicated effectively to team members considering the time constraints. Production also related to the dissemination of important information to facilitate effective running of the CTIT. Thus, planning in advance of what needed to be accomplished in the informal team meetings was very important so that the facilitator could drive the CTIT to continuously improve the step-by-step home loan sales referrals as demonstrated in the CTIO Cycle methodology.

Facilitation was mostly related to the crucial role of the facilitator in the effective running of informal team meetings, where key ideas from front-liners were built upon for the improvement of home loan sales referrals. The facilitator who was working with team members in the daily operational activities was close to all front-liners and noted that there was a ‘line of demarcation’ between front-liners and management representatives. The facilitator role was like a ‘buffer’ sandwiched between front-liners and management representatives and he tried to bring the two groups closer through the CTIT. The branch manager was leading the team meetings, with the support and assistance of the facilitator.

Control was related to what needed to be discussed in team meetings. The control of team meetings was very important so that only issues relevant to problem of poor home loan sales referrals were discussed. Issues such as pay increases, too much work to be done, doing too much of ‘politics’, customers being rude, poor leadership and communication of the branch manager, a too-busy retail branch, slow computerised network and so on, were not raised in team meetings.
The intervention of the branch manager and facilitator was deemed necessary, so that team members did not go in irrelevant directions but focused on what needed to be done to improve home loan sales referrals.

(b) Consultation and participation

Consultation and participation were important aspects of the CIT Model/CTIO Cycle and related essentially to the morale aspect of continually involving team members. The facilitator has to be diplomatic to encourage team members to participate actively in the implementation of the CTIO Cycle. Most of the time, the branch manager was busy in her office and could not listen to staff queries on the spot, even though they were work-related. Team members were found to be quite frustrated at times when this type of leadership style was exercised. Thus, in some ways the ‘iceberg principle’ was often observed on the part of the branch manager. The ‘iceberg principle’ as described by Zikmund (2003, p. 737) refers to the idea that the dangerous part of many business problems is neither visible to nor understood by managers. The team leader and more experienced staff including the facilitator were very involved with team members, especially when technical issues arose. The researcher found that the role of the manager was very important in such instances, especially if she wanted her employees to be very committed to achieving good performance. Listening to employees should be a key role for managers to undertake. By using the CIT Model and the CTIO Cycle, most of the staff concerns were being immediately resolved. Telephone and the online functional services were used to liaise with staff from other retail branches or offices when assistance was needed.

(c) Quality improvement

To achieve quality improvement the role of the management representative, quality practitioner or facilitator is of crucial importance. In the case of this project, the facilitator acted as a catalyst to boost the branch staff’s understanding of CI and how to work better as a dynamic team. The facilitator used the 15 most important quality tools to illustrate the CTIO Cycle methodology and the CTIT felt that these 15 Continuous Improvement tools were enough for the success of this quality management project work. Some of the 15 tools are derived from the Deming PDSA and Six-Sigma DMAIC Cycles. However, the cause and root cause analysis, pareto analysis, tree diagram, correlation analysis including bivariate regression analysis are differently applied, specific to this case study as demonstrated in the CTIO Problem-Solving Cycle. Each of the 15 tools has a specific purpose in the CTIO Cycle and all tools have a systematic linkage with each other, working well together when properly understood in the CTIO Cycle methodology as shown in this project. Other Continuous Improvement tools can be added to the basic 15 tools, but if one of the 15 is not there the CTIO cycle may not work as it should.
6.4.6.2 Virtual interactions

(d) Online functional services (online interaction)

The online functional services as observed within the financial institution under study are the peer-to-peer network relationship builder, e-learning/experiential learning, electronic meeting systems, company’s web server search engine and virtual teaming and group network. This is related to B2E, as businesses are moving more towards having their employees use online domains for better and more efficient communication. For improving the home loan sales referrals, team members have been using the online functional services for better communication. For instance, the facilitator demonstrated to team members how to log onto the bank’s quality online page to know what quality management and continuous improvement are all about. Even the branch manager and other management representatives were not aware of the quality management and six-sigma department in the bank’s Sydney offices. By viewing the home page for quality management using the online functional services, the management representatives gained confidence which enabled them to further support the facilitator in his work with the retail branch team.

The online diaries and planner being used by bank staff to book appointments for home loan customers were very helpful, providing a quick and efficient service. There was also the online people directory where any employee could be immediately contacted from any other department or retail branch throughout Australia. Home loan brochures about different products, technical reports, articles, existing customer profiles, case studies, current economic conditions and information about what competitors were doing were all available on the company’s intranet services. Thus, employees within the bank were not only communicating by phone, fax or mail but also via online services in relation to any home loan concern. Hence, the online functional service was a very important tool in the Continuous Improvement Teamworking concept.

As the facilitator was working with the bank, he was given access to the online functional service where he searched on the company’s intranet for all relevant information and training on quality. The training provided by the bank involved only Six-Sigma. Although teamwork and continuous cycle were mentioned, their focus was mainly on the DMAIC Cycle for increasing profitability and the researcher found that, in practice, proper teamworking and Continuous Improvement initiatives were still lacking – and this lack provided justification for the implementation of the Continuous Improvement Teamworking concept. The training provided by the quality team in the head office in Sydney was focused mostly on the introduction of six-sigma, green belt, yellow belt and black belt quality practitioner courses.

After consultation with the branch manager and senior managers, the researcher gained approval to attend the introductory half-day course on six-sigma and the 40-hour, five full days’ training course on green belt six-sigma at the bank’s head office. The researcher had to pay for transportation and living expenses while the bank provided the training. After the training, a formal
examination was held for accreditation purposes. In order to be considered as a green belt quality practitioner, the researcher submitted a practical project (which was successful) about how to reduce cash errors by tellers in retail banking. The booking for the training was done through the intranet and confirmation obtained online, demonstrating the importance of the online functional service in assisting organisational efficiency, which employees need to tap into for their own self-development and training.

(e) Synchronous/asynchronous conferencing and teleconferencing
Synchronous conferencing refers to the synchronisation between team members at the same time, while asynchronous conferencing refers to team members posting contributions to a conferencing system which arranges the contributions by topic and makes them available to other team members at different times. The teleconferencing system used was simply a telephone equipped with a speaker and a computer for viewing and expressing concerns in relation to home loan referrals and sales achieved. As seen from the participant observation study and this case study with banking staff, synchronous conferencing and teleconferencing were used mostly by branch managers, home finance managers, financial planners and business service officers, while customer service officers and personal bankers tended to use asynchronous conferencing. Hence, synchronous conferencing, asynchronous conferencing and teleconferencing were in constant use in retail banking to increase home sales referrals and to achieve good sales in the respective branches.

Branch staff at the operational level were too busy with their retail operational activities to address the concerns of customers. Asynchronous conferencing was the right medium for interactive communication, since it can be viewed later at a suitable time. As branch managers and home finance managers have more free time, the synchronous conferencing and teleconferencing mediums of communication were ideal for them to communicate quietly in their offices with other managers and senior managers at the same time, reporting and sharing views about home loan sales referrals. Both synchronous conferencing and teleconferencing lasted for more than one hour and were normally held at least twice weekly. Every management representative posted on the synchronous conferencing and teleconferencing domains was required to report and share views on how their branches were performing according to targeted figures of home loan sales referrals. Branch managers and home loan managers shared what they discussed in synchronous conferencing and teleconferencing with branch retail staff informally and during weekly team meetings or daily huddles.

(f) Virtual communication
With the advance of e-business and e-collaboration, virtual communication is becoming an important tool in retail banking organisations. Retail banking staff are also provided with an email
address which they have to check daily. As mentioned by the branch manager, some other Australian banks which currently do not have an email system are in the process of implementing one in the next two years. Email is emerging as an important tool for virtual communication with retail bank staff, as retail banking is really the engine for survival of any banking organisation. It also allows customers with important issues to communicate directly with the appropriate branch staff, thus saving them from waiting in a very busy retail branch. It is also an easy mode of communication for staff in their own free time. Articles about sales referrals, home loan changes, important alert messages, proper use of the home loan questionnaire, clue statements and questions on how to address customers, new issues, new home loan products and so on were circulated regularly via emails to all team members. The managers, who are not always available when required, have individually communicated with branch staff as needed using virtual networking such as emails, telephone and voicemail via telephone, SMS on their mobile phones and via fax. The communication was mostly in relation to retail branch performance and results measured against targeted forecasts of home loan referrals. Thus, team members working on this study, who were at times seconded to other retail branches, were still virtually communicating with each other about home loan sales referrals.

STAGE 4: OUTCOME

6.4.7 Step 7: Data collection and analysis for the before- and after-improvement periods

6.4.7.1 Data collection

Figure 6.6: Illustrating the outcome stage of the CTIO cycle

<table>
<thead>
<tr>
<th>OUTCOME STAGE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure results before and after improvement (pareto analysis), data collection &amp; analysis</td>
</tr>
<tr>
<td>Standardisation of new procedures and monitoring chart</td>
</tr>
<tr>
<td>Analysis of two key variables</td>
</tr>
<tr>
<td>Benefits obtained (radar chart), self-examination, Continuous Cycle to attend other concerns.</td>
</tr>
</tbody>
</table>

Figure 6.6 demonstrates the final stage of the CTIO Problem-Solving Cycle. This is an important stage which involves the quantitative steps of data collection, data analysis, monitoring of the problem of poor home loan sales referrals and standardisation of improved operational
procedures in the retail branch. The less dominant quantitative methodology now supports the dominant qualitative methodology. Only the facilitator was involved in the data collection process using the check sheet quality tool. Data was collected for a period of six months from the available Retail Sales Performance Activity Report provided by the manager before implementing the CTIO cycle to understand the extent of poor home loan sales referrals in the branch. The Retail Sales Performance Activity Report is generally issued weekly by senior regional managers for all the retail branches. It shows 15 retail branches for that region and indicates the regional sector with sales and referrals figures for each branch. It gives the figures for money management, general insurance, business, home loans, new accounts, financial planning and credit card applications. For the purpose of this study, as mentioned, only the figures for home loan sales referrals were considered. The report also indicated the actual sales referrals figures for the period which this study spanned. The branch manager circulated copies of the report for the relevant period to all team members to inform them how well the sales activities for their branch were meeting budgeted forecast figures. The facilitator explained to team members what he was doing with the data collected. He constantly checked for feedback by asking other team members’ opinions about the data collected to ensure its accuracy and integrity. Each team member was asked personalised problem identification questions about data collected, as everyone has a different perspective and different experiences.

6.4.7.2 Measure results achieved (data analysis before and after improvement)

Pareto Analysis (Data Analysis Using the Pareto Diagram)

From the information originating from the check sheets, the Pareto Diagram (Spector, 2006) was drawn to display information for ease of analysis. The Pareto Diagram (the 80/20 rule which states that 20 percent of the initiatives will yield 80 percent of the results as explained by Spector, 2006) was used to illustrate both the causes and root causes for the before- and after-improvement periods. The most important causes and root causes as described earlier were selected and related to data collected in the planned period. The results of the countermeasures were also evaluated against the original targets using the Pareto Analysis.

The average for the before-improvement period was 16.4 for the 12 weeks and 27.2 for the after-improvement period (refer Table 6.4) for another 12 weeks after practical implementation of the CTIO Cycle by the CTIT. Hence, there were 129 extra sales referrals when the CTIO Cycle was used, which validated its usefulness. The monitoring chart in Figure 6.7 illustrates graphically how the home loan sales referrals had evolved over the 24-week period.
Table 6.4: Percentage difference before and after improvement for figures collected for six months each, from the check sheets against the standard weekly targeted figures

<table>
<thead>
<tr>
<th>Period /Weeks</th>
<th>Before Improvement % (week 1 to week 6)</th>
<th>After Improvement % (week 7 to week 12)</th>
<th>Difference from branch’s set target of 17 sales referrals weekly.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17 -No CTIT/NO CTIO cycle</td>
<td>17-17= 0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>16 -No CTIT/NO CTIO cycle</td>
<td>16-17= -1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>21 -No CTIT/NO CTIO cycle</td>
<td>21-17= +4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>8 -No CTIT/NO CTIO cycle</td>
<td>8-17 = -9</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>23 -No CTIT/NO CTIO cycle</td>
<td>23-17= +6</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>14 -No CTIT/NO CTIO cycle</td>
<td>14-17= +3</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>19 -No CTIT/NO CTIO cycle</td>
<td>19-17= +2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>22 -No CTIT/NO CTIO cycle</td>
<td>22-17= +5</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>14 -No CTIT/NO CTIO cycle</td>
<td>14-17= -3</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>13 -No CTIT/NO CTIO cycle</td>
<td>13-17= -4</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>12 -No CTIT/NO CTIO cycle</td>
<td>12-17= -5</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>18 -No CTIT/NO CTIO cycle</td>
<td>18-17= +1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Using CTIT/CTIO cycle</td>
<td>19-17= +2</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Using CTIT/CTIO cycle</td>
<td>22-17= +5</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Using CTIT/CTIO cycle</td>
<td>25-17= +8</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Using CTIT/CTIO cycle</td>
<td>28-17= +11</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Using CTIT/CTIO cycle</td>
<td>27-17= +10</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Using CTIT/CTIO cycle</td>
<td>29-17= +12</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Using CTIT/CTIO cycle</td>
<td>26-17= +9</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Using CTIT/CTIO cycle</td>
<td>28-17= +11</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Using CTIT/CTIO cycle</td>
<td>32-17= +15</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Using CTIT/CTIO cycle</td>
<td>29-17= +12</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Using CTIT/CTIO cycle</td>
<td>31-17= +14</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Using CTIT/CTIO cycle</td>
<td>30-17= +13</td>
<td></td>
</tr>
<tr>
<td>Average (12 weeks)</td>
<td>16.4</td>
<td>27.2</td>
<td>27.2-16.4=+10.8</td>
</tr>
</tbody>
</table>

6.4.7.3 Cause Pareto Analysis

The data obtained from the before and after improvement cause Pareto Tables were drawn on two Pareto Charts. The frequency data was obtained from checksheets, where the percentage, cumulative frequency and cumulative percentage were calculated. The cumulative frequency and
cumulative frequency percentage showed the cumulative effect of each of the causes of poor home loan sales referrals and was easier to compare and contrast when doing the Pareto analysis. Applying the CTIO Cycle resolved the related causes for the problem of poor home loan sales referrals in the branch. The data collection and Pareto analysis could have been considered in the interaction phase as done in Case Study 2.

6.4.8 Step 8: Standardisation of procedures from alternative solutions

6.4.8.1 Standardisation

Once the CTIT were satisfied with the results showing the effectiveness of the alternative solutions implemented, the facilitator designed a ‘team checklist’ to assist with the continuous implementation of alternative solutions to achieve more productive staff performance in home loan sales referrals. With the assistance of management support, the CTIT carefully planned the standardisation for all improvements to ensure that the new procedures were fully maintained. The countermeasures were incorporated into the daily retail operational activities and became permanent in the retail branch. With the support of the branch manager, the new procedures and methods were introduced when the existing operating procedures were revised by the facilitator and the CTIT. The checklist was also used to assist in resolving the concern of poor customer satisfaction in case number 2.

The checklist, which was entitled ‘CUSTOMERS’ as agreed by management and the CTIT, was as follows:

- Continuous Interaction with internal and external customers
- Unexpected customer concern to be immediately addressed
- Serving customers all the time
- Treating customers with respect
- Online functional services and virtual communication appropriately used
- Monitoring of each tasks
- Empathising with customer
- Responding to customer needs
- Staff visibility (face-to-face interaction to be always present to save customer’s time).

All of the new methods and procedures needed to be properly communicated to the employees concerned – whether part-time, full-time, replacing on job rotation or from support team – who were working in the branch during the period of study. These measures contributed to maintaining a better quality assurance management system in the branch. Several informal question-and-answer sessions were also employed to improve communication and an exchange of ideas for the proper
implementation of alternative solutions. Informal periodic reviews in the line of continuous improvement were conducted to ensure that the standardised procedures were being followed.

6.4.8.2: Monitoring the concern

Figure 6.7: Monitoring Chart for before and after improvement period

![Monitoring Chart](image1)

Figure 6.8: Bar Chart comparing weekly average for before and after improvement

![Bar Chart](image2)

1 = BEFORE IMPROVEMENT (12 WEEKS AVERAGE) WITH NO CTIT AND NO CTIO CYCLE
2 = AFTER IMPROVEMENT (12 WEEKS AVERAGE) APPLIED CTIT USING CTIO CYCLE
The percentage differences, before and after improvement figures collected for the six-month period from each from the check sheets against the bank’s standard targeted figures on a weekly average basis (from Table 6.4) are plotted on the monitoring chart (Figure 6.7) and bar chart (Figure 6.8).

**6.4.9 Step 9: Self-examination and future plan**

**6.4.9.1 Awareness of team constraints**

There was a lack of coaching and mentoring by management representatives especially for new employees in the retail branch, who should not need to be trained in their daily work by more experienced staff. Experienced team members (normally those with more than three years’ experience) were much more familiar with their routine operational tasks than the manager, as observed from this study; they were also so versatile and efficient in their working habits that they could easily facilitate the operational activity rather than having to provide training to new staff. What was felt was the lack of management support in matters such as training for newcomers, handling of difficult customers, assistance in dealing with fraudulent issues, looking at compliance issues, facilitating of virtual interactions, among others. Such assistance on the part of the manager was seen as important for gaining the confidence of experienced team members. Management representatives had enough authority from the organisation for them to be used productively in assisting their staff, which did not seem to be the case. In conducting this case study, the researcher clearly understood why Dr Deming refuted the manager’s role but supported the line workers. However, it was noted that team members worked more seriously to achieve productive performance when a management representative was present.

**6.4.9.2 Overcoming technical difficulties encountered**

Branch staff faced some difficulties in performing certain tasks using information technology, as many programs were being updated without proper communication from the bank’s IT department. Each time programming was updated it was necessary for branch staff to call the IT department for an explanation of how to proceed with many technical operational procedures using the computerised systems.

**6.4.9.3 Overcoming team constraints encountered**

It was found that management representatives should be trained in quality management, continuous improvement, teamworking, leadership, communication and problem-solving approaches and not only in retail banking technical operations. However, for the purpose of this study, as the facilitator
was already trained and knowledgeable about these concepts he was able to address such
deficiencies encountered in the management representatives. The implementation of the CTIO
Problem-Solving Cycle assisted the CTIT to overcome the constraints on the team. Hence, as
leadership was a key issue observed from this study, the leadership style relevant to the CTIO
Cycle and CTIT could be experimented upon in a future research work. A management
development program was delivered in a highly interactive Action Learning and Work Base
problem-solving approach designed to develop metanoic (paradigm shift) changes in the leadership
practices of participants as cited by Booth (2003) at the 4th MAAOE Conference. This shows to
some extent the importance of the problem-solving approach used to improve leadership skills for
managers. Booth (2003) found that interaction and insight were the cornerstones of an
organisation’s approach to team-building and creating the leadership and management capabilities
to coordinate team effort in a supply chain operation. Similarly, as leadership was found to be a
serious obstacle to be overcome within the retail banking sector, building a management
developmental program similar to that documented by Booth (2003) could be initiated with an
Australian University to improve the leadership style of management representatives in the retail
banking sector.

6.4.9.4 Quantifiable and unquantifiable gains

‘Outcome Quality’ as a component of ‘Service Quality’ – which stresses tangible and intangible
gains – is an important aspect of the problem-solving approach (Staples, 2004). Following the
successful completion of the project, the head of department together with other senior managers
invited all team members to a tea party in one of the best restaurants in town. Those present were
informed that the team had achieved both tangible and intangible gains. The improvement in sales
referrals had resulted in substantial profits, although the amount could not be disclosed. Intangible
gains included employee satisfaction, better morale, self-actualisation, more confidence, higher
self-esteem, stronger motivation and better communication. For the retail branch to emerge as the
best-performing team, it could not be a ‘one-man show’; everyone’s continuous commitment to
better performance contributes (even though individual team members perform differently
according to their capacity) by using the CTIO Problem-Solving Cycle with the constant support of
a knowledgeable management representative or facilitator.
6.5: Summarising the CTIO Problem-solving Cycle

The central issue of the CTIO Problem-Solving Cycle as summarised in Figure 6.9 is the continual use of face-to-face and virtual interactions during all four stages of the cycle in addressing the problem of poor home loan sales referrals. Team members of the CTIT interacted regularly, using routine face-to-face communication and virtual communication to alleviate concerns within the organisation.

6.6 Implications

The researcher had limited official time to talk with team members, especially as this retail branch was constantly busy with customers. He was also unable to be involved in formal meetings for any length of time, as there were too many other banking issues for the manager or team leader to communicate to staff during team meetings. At that particular period of conducting the project work, the researcher had no alternative but to look for an effective and efficient method of working with team members. This is why the CIT model is best suited for this case study, and the
implementation of the CTIO cycle by the facilitator as the quality practitioner with the CTIT has proved to be fruitful.

6.7 Differentiating between the PDCA Cycle, DMAIC Cycle and CTIO Cycle (specific for the retail banking branch under study)

The nature of the Deming PDSA cycle is normally demonstrated by Quality Circle or Work Improvement Team with a small group of employees, who voluntarily meet regularly to solve problems in their workplace. The PDCA Cycle is a problem-solving approach using numerous quality tools and largely face-to-face interaction. The basic philosophy behind the implementation of the PDCA Cycle in an organisation is the people development concept for Continuous Improvement of performance by the organisation in all its aspects (Quality systems, 1996). By contrast, the Six-Sigma DMAIC cycle takes a Process Improvement Team approach by looking at how process improvement and process management can be used to improve the overall success of a business. It is a very advanced problem-solving technique using statistical process control and related quality software for analysing data. Group dynamics and behaviours that influence team effectiveness are considered, but little consideration is given to actual team members’ tasks and team interactions when working on a particular six-sigma project. Six-sigma DMAIC methodology involves process identification, process characterisation, process mapping using iGrafx software.

The DMAIC cycle concentrates more on the process with less consideration given to the triangulation of Continuous Improvement, teamwork and virtual teamwork concepts as illustrated in the CIT Model/CTIO Cycle. The CTIO Cycle, however, places more emphasis on the tasks and team interactions, face-to-face and virtual interactions in the immediate operational activities of the team’s workplace. The DMAIC Cycle would appear to be too complex for the front-line operational activities of retail banking and is more useful for highly analytical project work at management and senior management levels. The ways in which the PDCA Cycle or DMAIC Cycle are applied in the service sector are completely different from the ways they are applied in the manufacturing sector. For instance, in the manufacturing sector the PDCA Cycle or DMAIC Cycle work very well in reducing wastage, errors, reject rates, improving packaging, improving delivery from one place to another and so on. However, in the service sector including banking, the emphasis is more on dealing with customers and using information technology. As the nature of businesses differs, the problem-solving approach also differs. The CTIO Cycle was the best approach for achieving quick, continuous and efficient productive performance from team members specifically for this retail bank branch. Hence, the CTIO Cycle can be classified as a systematic methodology which lies in between the PDCA Cycle and the DMAIC Cycle, where the focus is on the tasks and team interaction in resolving issues rather than on the process, since it is
mainly the people who operate service sector organisations. Accordingly, the views of front-liners were given more consideration when implementing the CTIO Cycle in this branch.

6.8 Conclusion

This case study has developed an applied work-based problem-solving approach using the CTIO Problem-Solving Cycle to enable team members of the CTIT to work better in achieving productive performance in banking supply chain. The researcher together with the team put forward and implemented the CTIO Cycle methodology in the branch. The Continuous Improvement Teamworking (CIT) Model using the CTIO Problem-Solving Cycle made it easier for all team members, including managers, to enhance productivity by exceeding their target for home loan sales referrals. The study was of considerable value to the banking branch as the home loan sales parameter is a critical performance indicator for the bank to continue generating profitability and achieve economies of scale. This was a challenging project because getting everyone to work together as a dynamic team to enhance productivity has always been the challenge for any manager. However, applying the CIT concept using the CTIO Cycle facilitated this task and the quantitative data used have added rigour to the dominant qualitative case study. It was observed that branch managers were not properly consulting and participating with team members; however, the level of participation and consultation was very high between team members including the team leader and the facilitator.

Improving the rate of home loan sale referrals in the branch was a great achievement for the team when compared to the performance of other retail branches, for which the CTIT was recognised and rewarded by senior management by Excellence Awards and team party. The facilitator was awarded an Excellence award. As this study reveals, when putting the CIT concept/CTIO Problem-Solving Cycle into practice a knowledgeable management staff representative or facilitator needs to drive the team continuously towards achieving productive performance in their ongoing routine work, albeit in an informal manner. The use of the key quality tools is further explained in the next case study.
CHAPTER 7

CASE STUDY 2

IMPROVING CUSTOMER SATISFACTION IN RETAIL BANKING OPERATIONS

An operation’s ability to deliver products or services to customers is fundamentally influenced by how its supply chains are managed (Slack et al., 2009 p.209)

The CTIO Problem-Solving Cycle Practical Implementation

7. Chapter Overview

The second project which was done over a period of twelve months aimed to improve “customer satisfaction” in another busy retail branch and poorest performing branch operations. This CTIO Problem-Solving methodology was previously presented in more detail in Case Study 1. This case study further validated the triangulation of CI, teamworking and virtual teamworking knowledge domains evidenced by the practical implementation of the CTIO Problem-Solving Approach. Only the nine key and simplified steps of CTIO problem-solving Cycle as implemented are illustrated in this case study using the CTIO Cycle. Throughout the steps, the researcher as the facilitator was mostly involved with the team leader who was interacting with the nine team members to improve “customer satisfaction”. Contrary to the first case study, most of the observation was done by the team leader and the facilitator collected most of the data from her. This has been a triangulation exercise to overcome bias as data collection and observation done by another person who was the team leader. The facilitator spent about one to two hours every week for one year in the retail branch operations. Training, coaching and explanation were given by the facilitator to the team leader on how to gather information and observe patterns of commonality about what the front liners were saying using the CIT Model/CTIO Cycle philosophy. The facilitator was involved regularly with participants in this case, but used the CTIO Problem-Solving Cycle methodology and quality tools to detect the right causes, root causes, solutions and alternative solution with data and information provided by the team leader. As found from this study, “customer satisfaction” was improved from an average of 67% to 89% over a comparison of six months periods, with another Continuous-Task-Interacting-Team (CTIT) with different team members under supervision of the team leader. This second case study shows the reliability of the CIT Model/CTIO Problem-solving Cycle approach implemented by the CTIT.

7.1 Case Study Summary

Adebanjo & Kehoe (2001) research demonstrated that poor levels of teamwork results in an ability to curtail breakthrough in customer focus. As explained by Fleming & Asplund (2007), ‘Bank T’ worked out how to understand its employees’ attitudes at the local workgroup level (i.e each bank
branch) to improve employee morale and productivity with improved customer service. Similarly, the facilitator tried to improve the level of teamworking of banking staff in this case, using the CTIO Problem-Solving Cycle to improve customer satisfaction. This project relates to a similar retail banking operations like the first Case Study in Chapter 6. The branch employed fourteen employees including the branch manager, the home specialist, the business manager, the financial planner and the team leader. This retail branch serves about 1000 to 1500 customers daily. “Customer satisfaction” is a crucial retail banking parameter which is measured on a monthly basis by another research team of the bank from the head office in Sydney, by calling 50 customers at random, who performed any transaction in the specific retail branch. Poor “customer satisfaction” was seen in this retail bank branch for nearly two years. Poor customer satisfaction affects branch performance, thus detracts from the company’s profitability as an increased cost of production, low volumes, loss of sales opportunities, high retail branch running costs, low employee morale and reduced job satisfaction. The informal brainstorming technique, check sheets, flow chart, Cause and effect diagram (including systematic diagram), tree diagram, cause and root cause solution matrix, informal 5W-1H questioning technique, paired comparison analysis (PCA) chart, root cause verification chart, barriers and aids chart, componential analysis matrix, pareto analysis, correlation analysis, monitoring chart, bar chart, radar chart (Berk and Berk, 1995; STA, 1996; Mizuno, 1988; Ishikawa, 1989, Summers, 2000; Evan and Dean, 2003; Pyzdek, 2003; Evans and Lindsay, 2005 and George et al. 2005) as the fifteen key quality tools as used in Case Study 1, were all used again.

7.2 CONCERN STAGE

7.2.1 STEP 1: DEFINING A PROJECT TO IMPROVE CUSTOMER SATISFACTION WITH PLAN SCHEDULE AND TARGET SETTING

The CTIT started the project under the direction of the facilitator. All team members were under the manager’s and team leader’s line management responsibility. No formal training was given to team members. As the theme ‘customer service’ (which involves customer satisfaction, customer complaints, customer transactions, customer queries about products, and so on), is generally quite broad in retail banking, a more focused statement of the problem to be addressed was used. It referred to improving ‘customer satisfaction’ in the retail branch rather than ‘customer service’. To understand, if ‘customer satisfaction’ was the main concern and team members were willing to address it, the (Paired Comparison Analysis) PCA chart was used, as it gives a systematic selection of the key theme through team consensus by using an informal voting exercise with the common likert scales of 1 (least preferred) to 5 (most preferred) as assessed by the
facilitator. The criteria used for the customer satisfaction theme selection were ‘cost benefits’, ‘closely related to company’s strategies, policies and procedures’, ‘serious obstacle’, ‘will improve employees morale’, ‘within capacity of team’, and ‘real need and challenging’. The theme for improving customer satisfaction scored the highest mark and was the theme selected by the CTIT, through common team consensus.

A schedule of activities or Gantt chart (Mizuno, 1988; Quality systems1996; and STA, 1996) was designed by the facilitator to plan and monitor progress. Members were assigned certain tasks. For example two team members were involved specifically in some trials to be conducted in order to confirm the exact cause of poor customer satisfaction in the retail bank branch together with many others tasks. The team leader and facilitator helped to make sure that tasks were completed on time. The common tool used for the schedule planning of the project was the Schedule of activities or milestone chart (Figure 1). The target period considering the plan and actual schedule for CTIT to work on each step is illustrated in Figure 1. The team planned that the project should be followed for nearly one year (six months before improvement and six months after improvement) to have a good standardized procedure together with integrity and accuracy of data. Figure 1 shows the 12 month schedules done for the project with the following activities: understanding present situation, data collection, target setting, cause analysis, root cause analysis countermeasures analysis, management approval, implementation, check results, standardization of procedures and project review and so on.

All the team members together as a team, set a target for the project of improving customer satisfaction by ten percentage points . The team believed at that time that the target set was reasonable, practical, achievable, believable, applicable and easy to understand. The team did not set a too high target so as not to discourage and de-motivate the team. At this stage the team was still in the learning phase and only the causes that were informally brainstormed, revealed whether the target was realistic or not. Informal brainstorming sessions done by the team leader enabled capture of experienced team member’s views about the poor level of customer satisfaction in the branch. The informal 5W-1H questioning technique was used with CTIT used to further unearth the causes, root cause, solutions and alternative solutions of the problem under study. These were deployed in a similar way to Case Study 1. However, the target was re-set to fifteen percentage points after the controllable causes and root causes of poor customer satisfaction were discovered by the team from the cause and effect diagram (Figure 7.4). The target was increased as the CTIT believed that more improvement could be achieved when the known causes and root causes were detected. The revised target was within the capacity of the team.
Figure 7.1: The Gantt chart showing only the summarised nine key steps in implementation of the CTIO Cycle to improve customer satisfaction in a major retail branch.

<table>
<thead>
<tr>
<th>THEME - CTIO Cycle</th>
<th>TO IMPROVE CUSTOMER SATISFACTION BY 15%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONTHS</td>
<td>PROJECT START (Targeted weeks)</td>
</tr>
<tr>
<td>STAGES</td>
<td>STEPS ACTIVITIES</td>
</tr>
<tr>
<td>CONCERN (C)</td>
<td>Step 1 Define problem; Plan schedule/Set target/informal brainstorming/informal 5W-1H</td>
</tr>
<tr>
<td>CONCERN (C)</td>
<td>Step 2 Understand present situation/Process characterisation</td>
</tr>
<tr>
<td>TASK (T)</td>
<td>Step 3 Determination of causes/root causes (cause and effect diagram/systematic diagram)</td>
</tr>
<tr>
<td>TASK (T)</td>
<td>Step 4 Determination of solutions/alternative solutions</td>
</tr>
<tr>
<td>TASK (T)</td>
<td>Step 5 Tree diagram– cause, root cause, solutions, alternative evaluations</td>
</tr>
<tr>
<td>INTERACTION (I)</td>
<td>Step 6 Implementation of alternative solutions using face-to-face and virtual interactions</td>
</tr>
<tr>
<td>OUTCOME (O)</td>
<td>Step 7 Data collection/analysis – cause/root cause pareto analysis (results evaluation before and after improvement)</td>
</tr>
<tr>
<td>OUTCOME (O)</td>
<td>Step 8 Frequency analysis</td>
</tr>
<tr>
<td>OUTCOME (O)</td>
<td>Step 9 Standardisation/monitoring problem/constraints/benefits</td>
</tr>
</tbody>
</table>

Legend: Plan (Target)  <br> Actual

7.2.2 STEP 2: GRASPING THE PRESENT SITUATION/PROCESS CHARACTERISATION

The CTIT needed to understand the present situation to identify the present problem and to confirm its existence. Informal brainstorming (Summers, 2000) was done by the team leader to understand the causes and root causes of the problem. All team members met informally to focus on the organizational concern. Some of the tools used by the facilitator were the process flow chart (Pyzdek, 2003 and Summers, 2000) to understand operational activities, checksheets (Pyzdek, 2003) to collect data, and graphs to understand the present situation causing the problem of poor customer satisfaction. The initial (before improvement) Pareto chart or Pareto diagram (Sinha and Willborn, 1985; Besterfield et al. 1999; Summers, 2000; and Pyzdek, 2003) was drawn by the facilitator based on the team consensus on the causes to be addressed. These Pareto charts showed the main causes and root causes of poor customer satisfaction which needed to be addressed by CTIT. This is explained in more detail in the next paragraph related to the ‘Task stage’ and ‘Step
3’. The facilitator explained the *Pareto diagram* to the team leader, so that she knew how to drive the team in addressing the root causes and causes of the problem. The *flow chart* (Evans and Dean, 2003 p.100) in Figure 7.2, illustrates the work process characterization of each step involved from the customers entering the retail branch until leaving after addressing their concerns.

![Figure 7.2: Process flow chart for customers entering and leaving the major bank retail branch.](image)

### 7.3 TASK STAGE

#### 7.3.1 STEP 3: DETERMINATION AND SELECTION OF CAUSES AND ROOT CAUSES

This was the most time consuming step as it was the most important one in solving the problem. Ideas contributed by all team members about causes and root causes were noted and worked out using the *Paired Comparison Analysis* (PCA) chart (Figures 7.3 and 7.6) integrated separately with the Cause Solution Matrix (Table 7.1) and *tree diagram* (Figure 7.7) to determine the major and minor causes related to root causes of the problem. Firstly, to stratify between the causes, nine criteria were identified by members from an informal brainstorming session used on Cause Solution Matrix. They were then narrowed down to seven after an informal voting exercise with CTIT as assessed in Figure 7.3 to determine their order of ranking and weighting of each selection criterion using the PCA Chart. The six selection criteria selected were as follows: in line with corporate objective; real need and interesting; serious obstacle; improve morale; within CTIT capacity; and time. Each of the team members of the CTIT gave a point by voting their most
preferred criteria relevant to be considered according to their experience and nature of retail banking operation. Every team member was asked to give their vote counted as a point, recorded by the facilitator when each of the seven criteria was mentioned to them. The numbers of points obtained are shown in brackets in the legend illustration of Figure 7.3. The best six selection criteria selected are illustrated below as legend in Figure 7.3 abbreviated as A, B, C, D, E, and F. Each selection criteria was compared individually with each other on the PCA Chart. For instance, criterion A was compared in pairs individually with B, C, D, and E. When selection criterion A, was compared with B, A was found to be more important by CTIT. While, criterion C was more important than A; A was more important than D; E was more important than A; and eventually A was more important than F. Similarly, the other six criteria were weighted in the same way as demonstrated in Figure 7.3.

Figure 7.3: The PCA Chart used to determine the order of ranking for the six selection criteria to assess which criterion was more important than the other as weighted in pairs.

<table>
<thead>
<tr>
<th>Weightage factor</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
</tr>
<tr>
<td>E</td>
<td>5</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
</tr>
</tbody>
</table>

Legend (selected only the best six selection criteria): A – In line with corporate objective (9 points); B- Real need and interesting (8 points); C- Serious obstacle (7 points); D- Improve morale (7 points); E- Within CTIT capacity (7 points); F- Time factor (6 points).

After obtaining the order of ranking of the six best selection criteria from the PCA Chart (Quality Systems, 1996), it was used on the Cause Solution Matrix (Table 7.1) for assessing the different causes of the poor customer satisfaction. Thus, the Cause Selection Matrix (Table 7.1) was used to
stratify the major and minor causes using the best six weighted selection criteria with weightage factor and the Likert scale to find the ranking order and importance of each cause.

7.3.1.1 Quality criteria used as measures

As described by Mizuno (1988) and Quality Systems (1996), a hierarchical generic framework of quality, showing distinction between primary and secondary quality criteria were used in this case study for selecting the most important causes of poor customer satisfaction. The quality criteria selected from Figure 7.3, were helpful as they facilitated information collection with CTIT to determine the order of ranking. From the relevant quality criteria the seven most important ones were selected at that point in time where each criterion has a state preference value and important weighting figures from the Likert scale 1 to 5 as selected by CTIT. The Paired Comparison Analysis Chart (PCA) chart (Quality Systems, 1996) as shown in Figure 7.3, was used to determine which quality criterion had a higher weight than others. The quality criteria profile was used to focus on the best possible quality information for evaluation of causes gathered in this study as shown in Table 7.1. The team at this stage managed to find out through informal brainstorming, as shown in Table 7.1, the causes of the problems which were mainly proposed by team members. After evaluation of all the causes using the Cause Selection Matrix with six selection criteria as shown in Table 7.1, the cause “making customer delighted” was found to be the main cause of poor customer satisfaction. “Long queues” and “relationship building” were found to be the second most important causes. The order of ranking for the fourteen causes are demonstrated in Table 7.1. Only the first five major causes were considered and shown on the cause and effect diagram (Figure 7.4) as the main categories and in the cause Pareto chart (Figure 7.9).

The root cause of each cause was identified using a cause and effect diagram or fish bone diagram (Quality system, 1996; Besterfield et al. 1999; Summers, 2000 and Evans and Lindsay, 2003) as shown in Figure 7.4. At this stage of the project, the facilitator, drew a fish bone diagram on an A3 paper and matched each team members’ informal ideas to diagnose each root cause and stratified it into major and minor root causes. This was the central point in the project to detect the exact root causes of the problem. The use of the 5W-1H technique was used by asking more why? Why? Why? about the root causes of the problem. Working on the cause and effect diagram was time consuming and was done in several sessions, as the facilitator wanted to do it right first time in detecting the right root cause of poor customer satisfaction.

Hence, the facilitator spent a lot more time and effort to explore the various root causes to detect the right ones. The team leader and facilitator acted as coaches in driving the team to right direction to focus on main issues of the problem under study. The cause and effect analysis has
systematically shown the relationship of poor performance to human factors in improving customer satisfaction in the retail branch. It was from the cause and effect diagram (Figure 7.4), that the CTIT identified the problem areas and established corrective actions. Other team members were also informally cross-trained by the facilitator with the support of the team leader. The informal brainstorming, informal 5W-1H questioning techniques and informal voting exercises were used through the various sessions in determining the cause and effect relationship to capture the right root cause.

Table 7.1: Cause Selection Matrix using the best six weighted selection criteria and the Likert scale to find the ranking order of each cause.

<table>
<thead>
<tr>
<th>Number</th>
<th>CAUSE SOLUTION MATRIX</th>
<th>SELECTION QUALITY CRITERIA MULTIPLY BY WEIGHTAGE FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Long queues – ‘In retail settings queuing problems – that pesky waiting in line that annoys customers so much’ (Hugos &amp; Thomas, 2006 p. 52)</td>
<td>A X 2 B X 3 C X 3 D X 2 E X 5 T 65 R 2</td>
</tr>
<tr>
<td>2</td>
<td>Being friendly and open</td>
<td>4 5 2 5 5 64 4</td>
</tr>
<tr>
<td>3</td>
<td>Relationship building with customers</td>
<td>3 5 3 5 5 65 2</td>
</tr>
<tr>
<td>4</td>
<td>Make customer feel valued</td>
<td>5 3 2 3 4 51 10</td>
</tr>
<tr>
<td>5</td>
<td>Too much to do with Complex nature of jobs</td>
<td>5 5 5 4 1 53 7</td>
</tr>
<tr>
<td>6</td>
<td>Lack of personalised solutions to customer’s needs</td>
<td>4 2 1 2 2 31 14</td>
</tr>
<tr>
<td>7</td>
<td>Not enough staff with busy retail branch</td>
<td>5 5 5 5 1 55 6</td>
</tr>
<tr>
<td>8</td>
<td>Lack of management support with improper coaching and mentoring</td>
<td>3 5 5 5 1 51 10</td>
</tr>
<tr>
<td>9</td>
<td>Take ownership of customer inquiry</td>
<td>3 3 2 3 4 47 12</td>
</tr>
<tr>
<td>10</td>
<td>Slow computerise systems</td>
<td>5 5 5 4 1 53 7</td>
</tr>
<tr>
<td>11</td>
<td>Not enough feedback from customers</td>
<td>5 4 3 3 1 42 13</td>
</tr>
<tr>
<td>12</td>
<td>Making customers delighted</td>
<td>5 5 3 4 5 67 1</td>
</tr>
<tr>
<td>13</td>
<td>Keep customer informed about progress of their requests</td>
<td>5 2 2 3 5 53 7</td>
</tr>
<tr>
<td>14</td>
<td>Efficiency in addressing tasks</td>
<td>5 5 3 4 4 62 5</td>
</tr>
</tbody>
</table>

Legend: T = Total   R = Rank

The synergy of the team led to a consensus on each selected root cause. As everyone in the team was experienced technically in the field with experience ranging from 5 to 15 years, the best
possible root causes were identified through the consultation and participation of CTIT. The team leader and facilitator interventions were necessitated on several occasions to prevent “group think” because those team members who were more experienced were trying to dominate with their views. *Scatter diagrams* (Evans and Lindsay, 2003) were used with the help of the facilitator to understand the relationship between variables better. All the root causes that were selected through the team consensus had a positive correlation with the effect, which illustrated that the precise root causes were diagnosed and informally brainstormed by the team. The selection of the right quality tool to be used on the *cause and effect diagram* was also very important.

Figure 7.4: *Cause and effect diagram* to depict the root causes of poor customer satisfaction in the retail bank branch.

To be able to solve the problem, the main causes were broken down into more manageable parts to understand the root causes better. The *systematic diagram* (Figure 7.5) as described by Mizuna (1988 p. 144) was utilized in the *cause and effect diagram* (Figure 7.4) to effectively achieve the CTIO Problem-Solving Cycle objective which is to detect the right root causes of the
problem. “The systematic diagram is a technique developed to search for the most appropriate and effective means of accomplishing given objectives” Mizuna (1988 p. 143). An illustration is given to the “efficiency” cause in Figure 7.5, which was the most time consuming one to properly grasp the right root causes. The “level of interaction” branch from the fish bone is demonstrated. “Fast service” was found as the major root cause for the “virtual interaction” sub-cause category while “empathy” was found as the major root cause for the face-to-face interaction sub-cause category. Figure 7.4 was also represented on a tree diagram (Figure 7.7) as explained by Mizuna (1988) to determine the solutions and alternative solutions of each root causes.

Figure 7.5: The systematic diagram to depict the right root causes from the efficiency major cause as described by Mizuna (1988 p. 143).

### 7.3.2 STEP 4: DETERMINATION OF SOLUTIONS AND ALTERNATIVE SOLUTIONS

After the right root causes were identified by the team, possible solutions were proposed by the CTIT using informal brainstorming and informal 5W-1H questioning technique. Some of the other quality tools and techniques used were stratification, checksheets, and solution matrix (Pyzdek, 2003) representing the countermeasures. The solution matrix was used to detect the best alternative solution. A PCA chart (Figure 7.6) as explained for Figure 7.3 was also used with a severity index to rank the key selection criteria for the team to informally brainstorm on the right solutions and alternative solutions to address the right root causes. The selection criteria for the severity index used for choosing the best solutions were cost, time, effectiveness, relevancy, degree of urgency and practicality. The best alternative solutions selected by CTIT consensus were then tested first in the participating retail branch operations, following approval from branch manager. Side effects of the root causes were observed. After the trial and CTIT satisfaction with the outcome, the alternative solutions from the countermeasure matrix (or solution matrix) attached to the tree diagram (Figure 7.7) were ranked. A ranking order of merit for each solution proposed was
given by the CTIT. No external quality consultant or quality practitioner was involved to advise on the possible selected and recommended alternative solutions proposed by the CTIT. A few amendments of recommended solutions were made by the CTIT before complete approval was obtained from the manager. All the recommended solutions were then implemented in all aspects of the retail branch service sector department.

Figure 7.6: The PCA Chart (Quality system, 1996) used to determine the order of ranking for the six selection criteria.

<table>
<thead>
<tr>
<th>LC</th>
<th>TF</th>
<th>PR</th>
<th>DU</th>
<th>RL</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF</td>
<td>LC</td>
<td>TF</td>
<td>PR</td>
<td>DU</td>
</tr>
<tr>
<td>LC</td>
<td>EF</td>
<td>TF</td>
<td>PR</td>
<td>EF</td>
</tr>
<tr>
<td>LC</td>
<td>LC</td>
<td>PR</td>
<td>DU</td>
<td>LC</td>
</tr>
<tr>
<td>TF</td>
<td>TF</td>
<td>DU</td>
<td>TF</td>
<td></td>
</tr>
<tr>
<td>PR</td>
<td>PR</td>
<td>PR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DU</td>
<td>DU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weightage factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
</tr>
<tr>
<td>EF</td>
</tr>
<tr>
<td>LC</td>
</tr>
<tr>
<td>TF</td>
</tr>
<tr>
<td>PR</td>
</tr>
<tr>
<td>DU</td>
</tr>
<tr>
<td>RL</td>
</tr>
</tbody>
</table>

The selection criteria as identified by CTIT members were as follows:

EF – Effectiveness (8 points); LC - Low cost (7 points); TF - Time factor (7 points); PR-Practicality (7 points); DU - Degree of Urgency (6 points); RL - Relevancy (4)

7.3.3 STEP 5: TREE DIAGRAM FOR EVALUATION OF CAUSES, ROOT CAUSES, SOLUTIONS AND ALTERNATIVE SOLUTIONS

A tree diagram (STA, 1996; Mizuna, 1988; and Besterfield at al. 1999) as shown in Figure 6, was then used by the facilitator to display the countermeasures as the alternative solutions with respect to the target set. The CTIT selected the appropriate countermeasures for the related root causes displayed on the tree diagram (Summers, 2000) using the countermeasures matrix (Quality system, 1996). It has the evaluation criteria and provides a weightage factor to each criterion with actions to be taken. The 5W-1H questioning technique was again used for selection of
countermeasures. Selection of the appropriate alternative solutions was based on facts as verified using the root cause verification table (Table 7.2). The selected countermeasures with better rating and action dates decided by CTIT, were finally reviewed to determine the possibility of further improvement.

Figure 7.7: The tree diagram linked with the alternative solutions matrix for evaluation of best countermeasures (only part showing efficiency sub-cause).

7.3.3.1 ROOT CAUSE VERIFICATION TABLE

Table 7.2: Root Cause Verification Chart to further verify some key root causes.

<table>
<thead>
<tr>
<th>R.Cause No.</th>
<th>Root cause</th>
<th>Description</th>
<th>Example</th>
<th>Verification process</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Courteous</td>
<td>Banking staff politely communicate to customers.</td>
<td>Smiling, agree with customers, gracious, refined facial expression, good body language.</td>
<td>Verified by facilitator, team leader, and other team members.</td>
</tr>
<tr>
<td>2</td>
<td>Empathy</td>
<td>Banking staff put themselves into the customer shoes to better express themselves and understand customers.</td>
<td>Introducing themselves first to customers with their names and Greeting using customer’s names</td>
<td>Facilitator and team leader observed staff.</td>
</tr>
<tr>
<td>3</td>
<td>Greeting</td>
<td>Welcome customer in retail branch</td>
<td>Say good morning or good afternoon to customers. How has the customer day been so far?</td>
<td>Observed by team leader and facilitator</td>
</tr>
<tr>
<td>4</td>
<td>Fast service</td>
<td>Banking staff serving customers quickly</td>
<td>Performing a bank cheque should be done in less than five minutes</td>
<td>Verify staff daily transactional summary</td>
</tr>
</tbody>
</table>

The CTIT proceeded with the implementation of each root cause in the retail branch. By putting together these two important quality tools namely the tree diagram and the alternative
solution matrix, it became easier to see the whole project, the CTIT was working on using the
CTIO Problem-Solving Cycle.

Figure 7.8: The tree diagram linked with the alternative solutions matrix for evaluation of best
countermeasures (only part showing efficiency sub-cause).

Figure 7.8: Showing only four key root causes evaluation for their respective solutions and alternative solutions.

**Alternative Solutions Matrix using selection criteria from PCA chart and Likert scale (1-5)**

<table>
<thead>
<tr>
<th>Root cause</th>
<th>Solutions</th>
<th>Alternative Solutions</th>
<th>X2 EF</th>
<th>X3 LC</th>
<th>X3 TF</th>
<th>X4 PR</th>
<th>X3 RL</th>
<th>R</th>
<th>CTIO Cycle</th>
<th>Task Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathy</td>
<td>Rigour of expression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I</td>
<td>FF, VC</td>
</tr>
<tr>
<td></td>
<td>Use name</td>
<td></td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>A</td>
<td>FF</td>
</tr>
<tr>
<td></td>
<td>Speak clearly</td>
<td></td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>I</td>
<td>FF</td>
</tr>
<tr>
<td></td>
<td>Manners showing feeling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I</td>
<td>FF, VC</td>
</tr>
<tr>
<td></td>
<td>Engagement</td>
<td></td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>A</td>
<td>FF, VC</td>
</tr>
<tr>
<td></td>
<td>Compassionat</td>
<td></td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>I</td>
<td>FF, VC</td>
</tr>
<tr>
<td>Fast service</td>
<td>Address transactions quickly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I, A</td>
<td>FF, VC</td>
</tr>
<tr>
<td></td>
<td>Share technical experience</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>-</td>
<td>FF</td>
</tr>
<tr>
<td></td>
<td>Focus</td>
<td></td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>I, A</td>
<td>FF</td>
</tr>
<tr>
<td>Greeting</td>
<td>Way present oneself</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I, A</td>
<td>FF, VC</td>
</tr>
<tr>
<td></td>
<td>Respect</td>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>I, A</td>
<td>FF, VC</td>
</tr>
<tr>
<td></td>
<td>Positive approach</td>
<td></td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>I, A</td>
<td>FF, VC</td>
</tr>
<tr>
<td></td>
<td>Obliging</td>
<td></td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>LA</td>
<td>FF, VC</td>
</tr>
<tr>
<td></td>
<td>Pleasant</td>
<td></td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>LA</td>
<td>FF, VC</td>
</tr>
</tbody>
</table>

Legend: I : Immediate; A: All team members involved in tasks.

FF: Face-to-Face Communication; VC: Virtual Communication.

R: Ranking order of root causes related to relevant alternative solution.

X: Multiplication of weightage factor with average score given (From Likert scale 1-5) by CTIT for each alternative solution. Likert scale with 1 means low preference and 5 means high preference by average score given by CTIT.

The facilitator then proceeded with the verification of the key root causes of poor “customer satisfaction” by observing the interaction between staff and customers. The root cause verification chart used was a triangulation exercise to verify the root causes identified by the CTIT. Branch staff presenting themselves with a pleasant personality to internal and external customers
was the main alternative solution found by the CTIT (Figure 7.8). The second important alternative solution was to have a positive approach, while dealing with any customer. Afterwards serving customers with passion was found to contribute to better customer satisfaction. The rank of each alternative solution is illustrated in Figure 7.8.

### 7.3.3.2 ALTERNATIVE SOLUTION COMPONENTIAL ANALYSIS

The componential analysis as described by Spradley (1980) was used to determine the dimension of contrast within the best alternative solutions using a *componential analysis matrix* as shown in Table 7.3.

Table 7.3: The componential analysis matrix to illustrate the dimensions of contrasts between key alternative solutions.

<table>
<thead>
<tr>
<th>DIMENSIONS OF CONTRAST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Criteria</strong></td>
</tr>
<tr>
<td><strong>Alternative Solutions</strong></td>
</tr>
<tr>
<td>Pleasant</td>
</tr>
<tr>
<td>Positive approach</td>
</tr>
<tr>
<td>Compassionate</td>
</tr>
<tr>
<td>Respect</td>
</tr>
<tr>
<td>Speak clearly</td>
</tr>
<tr>
<td>Engagement</td>
</tr>
<tr>
<td>Focus</td>
</tr>
</tbody>
</table>

### 7.3.3.3 BARRIERS AND AIDS CHART

Table 7.4: *Barriers and Aids Chart* to anticipate some constraints before implementation of alternative solutions.

<table>
<thead>
<tr>
<th>Alternative solutions/ Abbreviations</th>
<th>Barriers</th>
<th>Barriers: Whether ‘High’ or ‘Medium’ or ‘Low’</th>
<th>Aids: Whether ‘High’ or ‘Medium’ or ‘Low’</th>
<th>Aids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleasant (PL)</td>
<td>-Not easy to be pleasant to all customer</td>
<td>Medium</td>
<td>High</td>
<td>-Make customer feel good</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-Reflect on good personality</td>
</tr>
<tr>
<td>Positive approach (PA)</td>
<td>-Difficult to be positive all the time especially with fraud issues</td>
<td>Low</td>
<td>High</td>
<td>-Better communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-Showing good manners</td>
</tr>
<tr>
<td>Compassionate (CO)</td>
<td>Not everyone agree on views depending on state of mind</td>
<td>Medium</td>
<td>High</td>
<td>-Customer feels good -Good impression on customer</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------------------</td>
<td>--------</td>
<td>-----</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Respect (RE)</td>
<td>Not always have mutual respect</td>
<td>Low</td>
<td>High Medium</td>
<td>-Promise of good service -Seriousness</td>
</tr>
<tr>
<td>Speak clearly (SC)</td>
<td>Old people, non-English speaking customers</td>
<td>High</td>
<td>High</td>
<td>-Assistance for better communication</td>
</tr>
<tr>
<td>Engagement (EN)</td>
<td>Lose out connection when branch busy -Not enough breaks</td>
<td>High</td>
<td>Medium High</td>
<td>-Listen for specific facts -Facilitate tasks</td>
</tr>
<tr>
<td>Focus (FO)</td>
<td>Complicated procedures in very busy retail branch</td>
<td>Medium</td>
<td>Medium</td>
<td>-Focus on key words related to customer concern</td>
</tr>
</tbody>
</table>

The CTIT anticipated some difficulties which could be encountered in the implementation process of the alternative solutions. Problems were anticipated and observed for side effects with observations and records taken by the facilitator throughout the implementation process. These implementation problems were assessed by using a *Barriers and Aids Chart* as shown in Table 7.4. Thus, by anticipating difficulties with team members experience which may occur again, it became easier to address these issues.

**7.4 INTERACTION STAGE**

**7.4.1 STEP 6: IMPLEMENTATION OF ALTERNATIVE SOLUTIONS USING BOTH FACE-TO-FACE AND VIRTUAL INTERACTIONS**

The core elements (face-to-face and virtual interactions) of the CTIO problem-Solving Cycle was used to implement the major alternative solutions to resolve the problem of poor “customer satisfaction” in the retail branch operations. Each team member was made aware by the branch manager and the facilitator of the important role they had in working together as a team in the implementation of alternative solutions. This was formally communicated by the branch manager to all team members in team meetings and through internal online functional services. Targets were set by the facilitator for each countermeasure of each root cause with respect to the overall target as illustrated in the countermeasure matrix attached to the *tree diagram*. Results were recorded by the facilitator on a trial basis by taking into account problems that the CTIT may encounter during the implementation process as illustrated in the *Barriers and Aids chart*. The difficulties were also alleviated by the team leader’s and branch manager’s advice based on their experience. The implementation plan and measures taken, were explained to all team members.
Hence, the CTIT concentrated on all the major causes, root causes, solutions and alternative solutions identified to determine the effect in a more precise way.

### 7.4.2 STEP 7: DATA COLLECTION AND ANALYSIS (CAUSE AND ROOT CAUSE PARETO ANALYSIS)

The accuracy and integrity of data was of real importance to understand the problem of poor “customer satisfaction”. To do that, the team used 5W-1H questioning by asking themselves firstly what data to collect relating to poor customer satisfaction, when data would be collected, which type of data collection check sheet would be used, the designated team members to be involved in the data collection process, how the information needed to be collected, till when the data would be continually collected and lastly how much data the team had to collect to have a reliable source of data for analysis in determining the root cause of the problem.

Table 7.5: The Check sheet used for collecting before and after improvement data to observe ‘customer delighted’ cause for 25 customers served by each team member of the CTIT.

<table>
<thead>
<tr>
<th>Retail Branch</th>
<th>Team Member 1</th>
<th>Team Member 2</th>
<th>Team Member 3</th>
<th>Team Member 4</th>
<th>Team Member 5</th>
<th>Team Member 6</th>
<th>Team Member 7</th>
<th>Team Member 8</th>
<th>Team Member 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>Tuesday</td>
<td>-</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13</td>
</tr>
<tr>
<td>Wednesday</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Thursday</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Friday</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The data for ‘before improvement’ and ‘after improvement’ was collected using check sheets by checking twenty five customers served by each team members in the CTIT. ‘Check sheets are simple tools for data collection. The average figures from the check sheets were considered for doing the Pareto analysis for both causes and root causes of poor customer satisfaction. This was done and recorded by the facilitator and team leader. Table 7.5 illustrates the before improvement check sheet used for collecting information about the ‘customer delighted’ cause. For instance, from Table 7.5, for team member 1 of the CTIT, only twelve out of twenty five customers served were not delighted with service provided by team member 1.

Each of the causes from Table 7.6 and Figure 7.9 shows less customer being delighted, poor relationship building, too long queues for customer to wait, lack of friendliness and low efficiency of staff. The five causes measured the frequencies of their occurrence by observing and asking 25 customers at random served by each team member. To collect data for each for the five major causes in the before and after improvement periods, the 25 customers served by the nine
team members in each period for each cause were approached by the team leader and facilitator. The data was recorded on a check sheet as each customer approached was asked about the five major causes in regards to their face-to-face interaction with the banking staff. For instance, the ‘customer delighted’ cause was asked by the team leader to each of the twenty five customers served by each team member. The average figure or frequency for the poor ‘customer delighted’ cause, for the nine team members of the CTIT observed serving twenty five customers each was 10.5 as shown in Table 7.6 and Figure 7.9. This means that about 95 customers out of 225 questioned were not delighted in the before improvement stage.

Table 7.6: Before and after improvement cause Pareto analysis table

<table>
<thead>
<tr>
<th>Causes (Before Improvement) - Each cause lacking in branch</th>
<th>Frequency (Ave)</th>
<th>%</th>
<th>Cumulative Frequency</th>
<th>CUM %</th>
<th>Caes (After Improvement) - Each cause lacking</th>
<th>Frequency (Ave)</th>
<th>%</th>
<th>Cumulative Frequency</th>
<th>Cum %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Customer Delighted (CD)</td>
<td>10.5</td>
<td>42</td>
<td>10.5</td>
<td>42</td>
<td>1. Customer Delighted (CD)</td>
<td>8.8</td>
<td>35</td>
<td>8.8</td>
<td>35</td>
</tr>
<tr>
<td>2. Relationship Building (RB)</td>
<td>6.8</td>
<td>27</td>
<td>17.3</td>
<td>69</td>
<td>2. Relationship Building (RB)</td>
<td>6.3</td>
<td>25</td>
<td>15.1</td>
<td>60</td>
</tr>
<tr>
<td>3. Long Queues (LQ)</td>
<td>3.7</td>
<td>15</td>
<td>21.0</td>
<td>84</td>
<td>3. Long Queues (LQ)</td>
<td>3.1</td>
<td>13</td>
<td>18.2</td>
<td>73</td>
</tr>
<tr>
<td>4. Friendliness (FR)</td>
<td>2.2</td>
<td>9</td>
<td>23.2</td>
<td>93</td>
<td>5. Efficiency (EF)</td>
<td>1.3</td>
<td>5</td>
<td>19.5</td>
<td>78</td>
</tr>
<tr>
<td>5. Efficiency (EF)</td>
<td>1.8</td>
<td>7</td>
<td>25</td>
<td>100</td>
<td>4. Friendliness (FR)</td>
<td>0</td>
<td>0</td>
<td>19.5</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL (Average)</td>
<td>25</td>
<td>100</td>
<td>25</td>
<td>100</td>
<td>TOTAL (Average)</td>
<td>25</td>
<td>100</td>
<td>19.5</td>
<td>100</td>
</tr>
</tbody>
</table>

N.B: All these causes show poor occurrence in retail branch and needed improvement. Only the key words are shown for presentation in Pareto analysis table and cause Pareto diagram.

Figure 7.9: The before and after improvement cause Pareto diagram
Similarly, the same approach was done for the other eight team members. The data summary from eighteen check sheets which were used for the data collection before (nine check sheets) and after (nine check sheets) improvements of causes of poor customer satisfaction as summarized, are illustrated in Table 7.6. Similar check sheets as used in the ‘before improvement’ stage were used to collect data in the ‘after improvement’ stage. ‘Pareto analysis’ is often used to analyze data collected in check sheets. One may draw a cumulative frequency curve on the histogram’ (Evans and Lindsay, 2005 p.652). The two cause Pareto analysis table for before and after improvement as shown in Table 7.6, with the items illustrating the causes of poor customer satisfaction were used to compare the results achieved. Similarly, from Figure 7.9, out of 100% of the major causes identified by CTIT, only 78% of the causes were found to be causing poor customer satisfaction which could not be resolved by CTIT for this project work. The 22% improvement was obtained in the after improvement cause Pareto analysis table as illustrated in Table 7.6 and Figure 7.9. The forecasted target as set by CTIT in the starting stage of the project was compared and it was exceeded by 7% for that particular period which meant that the solutions solved the root causes as previously identified. Some external factors which were beyond the team control could not be diagnosed.

The constant evaluation of CTIT by the facilitator and team leader with the use of a check list, role clarification worksheet, constantly informally informing team through face-to face verbal conversation and team time-out (how was the team performing?) were leading team tools which have made the team commit and perform better. The before and after Pareto analysis tables in Table 7.6, the before and after improvement cause Pareto diagrams in Figure 7.9 were used to demonstrate the improvement obtained by implementing the CTIO Problem-Solving Cycle using the CTIT. In after improvement cause Pareto table, the “friendliness” cause was completely resolved by CTIT and changed order of ranking in the after Pareto distribution as shown in Table 7.6. In the Pareto distribution in Table 7.6 and Figure 7.9, the frequency of the cause ‘efficiency’ became larger than ‘friendliness’ in the after cause Pareto analysis table and after improvement Pareto diagram. Thus, the data for ‘efficiency (EF)’ cause had a larger frequency in the after improvement period because the CTIT completely resolved the ‘friendliness (FR)’ cause which was within the team control and easier to implement. This is why on the Pareto diagram, the characteristic observed for both causes “efficiency” and “friendliness” changed their order from largest frequency to smallest as shown in Table 7.6 and Figure 7.9.
‘Pareto diagrams’ help analysts to progressively focus in on specific problems. *Pareto diagram* stratifies the data to more detailed levels, eventually isolating the most significant issues’ (Evans and Lindsay, 2005 p.654). ‘When you break down the major factors in a *Pareto chart* by classifying them in secondary *Pareto charts*, you further explain the problem areas’ (STA, 1996 p.23). Thus, from the cause Pareto analysis, the root cause Pareto analysis was performed as shown in Table 7.7 and Figure 7.10 to further explain the problem areas of poor “customer satisfaction”. As explained for the cause Pareto analysis, the before and after root cause analysis table and root cause Pareto chart was also performed to demonstrate the key root causes responsible for the problem of poor customer satisfaction. Table 7.7 illustrates the four main root causes as obtained from the *tree diagram* (Figure 7.8). The before and after improvement root cause Pareto diagram was performed (Figure 7.10) which showed an improvement of 38% for that particular period.

<table>
<thead>
<tr>
<th>Root Causes (Before Improvement)</th>
<th>Frequency (Ave)</th>
<th>% Cumulative Frequency</th>
<th>CUM %</th>
<th>Root Causes (After Improvement)</th>
<th>Frequency (Ave)</th>
<th>% Cumulative Frequency</th>
<th>CUM %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast Service (FS)</td>
<td>9.8</td>
<td>39</td>
<td>39</td>
<td>Fast Service (FS)</td>
<td>7.2</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Empathy (EM)</td>
<td>7.0</td>
<td>28</td>
<td>67</td>
<td>Empathy (EM)</td>
<td>4.8</td>
<td>19</td>
<td>48</td>
</tr>
<tr>
<td>Greeting (GR)</td>
<td>4.7</td>
<td>19</td>
<td>86</td>
<td>Greeting (GR)</td>
<td>2.5</td>
<td>10</td>
<td>58</td>
</tr>
<tr>
<td>Courteous (CO)</td>
<td>3.5</td>
<td>14</td>
<td>100</td>
<td>Courteous (CO)</td>
<td>1.0</td>
<td>4</td>
<td>62</td>
</tr>
<tr>
<td>TOTAL</td>
<td>25</td>
<td>100</td>
<td>25</td>
<td>TOTAL</td>
<td>62</td>
<td>15.5</td>
<td>62</td>
</tr>
</tbody>
</table>

Figure 7.10: The before and after improvement root cause Pareto diagram
Each of the root causes from Table 7.7 and Figure 7.10 shows service not fast enough, lack of empathy, lack of greetings and not being courteous to customers. To clarify, the four root causes measured the frequencies of their occurrence by observing and asking 25 customers at random served by each team member. To collect data for each for the four major root causes in the before and after improvement periods, the 25 customers served by the nine team members in each period for each cause were approached by the team leader and facilitator. The data was recorded on a check sheet as similarly done for the causes of the problem. The average results for the four causes are shown in Table 7.7 and Figure 7.10.

7.5 OUTCOME STAGE

7.5.1 STEP 9: CIT PROJECT MONITORING

When the desired target was achieved all the recommended actions were formally standardized by the CTIT. The training and operational manuals were amended by the manager/facilitator. The manager conducted training on new procedures to all staff in the retail banking branch strategic business unit. Team members acted as coach to other staff. Periodic reviews were conducted every three months. This ensured that the new procedures were correctly followed and the root causes identified for poor customer satisfaction did not recur. Standardized procedures were established which can be followed by any new comer in the operational activity of the retail branch. This is also explained in the induction programme to newly recruited employees.

The monitoring chart was done to follow the trend in improvement of customer satisfaction using the branch monthly “verbatim report about customer experience” circulated by the branch manager. The “verbatim report” is a monthly report of a random survey performed by the bank research department, based on customer interviews for level of customer satisfaction while visiting the retail bank branch. The Likert scale 1-5 was used with five as best score and 1 as the lowest score in terms of customer satisfaction. The results for the before and after improvement over a period of one year is illustrated in Figures 7.11 and 7.12. The bar chart in Figure 7.12 shows the average figures for two periods (February 2007 to July 2007 and August 2007 to January 2008).
Figure 7.11: The Monitoring chart for the project

![Figure 11: Monitoring chart](chart1)

Figure 12: Bar Chart to show the average figures for before improvement and after improvement periods of the project.

![Figure 12: Bar Chart to show before and after improvement](chart2)

Legend: Average figure for before improvement period
: Average figure for after improvement period
7.5.2 STANDARDISATION OF PROCEDURES

7.5.3 TRAINING OF CTIT

Having been educated in the notion of having good teamworking for improved customer satisfaction, the team leader and retail banking staff were trained by the facilitator on the implementation of the CIT Model realised by the CTIO Cycle and the importance of necessary quality tools and techniques in the problem-solving cycle that made them a more successful team. The notion of routine teamworking, virtual teamworking and CI were explained to team members. The part-time facilitator role was to guide the team towards their goals and encouraged them in achieving productive performance of the key performance parameter which was customer satisfaction. The causes, root causes, solutions and alternative solutions were communicated to team members by the facilitator to progressively improve customer satisfaction in their retail branch. The difference in the results before improvement and after improvement periods was achieved by the training informally given to team members. On comparing the before improvement results to that of after improvement results, the training provided by the facilitator contributed to team members of the CTIT understanding of causes, root causes, solutions and alternative solutions to address poor “customer satisfaction”.

7.5.4 TANGIBLE AND INTANGIBLE GAINS OF THE PROJECT

Productivity improvement in monetary gains was obtained with more sales of bank products and services. The branch manager reported from the branch weekly records that there were more customers who opened new accounts with the branch. There was also an increase in customer satisfaction. There were intangible gains with team having a higher morale, stronger team spirit, a new paradigm in ways of doing things and communicating, positive reinforcement between team members, more creativity and the entire team felt a sense of pride and belonging. This is illustrated in a radar chart in Figure 7.13 where the facilitator asked the views and feedback of each team member before and after the accomplishment of the CIT Model/CTIO Problem-Solving Cycle project work. The whole team was rewarded by senior management with a team party where an award with certificate of excellence was given to the team for excellent performance achieved.

As mentioned by Evans and Dean (2003), a company must be able to effectively translate customers language into actionable business terms. Customers know what they want, but have difficult time expressing their needs in ways that are meaningful to managers. The major bank undergoing this research had a similar approach in its retail banking outlets throughout Victoria, where customers needs and to effectively translate customers language was name as “the Good”, “the Quite Good” and “the Notorious” in customer delivery by team members from different
regions. This was a sort of competition with an award for best team in each region. The CTIT in the retail branch working on this project work won the award for “the Good” customer language for superior service customer delivery.

Figure 7.13: The radar chart illustrating the intangible gains team achieved with project.

<table>
<thead>
<tr>
<th>Legend</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Morale</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Stronger Team Spirit</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Better Communication</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Positive Team Reinforce</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>Creativity</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Sense of Pride</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>Sense of Belonging</td>
<td>14</td>
<td>20</td>
</tr>
</tbody>
</table>

7.5.5 CONSTRAINTS

As the retail branch was constantly busy, it was difficult to talk with team members in the time frame available. However, this was facilitated by the help of the team leader who was always close to CTIT and the practical scene. Leadership was a sensitive issue and again found to be a serious concern mentioned by team members on several occasions. This issue would benefit from further research.
7.6 Implications

As described by Ahmed (2002), the value of people contribution in organization, has always been an issue to fully understand. He also mentioned that customers are treated as transactions rather than life-long relationships and employees are mere tools to increase the bottom line, not business partners. He also stated that when business splutter, falter and fade, then the question will be asked “What went wrong?” Eventually, companies will develop a plethora of policies and procedures as a response to problems”. With competition, companies seem to have lost the value of being “virtuous” (upright), where the value contribution of face-to-face interaction of each employee is still important, even though there have been rapid improvement in technology with virtual communication for the organization to perform better. This is why more emphasis was placed on the CTIT not only to be virtual, but also virtuous in their tasks and interactions to address any concern in their daily routine operational activities. Virtual means employees using the CTIT were interacting through up-to-date enabling technologies such as internet, intranet, teleconferencing, videoconferencing and others. While, virtuous means banking staff applying the CTIT were dutifully interacting face-to-face with external and internal customers to deliver superior customer service, where every single task and interaction of the team member is still important.

This case study focused on improving customer service in another specific retail branch operations using the knowledge domains of teamworking, virtual teamworking and Continuous Improvement. The CTIO Problem-Solving Cycle methodology has described the nine key steps for the success of this research task performed over twelve months with different team members. This confirms reliability of the CIT Model realised by the CTIO Problem-Solving Cycle as similarly conducted in Case Study 1. However, to generalise about the CIT Model/ CTIO problem-Solving Cycle a broader study should be done in various sectors of businesses to better understand its usefulness for organization to achieve productive performance. Addressing the right causes linked to the right root causes with the implementation of the right solutions linked to the right alternative solutions, as demonstrated specifically in this case study, using the CTIO Problem-Solving Cycle using the CTIT, has contributed significantly in resolving the problem of poor customer satisfaction.
7.8 Conclusion

The CTIO Problem-Solving Cycle assisted in resolving the problem of poor customer satisfaction in the retail branch. By using the key fifteen quality tools in the nine key steps of the CTIO Problem-Solving Cycle methodology, the key variables responsible for the root cause of poor customer satisfaction were detected and addressed by CTIT with alternative solutions obtained from the *tree diagram* linked with the *countermeasure table*. Addressing the right causes linked to the right root causes with the implementation of the right solutions linked to the right alternative solutions was important for the success of this project. The CTIO Problem-Solving Cycle using the CTIT contributed to resolving the problem of poor customer satisfaction. This case study confirms reliability of the CIT Model/CTIO Cycle. Both face-to-face interaction and virtual interaction are important for team members to interact with internal and external customers.

The roles of the facilitator and team leader were found to be crucial to drive and coach CTIT in achieving superior customer service. Team members on their own, would not have been successful, because the systematic application of the quality tools in the CTIO Problem-Solving Cycle methodology needed to be done by a trained facilitator who could be a quality practitioner or a management representative. The difference in the results for the causes and root causes in the before improvement and after improvement Pareto tables and *Pareto charts* were achieved by both formal and informal training given by the facilitator to team members. Standardised operational procedures were set up to monitor the level of customer satisfaction. Both tangible and intangible gains were obtained by the CTIT in this case.
CHAPTER 8

STUDY 3

FACE-TO-FACE INTERVIEW WITH MANAGERS IN RETAIL BANKING OPERATIONS

8. Chapter overview

The analysis and interpretation of qualitative interviews is often more time-consuming than are quantitative interviews (Minichiello, Aroni and Hays, 2008). The face-to-face interviews with 29 management representatives of the branches operations are briefly described to report the results. The face-to-face interview was conducted using a structured instrument (refer Appendix 6). In the third stage of the initial phase of this mixed-methods research, the process of content analysis research (Neuendorf, 2002) was used. This study was conducted to justify further the relationship between the two key variables, namely face-to-face interaction (FF) and virtual interaction (VI) related to the six core elements of the CIT Model/CTIO Problem-Solving Cycle detected from the participant observation study and used in the case studies in Chapters 5 and 6. Twelve-paired measures as observed in the participant observation study and case studies were used from the six core elements of the CIT Model to collect quantitative values from the qualitative data using the coding units and sub-units recorded in a standard book. The relationship between the dependent variable (FF) and explanatory variable (VI) was assessed.

8.1 The content analysis of the face-to-face interviews

In driving service delivery, the major difference has been the advances in technology with enabled email, web chat, and voice-operated interactive phones to facilitate the traditional forms of fax and telephone (Anton, 2000). A large volume of written material was sampled, and collected during the face-to-face interviews. As identified from the participant observation study, coding units such as particular words like: team meetings, conferencing, intranet, online functional services, six-sigma, continuous improvement, voicemail, fax and others were used by the researcher to code the word in relation to the CIT Model/CTIO Cycle.

8.2 Developing the coding system

As described by Minichiello et al. (2008), the main preoccupation of the researcher when undertaking qualitative data analysis is the process of identifying the coding system, which is a means of reorganising the data according to conceptual themes recognised by the researcher. ‘Codes are derived from informant’s stories, research questions and theoretical frameworks’ Minichiello et al. (2008). Thus codes for this face-to-face interview were derived from the
taxonomic analysis (as illustrated in Figure 8.1) researched in the participant observation study (Study 1) to analyse managers’ stories, views, and the research question about the new form of team working using both face-to-face and virtual interactions. ‘Coding is analysis. This part of analysis involves how you differentiate and combine the data you have retrieved and the reflections you make about this information’ (Miles and Huberman 1994, p.56). To facilitate understanding, this part of methodology is explained here. For example, in this research task, the coding scheme for the virtual interaction independent variables was ‘conferencing/teleconferencing’, ‘online functional services’, and the ‘virtual communication’ components of the CIT Model/CTIO Cycle. The particular 12 coding units selected for the VI variable in this study were: ‘synchronous conferencing’, ‘asynchronous conferencing’, ‘audio conferencing’, ‘computer conferencing’, ‘e-learning’, ‘electronic meetings’, ‘search engine’, ‘peer-to-peer networking’, ‘computer-mediated communication’, ‘interactive multimedia communication’, ‘www communication’ and ‘virtual group working’. To facilitate understanding, the coding sub-categories were ‘accreditation’ or ‘assessment’ or ‘workshop’, ‘certification’, ‘functional training’ for the e-learning category as shown in Figure 5.7 in Chapter 5. The coding sub-category is referred to the respective coding unit.

The coding units and coding sub-units are ‘creating codes’ as explained by Miles and Huberman (1994, p. 58) which were already obtained from the participant observation study. ‘One method of creating codes–the one we prefer–is that of creating a provisional start list of codes prior to fieldwork’ (Miles and Huberman 1994, p. 58). Thus the creating codes for each of the two key variables FF and VI were already brought to this study by the researcher. For instance, the coded words used to detect the online functional services component were both the coding categories and sub-categories. Similarly, the same was done for other components of the CIT Model/CTIO Cycle which have both categories and sub-categories identified in Study 1.

As demonstrated in Figure 8.1 (brought from Figure 5.10, Chapter 5), ‘team meeting’ as one of the six key component of the CIT Model/CTIO Cycle had coding units or categories ‘audio/video/TV sets play’, ‘visual communication’, ‘voicemail’ and so on. While the coding sub-units or sub-categories were ‘group exercise’ and ‘role play/quiz’. All these coding units and coding sub-units were used in the typical process of the content analysis (Neuendorf, 2002) to extract the qualitative data manually from the interview scripts which were converted into numerical values as shown in Table 8.1.
8.3 Description of the method

The major goal to assess the two key variables (face-to-face interaction and virtual interaction) was executed by the use of a structured interview instrument which were filled by the researcher for interviews given by managers. The managers had the face-to-face conversation with the researcher to clarify any important points relevant to the study. Probing questions (Minichiello, Aroni and Hays, 2008) as discovered from the participant observation study were used by the researcher to elicit relevant and specific information relating to the CIT Model/CTIO Cycle. The researcher–informant (retail banking managers) relationship was something of prime importance for effective information gathering to verify the CIT Model. The information was classified as transcript note, descriptive note and focus note (Zikmund, 2003). The transcript note included the transcription of the face-to-face interviews filled by the researcher. The researcher then wrote his comments about what he observed during the interview with a front cover page. The texts were written in the left part of the structured instrument with the researcher’s comments on the other side of the paper. The descriptive note gave an account of the participants, environment workings, fieldwork experience, key issues relevant to the CTIO Cycle and new issues not thought of earlier. For instance, branch managers were communicating with regional managers on their mobile phones and even sending messages. This was not thought of in designing the structured interview instrument. Eventually, the focus notes portrayed a more focused examination of the research questions and also any important ideas emerging during the face-to-face interviews with the participant. The information as field notes had to be separated into different categories to facilitate and simplify it for relevant handling.
of the many field notes obtained. Thus only the few relevant steps for the process of content analysis (Neuendorf 2002, p. 50) were used for this study are illustrated in Figure 8.2.

8.3.1 The Process of Content Analysis Research

Figure 8.2: A flowchart summarising the typical process of content analysis research (as described by Neuendorf 2002, p.50) for face-to-face interviews with retail banking managers to depict the relationship between the two key variables of the CIT Model/CTIO Cycle

**Step 1–Theory and Rationale (content):** The face-to-face interaction (FF) and virtual interaction (VI) of team members using the CIT Model/CTIO Cycle in a retail banking branch are further examined. As found from Studies 1 and 2, FF relates to team meetings, consultation and participation, and continuous improvement, while VI relates to online functional services, virtual communication, and conferencing and teleconferencing. Various pieces of research in relation to these two variables (FF and VI) were done and are explained separately in the literature review. The participant observation and two case studies in this study have shown some of the linkages. The face-to-face interview using content analysis investigated the six core elements and 12 paired measures of the CIT Model/CTIO Cycle to assess the correspondence between FF and VI as a new form of team working.

**Step 2–Conceptualisations (variables):** The face-to-face interaction is the dependent variable and virtual interaction is the independent variable. Face-to-face interactions can be both face-to-face and virtual, where each person will be able to see the other, while virtual interaction is just virtual, as no one sees the other really face-to-face, so it can only be interactive. Qualities used to describe and differentiate between the two key variables in relation to CTIT in the CIT Model (CTIO Cycle) were given in previous chapters. Both the participant observation study and case studies (studies 1 and 2) as phenomenological paradigms have given empirical evidence which extracted rich data in its explanation/analysis based on practical observation coupled with the researcher’s both academic and practical experience about the justification of the six core elements of the CIT Model evidenced by the CTIO Problem-Solving Cycle.

**Step 3–Operationalisations (measures):** The unit of data collection used has been from 29 structured instruments with bank branch retail managers from 19 different retail branches. The qualitative data obtained from the 29 texts were converted into numerical values for quantitative data analysis. Coding was used to analyse the correspondence between the two key variables related to the six core elements of the CIT Model/CTIO Cycle. This is further explained in Step 8 below.

**Step 4–Data collection and period:** The face-to-face interviews took from 20 to 40 minutes to be completed with the participants. The study was conducted over two months. The researcher went over each question and answers given by participants. Clarifications and observations were also raised.

**Step 5–Human coding scheme:** The researcher was the only coder using a standard codebook and coding form which were used to write the number of times any of the coding units were noted from the text of the 29 transcripts. From the taxonomic analysis from Chapter 5 (Participant Observation Study), the coded units were obtained as demonstrated in Figure 8.1 for one of the components of the CIT Model/CTIO Cycle. These coded words, as researched in Study 1 assisted this human coding exercise to validate the six core elements of the CIT Model/CTIO Cycle.
The results obtained after performing the content analysis where each coding unit frequency was manually recorded is illustrated in Table 8.1. From the face-to-face interviews qualitative data collection using the 29 transcripts, the qualitative data were quantified. This involved the use of codes and themes created from the participant observation study in the taxonomic analysis step. As explained by Creswell (2003) the coding units were counted for the number of times they occurred in the text data from interview scripts. The quantitative data obtained are shown in Table 8.1.
### 8.4 Quantitative data obtained from content analysis

Table 8.1: Results for the coding units obtained for both FF and VI variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Results only for coding done on both variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face Interaction (FF)-Dependent variable (Y)</td>
<td>continuous reinforcement (CR) = 19</td>
</tr>
<tr>
<td></td>
<td>change management (CM) = 22</td>
</tr>
<tr>
<td></td>
<td>six-sigma (SS) = 21,</td>
</tr>
<tr>
<td></td>
<td>audio/video/TV sets (AV) = 25</td>
</tr>
<tr>
<td></td>
<td>visual communication (VC) = 27</td>
</tr>
<tr>
<td></td>
<td>voice mail (VM) = 24</td>
</tr>
<tr>
<td></td>
<td>brainstorming (BR) = 22</td>
</tr>
<tr>
<td></td>
<td>computer assisted work (CA) = 25</td>
</tr>
<tr>
<td></td>
<td>training (TR) = 28</td>
</tr>
<tr>
<td></td>
<td>coaching/mentoring (CT) = 16</td>
</tr>
<tr>
<td></td>
<td>continuous support (CS) = 21</td>
</tr>
<tr>
<td></td>
<td>team convergence (TC) = 19</td>
</tr>
<tr>
<td>Virtual Interaction (VI)-Independent Variable (X)</td>
<td>Synchronous conferencing (SC) = 16</td>
</tr>
<tr>
<td></td>
<td>asynchronous conferencing (AC) = 14</td>
</tr>
<tr>
<td></td>
<td>audio conferencing (AU) = 19</td>
</tr>
<tr>
<td></td>
<td>computer conferencing (CC) = 24</td>
</tr>
<tr>
<td></td>
<td>e-learning (EL) = 25</td>
</tr>
<tr>
<td></td>
<td>electronic meeting (EM) = 15</td>
</tr>
<tr>
<td></td>
<td>search engine (SE) = 20</td>
</tr>
<tr>
<td></td>
<td>virtual group networking (VG) = 19</td>
</tr>
<tr>
<td></td>
<td>computer-mediated communication (CO) = 24</td>
</tr>
<tr>
<td></td>
<td>interactive multimedia communication (IM) = 15</td>
</tr>
<tr>
<td></td>
<td>WWW communication (WW) = 19</td>
</tr>
<tr>
<td></td>
<td>virtual working environment (VW) = 11</td>
</tr>
</tbody>
</table>
8.5 Data analysis and representation

The process of analysis begins after data have been collected. During the analysis stage several interrelated procedures are performed to summarise and rearrange the data’ (Zikmund 2003, p. 453). Figure 8.3 illustrates the different sequences relevant to the processing and analysis of the qualitative data converted into quantitative data to be analysed. The bivariate analysis for the key relationships between face-to-face and virtual interaction was performed. The simple correlation coefficient calculated was $r = +0.743$ showing a positive correlation. Table 8.1 shows that the retail banking organisation has been using enabling technologies such as intranet/Internet, conferencing and teleconferencing, emails, telephone, faxes and other online technological tools. The retail bank has still maintained face-to-face interaction which still uses team meetings, consultation and participation, visual communication, continuous reinforcement, coaching and so on. This was confirmed in Study 3 with management representatives who mentioned that the major banks have been introducing these enabling technology tools to integrate the concept of routine team working with virtual teamworking in a continuous improvement environment to perform better. With the retail banking sector becoming more competitive, with more customers using retail banking, and no fewer retail banking branches being opened, retail banking senior management and policy makers are looking for properly integrated virtual interaction with face-to-face interaction. Face-to-face interaction through teamworking has always been used as the interaction medium.
since the existence of retail banking. With the advent of technological know-how, retail operational activities have been improved for team members to communicate and interact better in a virtual teamworking approach. With competition and the demand for superior customer service, the banking organisation has also been adopting quality management philosophies to perform better. The adoption of Continuous Improvement as the quality management technique amalgamated with routine team working as face-to-face interaction have been integrated with virtual teamworking as virtual interaction media. The functional relations between two variables need to be expressed by a mathematical formula. This has not been done, as it is not the purpose of this research.

8.6 Implications

‘The main challenge to qualitative data analysis is that there is no clear and accepted set of conventions for analysis corresponding to those observed with quantitative data’ (Robson 1993, p. 370). This study has further validated the CIT Concept/CTIO Cycle by the identification of coding units from interview scripts. These coding units were derived from Study 1 which was the participant observation study. These coding units have facilitated the task of analysing qualitatively the face-to-face interview transcripts from retail managers. All the core elements of the CTIO cycle were considered and assessed with face-to-face interaction (FF) dependent variables and virtual interaction (VI) independent variables.

A critical element is what type of relationship between FF and VI can be forecasted, as economic theory and production theory do not always imply that there is a linear relationship between variables if based on some econometric assumptions. This is an area for further research. As explained by Hill Griffiths and Judge (2001, p.129) when it is referred to a nonlinear relationship, we do not expect that as face-to-face interaction increases in retail banking, virtual interaction will continue to rise indefinitely at the same (constant) rate. Instead, as face-to-face interaction increases we expect virtual interaction to be increasing; but we expect such virtual interaction to increase at a decreasing rate .This possibly means that if bigger retail branches are operated with more up-to-date technological facilities, there will be more face-to-face and virtual interaction with team members to serve customers visiting retail branches. But as the nature of the retail banking business involves more face-to-face interaction, not all team members will necessarily be using virtual interaction media. Use of advanced and expensive technology involves more cost, risk, security, and compliance issues in the banking sector. For instance, at a point there may be limited up-to-date advanced computerised systems and devices available only to key retail banking staff in some other retail branches such as the branch manager, team leader, and some senior experienced
front liners. This may occur because not all retail branches for the major bank will be using up-to-date enabling technologies at once. It may take some time for a complete change of management with implementation of new technological devices in all branches of the major bank. This is an area for further research in econometric studies at post-doctoral level with more data. However, the analysis has been used to facilitate understanding and possibly explain the correspondence between FF and VI variables for the qualitative data collected to further validate the CIT model/CTIO Cycle.

8.7 Conclusion

Study 3 confirms the six core elements of the CIT Model realised by the CTIO Cycle. The face-to-face interaction (FF) dependent variable of the CIT Model/CTIO Cycle relates to the team meeting, consultation and participation, and quality improvement components, while the continuous interaction (CI) independent variable relates to the conferencing and teleconferencing, intranet online functional service, and virtual communication domains. This has been demonstrated through the 12 paired measures for the six core elements of the CIT Model/CTIO Cycle. This study confirms a correspondence between the face-to-face interaction (FF) and virtual interaction (VI). The tendency is more towards a positive correspondence which means that both FF and VI have a relation to each other in retail banking which needs each other in some respect for team members to operate effectively. But further analysis such as correlation analysis and regression analysis can be performed with more data collection as the focus of another study to assess the correlation between FF and VI. This had not been performed as it is not the purpose of this study. The nature of retail banking has always been face-to-face, but it has now changed with advanced use of technological know-how. Retail banking managers who participated in this study mentioned the integration of face-to-face interaction and virtual interaction as also confirmed from Studies 1 and 2. This sounds logical, as the nature of retail banking operations is moving towards face-to-face and virtual interactions where internal staff within the branch, in their immediate place of work, visually face each other to communicate properly in their daily operational activities, but also to communicate with other staff in different co-located retail branches using digital technology to work as a dynamic team. This is important for managers and senior managers of retail banking to understand the notion of routine teamworking using face-to-face interaction being integrated with the notion of virtual teamworking to efficiently and effectively run their retail banking operations considering E-supply chain management initiatives.
CHAPTER 9

STUDY 4
THE PERSONAL SURVEY IN THE RETAIL BANKING OPERATIONS

9. Chapter overview

In the last stage of the research process, a survey was conducted to validate the CIT Model/CTIO Cycle further. A response rate of 79 per cent was obtained, where 189 questionnaires (refer Appendix 7) for the survey were distributed to the staff working at that time in all of the 35 retail branches of regional areas of Victoria. One hundred and forty-nine questionnaires were completed by participants and were used in this study. The main step in the quantitative methodology involved the deductive theory as mentioned in the methodology chapter. The survey was conducted to answer the first research question about the new form of continuous team interaction using face-to-face and virtual media set out in Chapter 1. The research design did have implications for a variety of issues, as the CIT concept is new. Nevertheless the researcher, as in Study 3, used the six major elements with measures of the CIT concept/CTIO Cycle from the participant observation study in Chapter 5 to focus on this quantitative study. The research sites, research subjects, and respondents were selected before administering the survey instrument. The data analysis was done using Microsoft Excel spreadsheets. As other sources of qualitative data and information were already obtained through the participant observation, case studies, and the face-to-face interviews, it became clearer in the researcher’s mind, what specific issues needed to be the focus here. Hence in this fourth step of this mixed-methods research, the study was conducted to confirm the relationship further between the two key variables, namely the face-to-face and virtual interactions related to the six core elements of the CIT Model/CTIO Cycle. Only a brief illustration of this quantitative study is reported. All of the 36 measures classified into each of the respective six core elements of CIT were also differentiated for most important ones from each other.

9.1 Research methodology for the personal survey

A survey is described by Zikmund (2003, 175) as ‘a research technique in which information is gathered from a sample of people by use of a questionnaire or interview; a method of data collection based on communication with a representative sample of individuals’. The personal survey used a slightly different approach, where self-administered printed questionnaires were handed personally to participants (in-person drop-off) and collected later by the researcher himself or returned by post to the researcher with only the branch names and addresses written as the senders’ identification. Questionnaires filled in by participants were kept anonymous. No matter how self-questionnaires are distributed, they are different from interviews because the respondent takes responsibility for reading and answering the questions’. Drop-off method as defined by
Zikmund (2003, 219), is ‘a survey method that requires the interviewer to travel to the respondent’s location to drop off questionnaires that will be picked up later’. As participants were not always free in busy retail branches, performing the personal survey was quite helpful, as participants were able to fill it in later during their free time and thus saved the researcher waiting time.

The quantitative research was feasible, as the population list obtained from the bank included the branches with employees from the target population in the two biggest regional areas of Victoria. Both regions were considered together as the two largest retail operational business units in Victoria and were used in this study. The second regional area also caters for the adjacent country regions. The staff list provided by the bank for 35 retail branches was the sampling frame and also the working population. The information provided the databases which included the names, addresses, phone numbers, BSB numbers, and e-mail addresses of the staff of the two Victorian regions. Table 9.1 below shows the number of the staff who participated from the retail branches operations for the two related areas.

Twelve per cent of staff did not reply to the personal survey; 20 per cent of staff took the questionnaires with them to bring home to send back by post, with only the branch details on the envelopes. Only 52 per cent (20 out of the 38 questionnaires) responded by sending the questionnaires by post, as they were very busy in the retail branch at the time of the survey. The strategy the researcher was using was simply to drop off questionnaires and then return to collect them within three or four hours. It was noted that nine branches were very busy and this was why the 20 per cent of questionnaires were left with the staff to be returned by post. At the time of conducting the survey, 15 participants did fill in the questionnaire very quickly (on the spot) in about 10 to 15 minutes, as they were very busy at that time. In filling in the questionnaire quickly, they may have introduced some bias leading to systematic errors. These 15 questionnaires were treated separately in the data analysis stage to see if they were different from the other sample. Nineteen participants declined to participate in the survey. The common reason that participants gave was that they had no time with a heavy work load, as they were constantly busy. During the period of the survey, 10 employees were absent for medical reasons; four employees were on overseas leave; 12 employees were on recreational leave. One employee was on Work Cover and did participate in the survey. Three employees were on study leave and two employees were on career breaks for about one year. Seventeen employees were new in their branches being from one to three months with the organisation. Nineteen employees had just resigned from the financial institution, where most of them had worked for more than six months. Most of the information is represented below in Table 9.2. Figure 9.1 summarises in the flowchart the sequential steps involved in the selection of the sample for performing this study.
### Table 9.1: Retail branches and number of staff participated in the two related areas

<table>
<thead>
<tr>
<th>35 Branches with abbreviation</th>
<th>Number of retail banking staff present at time of the survey</th>
<th>Number of staff participating in survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. BS</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>2. CS1</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>3. CS2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>4. CS3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>5. ES</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>6. PM</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>7. Ph</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>8. Qu</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>9. Rd</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>10. SY</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>11. SM</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>12. SK</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>13. SS</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>14. To</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>15. WS1</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>16. WS2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>17. Fc</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>18. NM</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>19. AI</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>20. HW</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>21. Wa</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>22. Ne</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>23. Hp</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>24. AM</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>25. Wa</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>26. Su</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>27. SA</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>28. We</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>29. Be</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>30. Co</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>31. Ge</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>32. GW</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>33. OG</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>34. To</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>35. Me</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>N=189</td>
<td>n=149</td>
</tr>
</tbody>
</table>

A high response rate was obtained for this study. Doing the qualitative methods first had assisted in the design and formatting of a good questionnaire, and wording questions for each measure of the core elements of the CTIO Cycle. The participant observation study, case studies, and face-to-face interviews guided the researcher about key issues used by team members in their daily operational activities relevant to retail banking. Asking questions in clear, concise, and simple English language as observed in the qualitative methodologies, made it interesting to the participants. The
participants developed a special interest in the topic (which was not about conflict, staff appraisal, leadership, collective bargaining, change management and so on) and were more likely to respond to make a contribution in further improving their team member interactions with each other. The higher level of education of retail banking staff (most of them attended university) also contributed to their understanding of the importance of participating in this research project on CI, teamworking, and virtual teamworking in this business sector. Including the postage-paid return envelopes to those participants who decided to send their questionnaires by post assisted to achieve a good response rate. Eventually by providing the cover letter from the university and explaining to all retail banking staff the relevance of this research for their own benefit, and by also developing a good relationship assisted in gaining the trust of the participants who were interested in answering the questionnaires. Respondent anonymity also encouraged retail banking staff to express their views and to fill out the questionnaires.

Table 9.2: Summarising employee eligibility and questionnaires used for this study from retail branches

<table>
<thead>
<tr>
<th>Employee eligibility/Questionnaires used</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible employees in 35 branches at time of the visit</td>
<td>189</td>
</tr>
<tr>
<td>On leave (sick, recreational, study leave etc)</td>
<td>29</td>
</tr>
<tr>
<td>Career Break</td>
<td>2</td>
</tr>
<tr>
<td>Resigned</td>
<td>19</td>
</tr>
<tr>
<td>New employees</td>
<td>17</td>
</tr>
<tr>
<td>Questionnaires distributed</td>
<td>189</td>
</tr>
<tr>
<td>Questionnaires returned by hand</td>
<td>129</td>
</tr>
<tr>
<td>Questionnaires returned by post</td>
<td>20</td>
</tr>
</tbody>
</table>

9.2 The sample

The sample was constrained by the industrial partner. The collaboration agreement required that only the specified branches were included in the sample. However, since these branches included 35 branches representing CBD, suburbs, outer suburban and rural branches, the sample is quite representative of the branches in the bank’s network. In view of the survey instrument and the high response rate, it is unlikely that non-response bias is an issue in this case.

Figure 9.1: Summarising the series of sequential steps in the decision process of selecting the sample as described by Zikmund (2003, p.372)

Step 1: Defining the target population for this research project

The target population is the specific, complete group relevant to the research project (Zikmund 2003, p.373). The relevant target population was the 35 retail branches from the main area (19) and regional area (16). The total number of retail branches in Victoria is 185.
Step 2: Selecting the sampling frame

'The sampling frame is the list of elements from which a sample may be drawn: also called the working population' (Zikmund 2003, p.373). The sampling frame was the list of elements available from the yearly personnel perspective survey (YPPS) lists and online intranet functional services available in any retail branch. The YPPS lists, gave all the 185 retail branches in Victoria categorised into 11 groups of different regional areas. The two regions selected for this research were selected to be surveyed by the major bank senior management team.

Step 3: Determining a probability or non-probability sampling method

For convenience of further justifying the CIT Model/CTIO Cycle, the convenience non-probability sampling technique (Zikmund, 2003) was used in the population of two regions, where the two groups from the target population were represented as far as possible. In the non-probability sampling, the probability of any retail banking staff member being chosen at the time the personal survey was being conducted was unknown. As mentioned by Zikmund (2003, p.380), 'Convenience sampling is the sampling procedure used to obtain those units or people most conveniently available'. It was convenient to perform the personal survey in the nearby two groups in Victoria which assisted the researcher in moving around, saving time and money. This was also convenient for the major bank as the two groups represented the two most important and busiest retail operations with higher margins and turnover.

Step 4: Planning procedure for selecting sampling units

The elements of the population were selected according to certain procedures as described by Zikmund (2003). The sampling unit was a group of two elements which were the 'retail branches' and the 'banking staff' working in the branches. The sample to be surveyed as the target population was planned and decided to be all of the 35 branches and available working staff at time of visiting the branches in their respective regions. It was not necessarily important for the target population to be divided into the primary sampling unit–PSU main region and the secondary sampling unit–SSU regional region, since the survey was conducted in both areas at the same time and not as two designated stages of sampling units. The self-administered questionnaires were printed questionnaires done by the researcher as the basic method of communication used with respondents in this survey research. In planning for the sample unit selection, accuracy and integrity of data collection were always considered important and the researcher mentioned that in advance to all participants to whom he handed a questionnaire. The researcher self-financed all paper, travelling, and other resource costs. Thus when the researcher went to one area, the maximum number of retail branches close to each other were covered on the same day, so that the researcher did not have to return, as this demanded extra financial cost and other restricted resources.

Step 5: Determining sample size

'Statistics is the language of the researcher' Zikmund (2003, p.401). 'The larger the sample size in Step 5, the more accurate the research. Increasing the sample size decreases the width of the confidence interval at a given confidence level' (Zikmund 2003, p. 423). As the target population from the two regions was selected, and only authorised by the major bank senior management team, it was unimportant to determine the sample size for this personal survey. The researcher had no alternative but to collect the only quantitative data made available for conducting this research. Though, as mentioned by Zikmund (2003, p. 424), 'three factors are required to specify sample size: (1) Variance, or heterogeneity, of the population, (2) Magnitude of acceptable error, (3) Confidence level'.

Step 6: Selecting actual sampling units

There were 16 retail branches in the major area and 19 branches in the regional area. The branches were visited at random by the researcher without any priority given to any retail branch with their available working bank staff. Only staff working at the time the researcher visited a branch were handed questionnaires.

Step 7: Conducting fieldwork

The field work was conducted for about four months. All the questionnaires were drop-off for gathering data and collected by the researcher. Some questionnaires were sent back by post mentioning only which branch it came from.
Researchers must make several decisions before a sample is taken’ (Zikmund 2003, p.372). Thus, for the purpose of this research project, Figure 9.1 has summarised the seven key steps in the selection of the sample as described by Zikmund (2003).

9.3 Questionnaire design

The taxonomic analysis in the ethnographic research cycle in Study 1 assisted the researcher: in what questions to ask; the phrasing of questions, the sequence of asking each question by following the same pattern from Figures 5.6 to 5.12 in Chapter 5; the questionnaire layout to suit the research question; and the number of questions to be asked. Each question had a five-point Likert scale response given to participants to be circled. There were 36 statements in the questionnaire which described each of the 36 measures of the six core elements of the CIT Model/CTIO Cycle, as researched in Study 1. Retail banking staff had to choose from five alternatives: strongly disagree (1), disagree (2), uncertain (3), agree (4), and strongly agree (5). The questionnaire was trialled with five typical retail banking staff from two randomly selected Melbourne CBD branches. It took an average of about 15 to 20 minutes to fill in one questionnaire. After the pilot questionnaire was filled in, the researcher discussed interpretations of questions, any problems of understanding they had, and the improvements in wording which two of them recommended. These five respondents were not used in the final survey.

9.4 Results (data collection)

Table 9.3 illustrates the results of the survey, which shows the number of employees from the two group elements of the bank retail branches areas with responses out of the 149 questionnaires with the Likert scales as responded by participants. Only 12 measures as used in Study 3 were randomly selected from each variable for ease of analysis. Tables 9.3 and 9.4 illustrate the importance of each measure from both the face-to-face interaction and virtual interaction variables.

The measures cost control/cost reduction, one-to-one coaching, Audio/Video/T.V sets Play, visual communication, voicemail, synchronous conferencing, search engine and www communication obtained an average of 5 points from Likert scale showing their importance in the daily operational activities of retail banking. According to participants each of these measures plays an important role in team member’s tasks and interactions in the CIT Model/CTIO Cycle. While role-by-role participation, team leadership, information quality, ambient intelligence were the least important measures as demonstrated by survey results. To further assess the importance of each of the 36 measures faced by team members in the 35 retail branches and to show the demarcation between each measure, the method applied by FAO (1989) has been used in this case. In evaluating the measures an attempt has been made to identify both the nature of measures encountered by team
members and the strength of their interaction as weighted by team members using the 1 to 5 Likert scale average scores from the survey questionnaires. This has been named as the ‘team interaction index’ as shown in Figures 9.3, 9.4 and 9.5. An analysis was performed from all 149 questionnaires to show the importance of each measure. To make this classification, the 36 measures identified and grouped into the six core elements of the CIT Model/CTIO Cycle from Study 1 were used.

Table 9.3: Results from personal survey with 149 retail banking staff from two major regions of Victoria

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Thirty-six measures for six core components of CIT Model/CTIO Cycle from taxonomic analysis from Study 1 (Participant Observation study)</th>
<th>Personal Survey (PS) Results</th>
<th>Average Likert Scale (LS) 1-5, out of 149 questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF</td>
<td>Face-to-face Interaction (FF):</td>
<td>Out of 149 (A)</td>
<td>(B)</td>
</tr>
<tr>
<td>CL</td>
<td>Cost control/cost reduction</td>
<td>129</td>
<td>5</td>
</tr>
<tr>
<td>PI</td>
<td>Process improvement</td>
<td>139</td>
<td>2</td>
</tr>
<tr>
<td>SS</td>
<td>Six-Sigma</td>
<td>127</td>
<td>2</td>
</tr>
<tr>
<td>CR</td>
<td>Continuous reinforcement</td>
<td>139</td>
<td>3</td>
</tr>
<tr>
<td>CM</td>
<td>Change management</td>
<td>117</td>
<td>2</td>
</tr>
<tr>
<td>OO</td>
<td>One-to-one coaching</td>
<td>128</td>
<td>5</td>
</tr>
<tr>
<td>AV or VC</td>
<td>Visual communication, Video/Video/T.V sets Play</td>
<td>132</td>
<td>5</td>
</tr>
<tr>
<td>VM</td>
<td>Voice mail</td>
<td>135</td>
<td>5</td>
</tr>
<tr>
<td>GI</td>
<td>General information</td>
<td>125</td>
<td>2</td>
</tr>
<tr>
<td>TR</td>
<td>Training</td>
<td>133</td>
<td>3</td>
</tr>
<tr>
<td>BR</td>
<td>Brainstorming</td>
<td>107</td>
<td>2</td>
</tr>
<tr>
<td>CA</td>
<td>Computer-assisted work</td>
<td>142</td>
<td>4</td>
</tr>
<tr>
<td>RD</td>
<td>Reporting/Delegation</td>
<td>109</td>
<td>3</td>
</tr>
<tr>
<td>RR</td>
<td>Role-by-Role participation</td>
<td>108</td>
<td>1</td>
</tr>
<tr>
<td>CI</td>
<td>Continuous innovation</td>
<td>134</td>
<td>3</td>
</tr>
<tr>
<td>TS</td>
<td>Team structure/integration</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td>CT</td>
<td>Team coaching/mentoring</td>
<td>135</td>
<td>3</td>
</tr>
<tr>
<td>TC</td>
<td>Team convergence</td>
<td>135</td>
<td>4</td>
</tr>
<tr>
<td>CS</td>
<td>Continuous Support</td>
<td>129</td>
<td>2</td>
</tr>
<tr>
<td>TL</td>
<td>Team leadership</td>
<td>111</td>
<td>1</td>
</tr>
<tr>
<td>VI</td>
<td>Virtual Interaction (VI):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td>Synchronous conferencing</td>
<td>119</td>
<td>5</td>
</tr>
<tr>
<td>AC</td>
<td>Asynchronous conferencing</td>
<td>104</td>
<td>2</td>
</tr>
<tr>
<td>AU</td>
<td>Audio conferencing</td>
<td>112</td>
<td>5</td>
</tr>
<tr>
<td>CC</td>
<td>Computer conferencing</td>
<td>111</td>
<td>4</td>
</tr>
<tr>
<td>VT</td>
<td>Virtual teaming and groupware</td>
<td>129</td>
<td>3</td>
</tr>
<tr>
<td>IQ</td>
<td>Information quality</td>
<td>101</td>
<td>1</td>
</tr>
<tr>
<td>SE</td>
<td>Search engine</td>
<td>102</td>
<td>5</td>
</tr>
<tr>
<td>EM</td>
<td>Electronic meeting</td>
<td>125</td>
<td>3</td>
</tr>
<tr>
<td>VG</td>
<td>Virtual group networking</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>EL</td>
<td>E-learning</td>
<td>127</td>
<td>5</td>
</tr>
<tr>
<td>CO</td>
<td>Computer-mediated communication</td>
<td>119</td>
<td>4</td>
</tr>
<tr>
<td>IM</td>
<td>Interactive-multimedia communication,</td>
<td>112</td>
<td>3</td>
</tr>
<tr>
<td>AI</td>
<td>Ambient Intelligence</td>
<td>97</td>
<td>1</td>
</tr>
<tr>
<td>WW</td>
<td>WWW communication</td>
<td>117</td>
<td>5</td>
</tr>
<tr>
<td>VW</td>
<td>Virtual working environment.</td>
<td>121</td>
<td>3</td>
</tr>
</tbody>
</table>
A subjective assessment given by the staff gave the importance of each measure with the average scale from the Likert scale (LS) attributed to each measure from the 149 questionnaires to calculate an index. By aggregating the scores (that is, multiply personal survey results by the average Likert scale–PS*Average LS), it has been possible to know the importance of team interaction for each measure type. The validity of this exercise is based on the assumption that the scaling system is correct. The scores for each group of elements and measure type of the CIT Model/CTIO Cycle are shown in Table 9.4 and Figure 9.5. The results have been illustrated as a bar chart in Figure 9.5.

9.5 Data analysis

Figure 9.2: Overview of the sequences for data analysis of survey results as described by Zikmund (2003, p. 453)

9.5.1 Differentiating between each measure from the six core elements of the CIT model/CTIO cycle

From the Table 9.3 data the two column charts were drawn. Figures 9.3, 9.4 and 9.5 illustrate the charts to differentiate each measure from the variables. It can be seen in Figures 9.3 and 9.4, that measures such as cost, control/cost reduction, one-to-one coaching, audio/video/TV sets play, visual communication, voicemail, computer-assisted work, and team convergence seem to be more important in face-to-face interaction variables. While synchronous conferencing, audio conferencing, computer conferencing, search engine, e-learning, computer-mediated communication, and WWW communication seem to be more important for virtual interaction as found from this personal survey. An ‘index’ as manipulated from Table 9.4 was used to draw the bar chart in Figure 9.5 to show the demarcation between each measure for their respective element of the CIT Model. Figures 9.3, 9.4 and 9.5 are important as it shows how the different relative importance of the different measures of the CIT Model derived from the participant observation
study as viewed from retail banking operations staff participated in survey. Tables 9.3 and 9.4 with Figures 9.3, 9.4 and 9.5 are showing the importance of the composite measures for the six key components of CIT Model/CTIO Cycle. Figure 9.5 shows all the 36 measures consisting of different parts representing the six key component of CIT. Team meeting was found to be the most important element of the CIT Model (refer to Figure 9.5). Virtual group networking, ambient intelligence, search engine, information quality, conferencing and teleconferencing were found to be the least element of importance for CIT. Voicemail (measure) physical usage in team meeting (element) was found to be the most important measure for team meeting. While role-by-role participation, brainstorming and reporting/delegation were amongst the least preferred by banking staff in team meeting interaction between team members (refer Figure 9.5). The same logic applies for the other five core elements of CIT with their respective measures as shown in Figure 9.5.

![Column Chart to show the severity scores of different measures for face-to-face interaction (FF)](chart.png)

**Legend:**

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Face-to-face Interaction (FF) measures</th>
<th>Abbreviations</th>
<th>Face-to-face Interaction (FF) measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL</td>
<td>Cost control/cost reduction</td>
<td>RR</td>
<td>Role-by-Role participation</td>
</tr>
<tr>
<td>PI</td>
<td>Process improvement</td>
<td>CI</td>
<td>Continuous innovation</td>
</tr>
<tr>
<td>SS</td>
<td>Six-Sigma</td>
<td>TS</td>
<td>Team structure/integration</td>
</tr>
<tr>
<td>CR</td>
<td>Continuous reinforcement</td>
<td>CT</td>
<td>Team coaching/mentoring</td>
</tr>
<tr>
<td>CM</td>
<td>Change management</td>
<td>TC</td>
<td>Team convergence</td>
</tr>
<tr>
<td>OO</td>
<td>One-to-one coaching</td>
<td>CS</td>
<td>Continuous Support</td>
</tr>
<tr>
<td>AV</td>
<td>Audio/Video/T.V sets Play</td>
<td>TL</td>
<td>Team leadership</td>
</tr>
<tr>
<td>VS</td>
<td>Visual communication,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM</td>
<td>Voice mail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GI</td>
<td>General information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TR</td>
<td>Training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BR</td>
<td>Brainstorming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA</td>
<td>Computer-assisted work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RD</td>
<td>Reporting/Delegation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 9.4: Column Chart to show the severity scores of different measures of virtual interaction (VI)

Responses from 149 questionnaires using five points scales.

Legend:

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Virtual Interaction (VI) measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC</td>
<td>Synchronous conferencing</td>
</tr>
<tr>
<td>AC</td>
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</tr>
<tr>
<td>AU</td>
<td>Audio conferencing</td>
</tr>
<tr>
<td>CC</td>
<td>Computer conferencing</td>
</tr>
<tr>
<td>VT</td>
<td>Virtual teaming and groupware</td>
</tr>
<tr>
<td>IQ</td>
<td>Information quality</td>
</tr>
<tr>
<td>SE</td>
<td>Search engine</td>
</tr>
<tr>
<td>EM</td>
<td>Electronic meeting</td>
</tr>
<tr>
<td>VG</td>
<td>Virtual group networking</td>
</tr>
<tr>
<td>EL</td>
<td>E-learning</td>
</tr>
<tr>
<td>CO</td>
<td>Computer-mediated communication</td>
</tr>
<tr>
<td>IM</td>
<td>Interactive-multimedia communication</td>
</tr>
<tr>
<td>AI</td>
<td>Ambient Intelligence</td>
</tr>
<tr>
<td>WW</td>
<td>WWW communication</td>
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<tr>
<td>VW</td>
<td>Virtual working environment</td>
</tr>
</tbody>
</table>

Series 1: 595 208 560 444 387 101 510 375 300 635 476 336 97 585 363

Virtual interaction measures (x-axis)
Figure 9.5: Height of box indicates percentage score attributable to importance of each measure type and key issues relative importance for the six core elements of the CIT Model/CTIO Cycle

Index %

Legend:

<table>
<thead>
<tr>
<th>FF (Dependent variable)</th>
<th>Face-to-face Interaction (FF)</th>
<th>VI (Independent variable)</th>
<th>Virtual Interaction (VI)</th>
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<td>CL</td>
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<td>Synchronous conferencing</td>
</tr>
<tr>
<td>PI</td>
<td>Process improvement</td>
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</tr>
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<td>Six-Sigma</td>
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<td>Audio conferencing</td>
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<td>CR</td>
<td>Continuous reinforcement</td>
<td>CC</td>
<td>Computer conferencing</td>
</tr>
<tr>
<td>CM</td>
<td>Change management</td>
<td>VT</td>
<td>Virtual teaming and groupware</td>
</tr>
<tr>
<td>OO</td>
<td>One-to-one coaching</td>
<td>IQ</td>
<td>Information quality</td>
</tr>
<tr>
<td>AV</td>
<td>Audio/Video/TV sets play</td>
<td>SE</td>
<td>Search engine</td>
</tr>
<tr>
<td>VS</td>
<td>Visual communication</td>
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<td>Electronic meeting</td>
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<td>VM</td>
<td>Voicemail</td>
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<td>EL</td>
<td>E-learning</td>
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<tr>
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<td>CO</td>
<td>Computer-mediated communication</td>
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<td>BR</td>
<td>Brainstorming</td>
<td>IM</td>
<td>Interactive-multimedia communication</td>
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<tr>
<td>CA</td>
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</tr>
<tr>
<td>RD</td>
<td>Reporting/delegation</td>
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<td>WWW communication</td>
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<tr>
<td>RR</td>
<td>Role-by-role participation</td>
<td>VW</td>
<td>Virtual working environment</td>
</tr>
<tr>
<td>CI</td>
<td>Continuous innovation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TS</td>
<td>Team structure/integration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT</td>
<td>Team coaching/mentoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TC</td>
<td>Team convergence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
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<td></td>
</tr>
<tr>
<td>TL</td>
<td>Team leadership</td>
<td></td>
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</tr>
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</table>
Table 9.4: Results from personal survey with 149 retail banking staff with Likert Scale Frequencies.

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Thirty-six measures for six core components of CIT Model/CTIO Cycle from taxonomic analysis from Study 1 (Participant Observation study)</th>
<th>Likert Scale Frequencies 1 to 5</th>
<th>Person al Survey (PS) Results</th>
<th>Average Likert Scale (LS) 1-5, out of 149 questionnaires</th>
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<td>AV</td>
<td>Audio/Video/T.V sets Play</td>
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<td>5</td>
<td>2</td>
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<td>Voice mail</td>
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<td>1</td>
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<td>1</td>
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<tr>
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<td>Electronic meeting</td>
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<td>WW</td>
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<td>3</td>
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<tr>
<td>VW</td>
<td>Virtual working environment.</td>
<td>4</td>
<td>4</td>
<td>97</td>
</tr>
</tbody>
</table>

It is apparent from Likert Scale Frequencies (Table 9.4) that managers in retail banking are focusing mainly on cost control/cost reduction to improve profitability, one-to-one coaching to assist employees in a better way, use virtual interaction media such as Audio/Video/T.V sets, voice mail, synchronous conferencing, audio conferencing and WWW conferencing to strategically perform better. Areas of focus should be more on information quality, ambient intelligence,
employee participation and involvement, and leadership style of managers as discussed in this thesis work. The other measures are moderately considered by banking managers as it is in the process of being further developed in the process of strategic performance improvement. Looking at the frequency data it can be further explained that there is a high frequency of the 3 Likert scale for ‘undecided/uncertain’ in the cases where the average are 3 for ‘continuous reinforcement’, ‘training’, ‘continuous innovation’, ‘team structure/integration’, ‘team coaching/mentoring’, ‘virtual teaming and groupware’, ‘electronic meeting’, ‘interactive-multimedia communication’, and ‘virtual working environment’. These measures refer mostly to Continuous Improvement and virtual teamworking which seemed to be new for staff but not for managers. Team members knew that they were using most of these measures but was uncertain as managers did not properly communicated these issues to their staff.

In the case where the averages are 2, staff in retail banking tends to disagree with the issues such as ‘process improvement’, ‘six-sigma’, ‘change management’, ‘general information’, ‘brainstorming’, ‘continuous support’, and ‘asynchronous conferencing’. These measures demonstrate categorically that team members were not at all conversant with quality management tools and techniques which managers should be inculcating as a TQM/CI philosophy as a vision seen by top management in the retail banking supply chain. However, CA, TC, CC and CO show some spread – there was some agreement and some disagreement, that is some are doing it well, while some others do not seem to benefit from it. CA, TC, CC and CO are mostly related to virtual networking which is not used by all staff in retail banking as it depends on their respective roles and interaction with internal and external customers. Virtual interaction media is gaining importance nowadays and is being progressively implemented to different retail branches depending on their location, customer profiles/needs, business activity proliferation, competition, and many other factors.
9.5.2 Quantitative data obtained from personal survey

Table 9.5: Results for selected 12 measures obtained for both FF and VI variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Results only for coding done on both variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face Interaction</td>
<td>Continuous reinforcement (CR) = 139, change management (CM) = 117, six-sigma (SS) = 139, audio/video/TV sets (AV) = 132, visual communication (VC) = 126, voicemail (VM) = 135, brainstorming (BR) = 107, computer-assisted work (CA) = 142, training (TR) = 133, coaching/mentoring (CT) = 135, continuous support (CS) = 129, team convergence (TC) = 135</td>
</tr>
<tr>
<td>Virtual Interaction (VI)</td>
<td>Synchronous conferencing (SC) = 119, asynchronous conferencing (AC) = 112, audio conferencing (AU) = 104, computer conferencing (CC) = 111, e-learning (EL) = 127, electronic meeting (EM) = 125, search engine (SE) = 102, virtual group networking (VG) = 129, computer-mediated communication (CO) = 119, interactive multimedia communication (IM) = 112, WWW communication (WW) = 117, virtual working environment (VW) = 121</td>
</tr>
</tbody>
</table>

9.5.2.1 Measure of association

The data analysis for the personal survey was performed as mentioned. The association of the variable (face-to-face interaction) and the variable (virtual interaction) related to the CIT Model/CTIO Cycle was conducted. Only 24 measures from the six core components (12 measures for FF variable and 12 for VI variable randomly selected from the participant observation study) quantitative data collected were used from the personal survey (149 questionnaires). The measure of strength of association was statistically done. A positive correlation \( r = +0.741 \) was found between face-to-face interaction and virtual interaction variables. The Microsoft Excel spreadsheet was again used to perform this analysis.

9.5.3 Findings and discussions

The strong relationship may be showing that the retail banking organisation has been using more enabling technologies such as intranet/internet, conferencing and teleconferencing, emails, telephone, faxes and others technological tools than before, while still using the face-to-face interaction which has always been the practice. This was also confirmed in Study 3. Thus the major bank has been introducing these enabling technology tools to integrate the concept of routine team working with virtual teamworking in a Continuous Improvement environment to perform better. With the retail banking sector becoming more competitive, with more customers using retail banking, and fewer retail banking branches being opened as a cost-saving strategy in the supply
chain, retail banking senior management and policy makers are looking to integrate virtual interaction with face-to-face interaction to run the retail banking operations of the bank appropriately. Face-to-face interaction through teamworking has always been used as the interaction medium since the existence of retail banking. With the advent of technological know-how, retail operational activities have been improved for team members to communicate digitally and interact better in a virtual teamworking approach than two decades ago. With competition, compliance issues and the demands for superior customer service, the banking organisation has been adopting quality management philosophies to perform better. The adoption of the Continuous Improvement Model as the quality management technique with integrated operations management theoretical background amalgamated with traditional team working as face-to-face interaction has also been integrated with virtual teamworking as virtual interaction media as found from this survey.

9.6 Implications

The advantages found from this study were: low cost involved in performing the personal survey; suitability for this research task; quicker than expected, good participation and response rate from retail banking staff; and extensively used technique. As described by Zikmund (2003), there are various sources of error such as respondent error associated with various elements of bias and administrative error in survey research. ‘It is important for managers to realise that surveys are not a panacea’ (Zikmund 2003, p.185). Nevertheless the quantitative data from this study were very useful in further supporting the results of the qualitative methodologies used in Studies 1, 2 and 3. The identification of the 36 measures of the six core components of CIT from the taxonomic analysis as researched in the participant observation study was useful in assisting the researcher to perform the research and questionnaire designs. The quantitative data from this study assisted to differentiate between each measure of the six components of the CIT Model/CTIO Cycle which was not performed by any of the qualitative methodologies. Performing this personal survey study in only 2 groups out of 11 groups in the state constitutes a limitation which needs to be further researched in other studies to be able to be generalised.

The issue whether retail banking is using more face-to-face interaction than virtual interaction or vice versa was not assessed, as it is an area of future research. The focus of the research was mainly to find whether retail banking uses both face-to-face and virtual interactions with CI initiatives. As described by Zikmund (2003), sampling frame errors occurs when certain sampling elements are not listed and not represented in the sampling frame. This is demonstrated in Figure 9.6. For this personal survey study, not all the retail branch staff were used for conducting this research in the two major areas. 189 questionnaires were randomly distributed by the researcher to each of the retail branches in the two major regions. However the entire population, by using all the retail
branches in the two areas, was accurately represented in the sampling frame as all the 35 branches in the two major regions participated in the survey. As mentioned by the senior managerial team, what was observed in the participant observation study (Study 1), in case studies (Study 2) and from managers in the face-to-face interviews (Study 3), was that all the retail branches operate in the same way as each bank performs the same type of transactions, using the same computerised technology and software. Any staff transferred from one branch to another will be able to perform any transaction and perform any operational activity within the branch. Staff in the support team transferred from one branch to another for daily replacement only, can still communicate virtually with other staff from different branches they met before. Any customer will be able to go to any branch in Australia and will be able to perform any similar transactions as per his or her needs. Thus all the retail branches for the major Australian banking organisation are the same in terms of operational activities except for the people and customer service levels which may differ, though there may be potential sources of error associated with the selection of a sample from the targeted population.

Figure 9.6: Errors associated with the survey sampling of the working population

‘Researchers must take several decisions before a sample is taken’ (Zikmund 2003, p.372). For the purpose of this research, the difference between the value of the sampling statistics of interest which is represented by the two major areas over the reference value of the corresponding
population parameter for all over Victoria and Australia nationwide is not being investigated. These two regions are only being used to validate the Continuous Improvement Teamworking Model further and to focus more deeply on its core elements and measures as investigated earlier in the other studies of the sequential mixed-method approach. For conducting this research, the convenience non-probability sampling technique was used in the two regions where the two groups from the target population were represented as recommended by the bank. ‘The non-probability sampling is a sample technique in which units of the sample are selected on the basis of personal judgment or convenience’ (Zikmund 2003, p.380). As described by Zikmund (2003, p.376), ‘the random sampling error is a statistical fluctuation which normally happens, because of the chance variation in the scientific selection of sampling units’. The random sampling error associated with this research project is shown in Figure 9.6.

Hence, in using the two elements only in the two major areas, there were no randomisation process which is the design procedure for giving any retail branch and anyone in the targeted population an equal chance of being selected as a sample retail branch and member. The sample covers all the branches and only included staff present when conducting the personal survey of the target population. The sample bias that could add to non-sampling errors was mostly the 12 per cent of staff who did not reply to the personal survey out of 20 per cent of staff who took the questionnaires with them to take home and mentioned sending it back by post. However the high response rate and previous dominant qualitative methodologies applied assisted to conduct the survey properly which yielded good outcomes.

9.7 Conclusion

The study has given an explanation of the sampling procedure used for conducting the personal survey with its limitations. By not conducting the personal survey throughout Victoria, but only focused in the two regions may have introduced some sampling frame error. However by doing a mixed-research method which the researcher has used, it would have been very difficult and (mostly) practically impossible for the researcher to conduct the personal survey throughout Victoria. This would have been beyond the scope of this research for the investigation, as the personal survey was done for further verification of the Continuous Improvement Teamworking Model to support the qualitative methodologies used earlier in this mixed-methods sequential approach. The result obtained was quite promising with the positive correspondence between the two key variables (FF and VI) of the CIT Model/CTIO Cycle. The illustration and differentiation of
all the 36 measures for the six key elements of the CIT Model/CTIO Cycle have assisted to show which measures were more important for face-to-face and virtual interactions. Leadership seems to be a concern for the 149 staff, as found from this study. The personal survey facilitated this differentiation task. Cost control, coaching, audio/video/TV sets play, visual communication, voicemail, computer-assisted work and team convergence measures were found to be more important for face-to-face interaction. While conferencing (audio, computer, and synchronous), search engine, E-learning, www communication, and computer-mediated communication were found to be more important for virtual interaction. This further validated the qualitative method results obtained and showed rigour, integrity of data, and consistency supported by the quantitative methodology. The qualitative methods used assisted the quantitative study.
CHAPTER 10

INTEGRATING, INTERPRETING AND SUMMARISING THE MIXED-METHODS ANALYSIS WITH ITS RESEARCH FINDINGS

10. Chapter overview

This chapter summarises the overall integration and interpretation of the entire analysis obtained by using both the dominant qualitative and less dominant quantitative methodologies as described by Creswell (2003). The importance of the research project and its sequential mixed-methods approach is recapitulated to explain the importance of each method as sequentially linked to each other. The combined mixed-methods analysis is discussed. The substantial contribution of the dominant qualitative methodology to capture a real setting and occurrence of the CIT Model evidenced by the CTIO Cycle is also explained. To justify that retail banking is competitive, as mentioned in Chapter 1, the combined results of the face-to-face interviews and personal survey results are illustrated as part of these research findings.

10.1 Recapitulation on the importance of this research and its sequential, mixed method

As found in the literature review of this research, the problem-solving approach and continuous interaction medium were merged to show the linkages of CI, teamworking, and virtual teamworking. Macaulay and Cook (1995); Ingram (1997); Tjosvold, Moy and Sasaki (1999); and Adebanjo and Kehoe (2001) researched the idea of developing teamwork for better customer service. They found that working together produces good customer service. They also found that teamwork and customer focus are crucial aspects of TQM and CI. Oakland, as cited by Adebanjo and Kehoe (2002, p.49), stated that ‘team improves the process of problem-solving’, and further asserted that teamwork in the organisation ‘is an essential component of the implementation of TQM’. ‘Suggestion systems, quality circles, and continuous improvement teams are typified by employee participation practices’ (Garcia-Lorenzo, Carlos Prado & Garcia Arca 2000, p.290).

Research was conducted on CI and teamworking, and demonstrated employee participation through face-to-face interaction of team members (Ingram, 1997; Watson, 1998; Garcia-Lorenzo et al. 2000; and Tsang & Anthony, 2001). According to the research based done by Terziovski (1999) and Tsang and Anthony (2001), Continuous Improvement (CI) and teamworking are among the critical successful factors for the implementation of TQM, where CI is one of the major dimensions of the TQM programme. The gap in the literature was mostly about the linkage and relationship between face-to-face interaction and virtual interaction related to the triangulation of routine
teamworking, virtual teamworking, and CI to enhance a better problem-solving teamworking approach of team members. From Figure 10.1 it can be seen that the two variables, namely face-to-face interaction (dependent variable) and virtual interaction (independent variable), form the key features of the CIT Model/CTIO Cycle. The measures for the six key components of the CIT Model are further researched in the face-to-face interviews and personal survey. Figure 10.1 summarises the research project conducted for this thesis and focuses on the key issues relevant to this study. The next paragraphs summarise each of the methodologies used and their findings and explains Figure 10.1.

**Research Questions (RQs)**

Answered two research questions as demonstrated in Figure 10.1 and explained in Sub-Sections 10.1.1, 10.1.2, 10.1.3, and 10.1.4.

(1) Research Question 1 answered by Studies 1, 2, 3 and 4.

There is a new form of problem-solving team working approach in the major Australian retail banking sector which involves the usage of both face-to-face and virtual interactions. This was demonstrated by the CIT Model evidenced by the CTIO Problem-Solving Cycle and CTIT. The key components and measures for face-to-face and virtual interactions were justified and verified by the participant observation study, case studies, face-to-face interviews and personal survey.

(2) Research Question 2 answered by Study 2 with two Case Studies.

The implementation of the CTIO Problem-Solving Cycle methodology using two CTITs in two case studies yielded both tangible and intangible outcomes by alleviating the two major problems in the two poorest performing branches of the bank.
The CIT Model triangulates the concepts of teamwork, virtual teamworking, and CI which is evidenced by the CTIO Problem-solving Cycle. The CTIO Problem-solving Cycle has been framed from the Continuous-Task-Interacting-Team (CTIT) philosophy. The CTIT is derived from the ‘Total Teamwork Way’ as researched by Atkinson (1997). The CTIT has been used in the CTIO Cycle to address problems in an immediate place of work with better team interaction among managers, team leaders, and front-line staff in retail banking operations. Team interaction uses both face-to-face and virtual interactions to achieve productive performance. Face-to-face interaction has three key components namely: team meeting, consultation and participation, and quality improvement while virtual interaction has conferencing/teleconferencing, online functional services, and virtual communication as its three key components. Thirty-six measures have been identified from this study for the six core elements of the CIT Model. Only 12 paired measures show positive correspondence between FF and VI. The CTIT implemented the CTIO Problem-solving Cycle by using the common 15 quality tools integrated from the Six Sigma DMAIC solutions, running PDCA cycles to address the causes, root causes, solutions, and alternative solutions of key performance parameters in team members’ immediate place of work systematically. The positive correspondence between face-to-face interaction (FF) and virtual interaction (VI) shows that retail banking staff use both FF and VI to work as a dynamic team. This research using the mixed methods answered the two research questions. First, there is a new teamworking approach involving CI, teamwork, and virtual teamwork and it filled a gap in the literature on CI and VI teamworking. Second, the CTIO Problem-solving Cycle methodology yielded positive outcomes.
10.1.1 Participant observation study (qualitative study)

The purpose of the participant observation study was to examine the importance of doing qualitative research using the ethnographic research cycle (Spradley, 1980) to show the emergence and framing of the Continuous Improvement Teamworking Model in an Australian bank. The technique used for the participant observation study was flexible, since there were a few constraints (such as busy retail branches, and time out with technology failures on two occasions) on the nature of activities employed, as described in Study 1, and the type of ethnographic data collected. The participant observation approach was an investigation, which concentrated on gathering relevant information to provide guidance about future research as conducted in this mixed methodology. In the past, it was possible to work only face-to-face in the immediate place of work; with improvements in technology there has been a progressive increase in the use of technological tools over time such as telephone, fax, computer, Internet/intranet and some others as virtual communication media. The systematic ethnographic research cycle confirms that the major retail banking organisation is now using virtual interaction amalgamated with face-to-face interaction to run their retail operation smoothly. The other methods used in the sequential mixed methods were more focused on the face-to-face and virtual communications media being used effectively and efficiently to achieve productive performance of retail banking supply chain. The participant observation assisted the researcher to conduct the case studies in the sequential mixed methods as described in next paragraph.

10.1.2 Case studies (qualitative study)

‘The intent of qualitative research is to understand a particular social situation, event, role, group, or interaction’ (Locke, Spirduso, & Silverman, 1987, as cited by Creswell 2003, p.198). From the participant observation study, the two key under-performing performance parameters, namely poor home loan sales referrals and poor customer satisfaction were discovered in a few retail branches of the major bank. In the two most underperforming retail branches, the CIT Model/CTIO Problem-Solving Cycle was implemented by the researcher as the facilitator with team members known as the CTIT (Continuous-Task-Interacting-Team), as described in Figure 10.1. Both case studies started with a dominant qualitative approach and were supported by using the quantitative tools and techniques. These two case studies as exploratory research were the main focus to confirm the CIT Model realised by the CTIO Cycle.

As mentioned by Bhuiyan and Baghel (2005), continuous improvement methodologies such as lean manufacturing (for example Quality Circles and Muda eliminating waste through CI), Six-Sigma (measuring process quality using statistical process control), the balanced scorecard, and lean Six-Sigma were developed based on the basic concept of quality and (or) process
improvement. ‘Lean Six-Sigma is the most well-known hybrid methodology, a combination of Six-Sigma and lean manufacturing’ (Bhuiyan & Baghel 2005, p.765). Similarly, in the CTIO Problem-Solving Cycle, a hybrid methodology of the Deming PDSA Cycle and Six-Sigma DMAIC Cycle was used in the two case studies (Studies 2 and 3) to justify the CIT Model. The 15 common quality tools from the Deming PDSA Cycle and DMAIC Cycle were integrated in the CTIO Cycle methodology (refer to Table 9.1) as an integrated quality management approach as explained in Chapter 2.

Table 10.1: Summarising the nine key steps for the CTIO Problem-solving Cycle methodology with key quality tools used in both case studies.

<table>
<thead>
<tr>
<th>STAGES</th>
<th>ACTIVITIES (9 KEY STEPS)</th>
<th>QUALITY TOOLS USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCERN</td>
<td>Step 1: Define Project/Plan Schedule</td>
<td>Time schedule, activities and resources/ expected set target/goal</td>
</tr>
<tr>
<td></td>
<td>Step 2: Grasp Present situation/Process characterisation</td>
<td>Flow chart, 5W-1H</td>
</tr>
<tr>
<td>TASK</td>
<td>Step 3: Determination and selection of causes/root causes</td>
<td>Collect data using check sheets, PCA Chart, cause solution matrix, fishbone diagram, systematic diagram, 5W-1H</td>
</tr>
<tr>
<td></td>
<td>Step 4: Determination of solutions and alternative solutions</td>
<td>PCA Chart, severity index, counter-measures matrix or solution matrix, 5W-1H</td>
</tr>
<tr>
<td></td>
<td>Step 5: Tree Diagram for evaluation of causes, root causes, solutions and alternative solutions</td>
<td>PCA Chart, tree diagram linked with alternative solution matrix, root cause verification table, alternative componential analysis, barriers and aid chart, 5W-1H</td>
</tr>
<tr>
<td>INTERACTION</td>
<td>Step 6: Implementation of alternative solutions using both face-to-face and virtual interactions</td>
<td>Using six core elements of CIT Model</td>
</tr>
<tr>
<td></td>
<td>Step 7: Data collection and analysis (Cause/root cause Pareto Analysis)</td>
<td>Check sheets, Pareto tables and Pareto charts for before and after improvement, 5W-1H</td>
</tr>
<tr>
<td></td>
<td>Step 8: Analysis</td>
<td>Frequency analysis</td>
</tr>
<tr>
<td>OUTCOME</td>
<td>Step 9: Standardisation, benefits, constraints and implications</td>
<td>Evaluate effectiveness, standardise procedures, monitoring chart, bar chart, radar chart</td>
</tr>
</tbody>
</table>

The CTIO Problem-solving Cycle methodology specific to the two case studies in two different retail branches can be summarised as shown in Table 10.1 with the following nine key steps: Plan schedule and performance target; grasping the present situation/process characterisation; determination and selection of causes and root causes; determination of solutions and alternative solutions; tree diagram for evaluation of causes, root causes, solutions and alternative solutions; implementation of alternative solutions using both face-to-face and virtual interactions; data collection and analysis (cause and root cause Pareto analysis); frequency analysis; and project standardisation and monitoring chart.

The second case study focused on improving customer service in another specific retail branch operation using the knowledge domains of teamworking, virtual teamworking and Continuous Improvement. The CTIO Problem-Solving Cycle methodology has described the nine
key steps for the success of this research task performed over twelve months with different team members. This confirms reliability of the CIT Model realised by the CTIO Problem-Solving Cycle as similarly conducted in Case Study 1. However, to generalise about the CIT Model/CTIO problem-Solving Cycle a broader study should be done in various sectors of businesses to better understand its usefulness for organization to achieve productive performance. Addressing the right causes linked to the right root causes with the implementation of the right solutions linked to the right alternative solutions, as demonstrated specifically in this case study, using the CTIO Problem-Solving Cycle using the CTIT, has contributed significantly in resolving the problem of poor customer satisfaction. Thus, it can be concluded that the cause of the problem under investigation for a project is linked to its root causes.

There are several solutions to each root cause. The CTIT chooses the best alternative solutions from each solution to address the relevant root causes of the problem better. Assessing the relationship between the key root causes, causes, and respective alternative solutions is very important. Also assessing other key variables related to the problem is important. The role of the facilitator, or manager, or team leader, or quality practitioner is to drive the team continuously using the different steps of the CTIO Cycle methodology to achieve productive performance using both face-to-face and virtual interactions in addressing the performance parameter. ‘Researchers in social situations deal a lot with impressions—their own, as well as those of others. Impressions can be good data, but good researchers want assurance about what they are seeing and hearing. The process of gaining these assurances is called triangulation’ (Stake 2006, p. 33). In both case studies, the researcher as the facilitator has dealt with many impressions as good sources of qualitative data, which contributed towards triangulation within both cases and assisted in achieving a relevant focus on the inquiry regarding the research question. Case Study 1 evaluated the validity of the CTIO Problem-solving Cycle while Case Study 2 confirmed the reliability of the CTIO Cycle methodology.

10.1.3 Face-to-face interview (qualitative study)

The face-to-face interviews conducted were to justify the relationship between the face-to-face and virtual interactions key variables using the six components with measures of the CIT Model/CTIO Cycle, as found from Study 1 (participant observation) and used in Study 2 (two case studies). The design of the structured interview was carefully planned to collect maximum information and data, so that the researcher did not have to go back into the field for further clarification from participants. For simplicity and to facilitate analysis, only 12 measures each were selected from the 21 face-to-face interaction and 15 virtual interaction variables (that is, 24 out of the 36 measures as researched in Study 1) using the simple random sampling as explained by Neuendorf (2002). The 12 pairs of sample measures were selected based on the ethnographic research cycle used to collect
ethnographic data for 12 months in the nine retail branches operations. The measures as created codes were counted by the researcher using human coding for the number of times the 12 paired measures for each variable from the interview scripts occurred. Comparable frequencies were found between the two key variables FF and VI. As retail banking has always been a face-to-face interaction due to the nature of the retail operational activities, where customers are visually faced by retail banking staff from the opening of the retail branch up to closing time, face-to-face communication is an important feature for this specific type of business activity. In order to work as a team to deliver superior customer service, face-to-face interaction of team members plays an important role.

In the past telephone and fax were the main virtual means of team members’ interaction from different retail branches to communicate any concern to address customers’ needs. However with new technological developments, presently, there have been more networked features such as file sharing, printer sharing, email, Internet and intranet, conferencing devices and many other enabling technological application services for team members to work quicker and more efficiently as a team to address the demanding needs of customers in busy retail branches. This is where the significance of virtual interaction has been gaining importance in retail banking. Nevertheless there is a threshold level of face-to-face interaction which a retail banking branch needs to keep, together with virtual interaction media for retail banking staff to operate the retail banking operation, while working as a dynamic and hybrid team. If there is no face-to-face interaction there will be no need for retail branches. But to have the minimum retail banking staff to check and operate with up-to-date technological devices such as enabling technology tools, automatic teller machines (ATM), newly opened teller counters with no physical barriers to customers as all monies (both notes and coins) are counted and stored in a cash transaction machine (there is no manual counting of cash), an integration of both face-to-face and virtual interaction is the new trend as observed and found from this mixed-methods study.

The challenge that senior retail banking managers are facing is to convert two or three retail branches into a more sophisticated and bigger retail branch, with more staff using more advanced technological networked features. Some of the major Australian retail banks have initiated this move. For instance, the researcher noted, two nearby retail branches for the CBA, a major Australian bank, were closed in 2008 in the Melbourne CBD, with a modern retail branch opened to cater for a wider customer profile with more retail banking staff in one retail branch for face-to-face interaction, and with more use of advanced enabling technologies for better virtual interaction. Similarly, another major Australian bank (NAB) did the same thing and a modern retail branch was opened this year by closing other retail branches. This is a Continuous Improvement initiative with integration of both routine teamworking mostly using face-to-face interaction, and virtual
teamworking mostly using virtual interaction for the banking organisation’s retail operations to obtain better productive performance. This could possibly explain the positive correspondence obtained between the face-to-face interaction and virtual interaction variables. To validate the relationship of the two variables further, the same measures as used in Study 3 were used in the personal survey in Study 4 to justify their association.

**10.1.4 Personal survey (quantitative study)**

This was the final stage of the mixed-methods approach to justify and validate further the CIT Model/CTIO Cycle. Dropping survey questionnaires in retail branches in person and developing a good relationship with participants resulted in a high response rate of 79 per cent. The same pairs of 12 measures as observed from the participant observation study, as used in the face-to-face interview were used in this quantitative study to check for reliability. This survey repeated with the same 12 paired measures used in the face-to-face interviews (Study 3). The 36 measures were also differentiated to show the key measures for the FF and VI variables. As explained in the face-to-face interview paragraph, this study further validates the notion that retail banking operations are using both face-to-face interaction and virtual interaction to perform better according to the level and presently available enabling technologies for retail banking team members to interact more effectively and efficiently. With competition, retail banking branches are progressively changing to perform better. However to know if this positive association changes, further research needs to be conducted in another five years or a decade, to see the difference in retail banking branches using both face-to-face and virtual interactions. With severe competition, a global financial crisis, the pace of technology increasing and the high demands of customers’ satisfaction for better service quality, it is difficult to predict the possible changes in retail banking operations in the next decade.

The Likert Scale Frequencies as demonstrated in Table 9.4 It can be explained that managers in retail banking are focusing mainly on cost control/cost reduction to improve profitability, one-to-one coaching to assist employees in a better way, use virtual interaction media such as Audio/Video/T.V sets, voice mail, synchronous conferencing, audio conferencing and WWW conferencing to strategically perform better with advancement in technological know-how. Areas of focus should be more on information quality, ambient intelligence, employee participation and involvement, and leadership style of managers as discussed in this thesis work. The other measures are moderately considered by banking managers as it is in the process of being further developed in the process of strategic performance improvement in the integrated operations management of retail banking. The researcher had to cater for considerable time in writing this thesis for the challenging mixed methods used. However the dominant qualitative methodology used has assisted the researcher in focusing on the right measures for the key components of the CIT Model/CTIO Cycle in this less-dominant quantitative methodology. If the quantitative
methodology was used first, it would have been more difficult to know the right paired measures to assess the association between face-to-face interaction and the virtual interaction variables. By observing for 12 months in the participant observation study, it became clearer in the researcher’s mind about the key measures’ relationships with each other which were then paired.

10.2 Results for the competitiveness (strategic importance) of Australian retail banking (as mentioned in Chapter 1)

The participant observation study guided the researcher sequentially for the focus of the question in relation to competition in retail banking using the face-to-face interviews and the personal survey. The simple question which related to competitiveness of retail banking from many other questions on Continuous Improvement Teamworking was as follows:

Q. 6 (From face-to-face interviews and personal survey questionnaires): According to you is the banking sector more competitive?

YES …. NO….

If yes, how is the banking sector more competitive?

Table 10.2: Illustrating the combined results that Australian retail banking is competitive

<table>
<thead>
<tr>
<th>Methodology (sequential)</th>
<th>Size of sample</th>
<th>Results (responses) Banking sector competitive</th>
<th>Results (responses) Retail banking sector Not Competitive</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative (Face-to-face interview)</td>
<td>29</td>
<td>29</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Quantitative (Personal Survey)</td>
<td>149</td>
<td>140</td>
<td>9</td>
<td>94</td>
</tr>
<tr>
<td>Total</td>
<td>178</td>
<td>169</td>
<td>9</td>
<td>94</td>
</tr>
</tbody>
</table>

Most of the participants explained that retail banking is becoming more competitive by the nature of products and services they provide to customers. For instance, different discounted rates, fees and facilities for different loan types, credit cards, insurances, opening account types, financial planning and so on as better products to encourage customers to come to their banks. Also some retail banking organisations are renovating new branches to provide better customer service and administer queue management. In two retail branches operations of this major bank, automatic
teller transaction machines and coin machines were introduced to save time and to serve customers more quickly by reducing queues in retail branches supply chain.

94 per cent of retail banking staff believed that the Australian retail banking sector is highly competitive. The six per cent of banking staff who did not know about the issue of competitiveness in retail banking were inexperienced, young (aged between 20 and 22 years old), working for less than three months in the retail branches at the time of the personal survey being conducted, and were totally new and undergoing an induction training programme to become customer service officers. Hence from this study as shown in Table 10.2, the retail banking organisation is competitive. Deregulation of the banking sector, as explained in Chapter 1, led to severe competition. Many efforts are strategically planned by banking policy makers to improve customer service in retail banking, so as not to lose customers with the economic crisis and severe competition with foreign banks coming to establish in Australia. Although the Continuous Improvement Teamworking Model captures as much information as possible about competition, the banking organisation has been adopting Continuous Improvement, teamwork and e-teamwork initiatives to work better as dynamic teams to achieve improved productive performance.

10.3 Dominant qualitative strategic implications in the mixed methodology

‘Qualitative research is largely an investigative process where the researcher gradually makes sense of a social phenomenon by contrasting, comparing, replicating, cataloguing and classifying the object of study’ (Miles & Huberman, 1984 as cited by Creswell 2003, p.198). ‘The main challenge to qualitative data analysis is that there is no clear and accepted set of conventions for analysis corresponding to those observed with quantitative data’ Robson (1993, p.370 as cited by Collis and Hussey 2003, p.253). The mixed methodology by using the qualitative inquiry followed by the quantitative strategy assisted for better reflexivity in constructing theoretically and conceptually the CTIO cycle framework. The researcher believes that if the quantitative approach was used as a dominant research strategy, much information and valuable data would have been missed in the research. These data are valuable pieces of information which have assisted the researcher in pursuing and achieving the research objectives. Hence by starting first with qualitative data collection, this assisted the researcher in better designing the structured instrument for the face-to-face interviews and the questionnaire for the personal survey. In doing so, the quantitative data collection was reliable in achieving consistency. The qualitative methodologies used were very effective in properly understanding these practical observations to depict the CIT Model/CTIO Problem-Solving Cycle which is new in the literature. For instance, in the participant observation study, by focusing on the artefacts the researcher has determined many issues by cross-analysing facts to gain a holistic picture of the various activities underlying the conceptual model of Continuous Improvement Teamworking. The key informants relating to the social science fields
were more accessible and understood with this qualitative approach first contrasted to the quantitative research. The systematic moderate participant observation methodology used was very helpful in doing this study and in understanding many issues which would not have been diagnosed in a quantitative research method.

‘Ethnographers attempt to develop dense and widely scoped texts whose validity can be ensured through the use of triangulation’ (Saule 2002, p.184). Two of the modes of triangulation as described by Saule (2002, p.185) are that ‘data triangulation allows the ethnographer to access a variety of data sources for the study’ and ‘multiple methods are undertaken to study a single problem or phenomenon’ (Janesick 1998, p.46). In this mixed methods, the research task was to study a new form of teamworking approach as a single phenomenon or problem to be researched using an array of data from multiple methods. Hence the two modes of triangulation as described by Saule (2002, p.185) were used in the sequential mixed-method strategy of this study to construct a good picture of the CIT Model, CTIO cycle and CTIT. ‘All methods have limitations, researchers felt that biases inherent in any single method could neutralize or cancel the biases of other methods’ (Cresswell 2003, p.15). Thus the combined methods used have triangulated data sources which served as a means for convergence across a dominant qualitative approach to a less dominant quantitative method. The sequential mixed-method developed a rationale for mixing and integrating the data at different stages of inquiry to understand best the research problem undertaken by this study. The mixed methods also critically investigated and evaluated the new form of teamworking approach in retail banking which contributed to an increase in our understanding about the CIT Model. This had undertaken considerable emphasis on rigour to justify the model. The mixed-methods data collection type, the researcher’s various roles, and the advantages, disadvantages and critical views are shown in Table 10.3.

‘When two people engage in a conversation, human interaction takes place’ (Zikmund 2003, p.198). As found from this study, the retail bank has been using both the human interactive media and the electronic interactive media. As described by Zikmund (2003, p.198) human interactive media are personal forms of communication in which a message is directed at an individual or small group through a face-to-face dialogue or a conversation on the phone. For instance, in the mixed methods it was found that human interactive media were being used in team meetings in the retail branches where each team member was interacting face-to-face, while listening to instructions from senior managers using voicemail from the telephone. As described by Zikmund (2003, p.198), electronic interactive media is communication that allows team members to interact using digital technology (for example, through Internet/intranet, teleconferencing, emails and other online functional services). In the retail branches, team members were also found using these virtual interaction media and many other enabling technologies as digital technology tools to
interact physically with team members in their daily operational activities. This positive relationship of face-to-face and virtual interaction had been confirmed with the positive correlation coefficient $r = +0.743$ for the face-to-face interviews with managers (Study 3) and $r = +0.741$ for the personal survey with retail banking branch staff (Study 4). Thus the strategic approach of using the participant observation first as a dominant qualitative strategy assisted successfully in performing the sequential mixed-method. The participant observation strategic qualitative inquiry assisted the researcher to see the situational analysis, the combinations of multiple-method design, the sorting/sifting of good/bad data, the purposiveness, the abstract thinking, the categorization, the log trail, the cumulative effect, the idea of bracketing, the indexing system and the congruence (Richards and Morse, 2007) of the mixed-method strategy which would have been different by starting with the personal survey first (i.e. Dominant Quantitative to less-Dominant Qualitative).

Hence the phenomenological analysis as an analytic strategy (Richards and Morse, 2007) assisted the researcher to transform live Continuous Improving Teamworking experiences into textual expression.

Table 10.3: Mixed-methods data collection approach, advantages, disadvantages and critical views of strategic importance

<table>
<thead>
<tr>
<th>Data collection type</th>
<th>Researcher roles</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Critical views</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant observation</td>
<td>Observer/ Ethnographer</td>
<td>-Researcher obtained first-hand experience with participants. -Unusual aspects and hidden details noticed during observation -Participants directly share their reality.</td>
<td>-Few staff saw researcher as intrusive. -Private and confidential information observed which cannot be disclosed -Busy retail branches</td>
<td>Time-consuming, as too much physical work is involved through moving from one place to another.</td>
</tr>
<tr>
<td>Case study</td>
<td>Facilitator/trainer</td>
<td>-Implementation of CTIO Cycle to yield tangible and intangible gains. -Closeness to data</td>
<td>-Information gathered and resolved problem in only a specific designated branch.</td>
<td>Resolving the two main problems is the job of a fully paid consultant.</td>
</tr>
<tr>
<td>Face-to-face interview</td>
<td>Investigator/ Interviewer</td>
<td>-Useful to gather first-hand information from management representatives</td>
<td>-Performed in two months</td>
<td>One on one in-person interview with the same interviewer</td>
</tr>
<tr>
<td>Personal survey</td>
<td>Researcher</td>
<td>-Questionnaires filled in by banking staff which was designed from the qualitative participant observation study</td>
<td>-Performed in only four months, which involved moving from one place to another. -Not close to scene and reality -Sample size -Dominant Qualitative study</td>
<td></td>
</tr>
</tbody>
</table>
a single unit of analysis in a specific retail branch and with a group of retail banking staff. The face-to-face interview was another methodology to understand the new form of CIT. This face-to-face verbal interchange as the common form of interviewing individuals (Denzin and Lincoln, 2000) assisted the researcher to shape the nature of the knowledge generated better. Eventually, the personal survey methodology provided the opinion of banking staff about the new form of teamworking by studying a sample of the population. It was able to make claims about CIT existence in retail banking from the sample of the population. The qualitative methodologies assisted the researcher to position himself and collaborate with the participants, collect participant meanings, focus on the single concept of CIT, creatively bringing values to the study and validating the accuracy and integrity of the findings through a variety of data and information. Hence the mixed methods independently conducted by the researcher used the participant observation to confirm the CIT Model/CTIO Cycle, the case studies to implement the CTIO Problem-Solving cycle to justify the model further, the face-to-face interviews using content analysis to evaluate the validity of the model and eventually the personal survey to confirm the reliability of the model.

10.4 Conclusion

The findings concluded that the six core elements of the CTIO cycle are team meetings, online functional services, conferencing consultation and participation, virtual communication and quality improvement. The face-to-face interview and personal survey have further justified the essential core elements of the CTIO cycle. The significance and outcome of this research can be considered as a modern, continuous improvement, team-based business model for better teamwork intervention programs to boost productivity and performance in Australian financial organisations. This study has used a mixed-method strategy of inquiry to illustrate the emergence of the inductive and deductive CIT Model/CTIO Cycle. A sequential exploratory design choice of strategy (Creswell, 2002) was used for integration of four different types of data in four steps of the process of the research. As mentioned before, for the sequential exploratory strategy, a participant observation study was a qualitative data collection process and the first step was done by the researcher to observe bank staff. A face-to-face interview with managers was then done in the second step of the qualitative data collection process. A personal survey of bank staff was eventually done as the third step to justify the CTIO cycle further. Hence this study started by characterising an initial phase of qualitative data collection and analysis including the participant observation study and face-to-face interview, which was followed by the second phase of quantitative data collection and analysis referring to the personal survey. Therefore priority was given by the researcher to the qualitative aspect of the study. By being closer to the scene and in the field first has assisted the researcher to perform an outstanding piece of research work. Figures 10.2 and 10.3 summarise the thesis.
Figure 10.2: Summarising the research from research rationale, literature review and conceptual frameworks, research questions and mixed methods used to justify the CIT Model, CTIO Problem-solving Cycle and CTIT

1. Rationale for research from classificatory framework: Emergence of CIT Model for strategic performance improvement.
   Deregulation  \rightarrow Competitiveness  \rightarrow CI  \rightarrow Teamwork  \rightarrow E-teamwork
   (From Chapter 1)

2. Literature on CI, V & VT
   (From Chapter 2-mapped themes interaction and problem-solving approach)
   Continuous Improvement (CI)
   Virtual interaction (VI).
   Face-to-face interaction (FF).
   Teamworking (T)
   Continuous Interaction (COI)
   CIT Model = CI + T + VT
   VI = CI + VT
   FF = CI + T
   COI = FF + VI

3. Crafting and framing of CTIO Cycle (from Chapter 3)
   (a) Continuous interaction and problem-solving linkages from other conceptual cycles focusing on face-to-face and virtual interactions.
   (b) CTIT evidenced from a proactive total teamwork way approach (Atkinson, 1997) to be used in implementation of the CTIO Cycle.

4. Answered two research questions after crafting CTIO Cycle/CTIT using mixed methods:
   1. Existence of new type of continuous interaction
   2. Problem-solving approach yielded positive outcomes
5. Research findings: CIT Model/CTIO Cycle/CTIT use of both FF (CI+T) and VI (CI+VT)

Figure 10.3: Summarising Research Process, Methodology & Strategic Mixed-Method Approach for Thesis Work

Conclusion:

CIT = CI + T + VT

Findings (Answered 2 Research Questions)

1. Using both FF (CI+T) and VI (CI+VT) – New type of teamworking approach.
2. CIT/CTIO/CTIT yielded tangible and intangible gains.

MIXED-METHOD: Address 2 research questions (RQ)
RQ1: Studies 1, 2, 3, & 4.
RQ2: Study 2

Participant observation
(Study 1): 12 months-290 hours to identify 6 core elements with measures from 59 descriptive observations. Observed twelve-paired measures

SIX CORE ELEMENTS OF CIT/CTIO
(1) Team meetings (9 measures)
(2) Conferencing and teleconferencing (4 measures)
(3) Online Functional Services (5 measures)
(4) Quality Improvement (6 measures)
(5) Virtual communication (6 measures)
(6) Consultation and Participation (6 measures).

2 Case Studies - Study 2 (1 year) Implemented CTIO Problem-Solving Cycle using CTIT with six main elements and key quality tools in two least performing branch. Achieved productive outcomes. Classified FF and VI.

Face-to-face interviews using Content Analysis- Study 3 (2 months – 29 managers)

12 paired measures for FF and VI
Positive correspondence between FF & VI

Personal Survey – Study 4 (4 mths-149 staff)

12 measures for FF and VI
Continuous reinforcement / Synchronous conferencing
Change management / asynchronous conferencing
Six sigma / audio conferencing
Audio/video/T.V sets / computer conferencing
Visual communication / e-learning
Voicemail / electronic meeting
Brainstorming: Search engine
Computer assisted work / virtual group network
Training / computer mediated work
Coaching / mentoring: interactive multimedia communication
Continuous support / WWW communication
Team convergence / virtual working environment

Finding (Answered 2 Research Questions)

1. Using both FF (CI+T) and VI (CI+VT) – New type of teamworking approach.
2. CIT/CTIO/CTIT yielded tangible and intangible gains.
CHAPTER 11

CONCLUSIONS AND RECOMMENDATIONS

11. Implications

As illustrated by Edwards and Wilson (2004), virtual communication and virtual teamworking are not the only solutions for productive communication and teamworking. Virtual communication does not work as well as face-to-face meetings. Virtual teams have an additional difficulty, namely that it is harder to build trust without day-to-day and face-to-face contact. Virtual teams are more difficult to manage, communication is more complex and it is time-consuming. There is little osmosis or sharing of ideas, team-shared objectives are harder to commit, being co-located does not mean that the teams talk to each other and it takes much longer for people to get to know each other really well. There are also other difficulties such as large numbers of people being free at the same time, limited knowledge of problem space, restrictions on travel, and difficulty in contacting team members when required to discuss a matter. Moreover it is not easy to have an informal discussion; there is a lack of regular contact between team members, a need to keep talking as on the phone, a need to constantly inform superiors of what you are doing; virtual teams would be more difficult the bigger they became (for example more than 10 is very difficult) and so on. Considering the negative aspects of virtual teamworking, financial organisations are still maintaining the use of face-to-face teamworking on top of virtual teamworking. This is why through the Continuous Improvement Teamworking model, organisations are practically making use of both face-to-face contact to build trust and virtual teamworking for better, more efficient, and smoother running of operational activities. In the major Australian banking organisation, it was observed that there was mostly daily to twice-daily face-to-face interaction every week in the form of team meetings, huddles, coaching, training, and induction programmes. Subsequent meetings also used the intranet, emails, memos, faxes, audio, video/TV sets, voicemails, teleconferencing, newsletters, weekly planners, online services, e-academy websites and some others for better communication.

Nowadays employees need not be solely in one immediate place to work as a team. With the advent of modernised technological know-how in computer science, communication networks, online functional services, virtual enterprises and virtual communications, employees can still work as a team even though co-located or virtually. Virtual teaming has got many advantages as stipulated by Edwards and Wilson (2004), such as convenience in working time, less time spent in travelling, ability to select on skills not on geography, the interchange and sharing of experiences, and little time wasted on the non-productive things that stable teams amuse themselves with. It
was also mentioned that it provides personal flexibility, the ability to bring people into the team as necessary for short-term pieces of work; there is more co-operation and better relationships. It was also found that there is best use of individual skills as focused on what really needs to be done, the team size is suited to the task, there is team goal setting, better speed of response, ability to run a thin organisation, more time to do the work, variety in work type, suitable location and many others. Nevertheless organisations considering the positive aspects of virtual teamworking are also maintaining and using the face-to-face people interaction to run the organisation effectively. A mixture of teamwork and e-teamwork was found to be the right balance for organisations to perform better.

Continuous Improvement as a concept has proved itself in the manufacturing and services sector. Today Continuous Improvement has been initiated in the four major Australian banking organisations. Recently these banking institutions have been adopting Continuous Improvement in the form of Six-Sigma, change management, process improvement, continuous reinforcement and one-to-one coaching. Problem-solving activities (Six-Sigma/DMAIC), change management, teamworking, green belt and black belt accreditation modules and many others are available for training via the company’s online intranet functional services. In the process of continuous improvement, many operational manuals, surveys, catalogues, quality management and e-quality management methodologies and tools, e-learning, e-networking, e-SCM derivatives and e-academy for accreditations, online certifications, people directory, products and services library, employee settings, results, performance indicators and many others have been tailored to each employee on their individual computers and virtual desk through the company’s online functional services. The online functional service emerging with Business to Employee (B2E) is an area of further research.

The interaction medium of the hybrid approach using both teamwork and e-teamwork in a Continuous Improvement (CI) philosophy to achieve productive performance is gaining importance. For instance, in the banking sector the information quality used to meet customer needs is very important. Thus the interaction medium of team members to meet internal and external customers’ needs using both face-to-face and virtual communication by using quality information as an inherent feature of CI is very important. Information quality provides an edge with the banking sector becoming competitive. Customers are becoming very demanding seeking efficient service and information quality through the process of Continuous Improvement.

11.1 Discussions on theory building of CIT Model, CTIO cycle and CTIT

This thesis has provided a background on an evolving approach to teamwork in the retail banking sector. It introduced the Continuous Improvement Teamworking (CIT) Model which refers to the
new teamwork approach, where routine teamwork is integrated with virtual teamwork using a Continuous Improvement (CI) initiative. CI and teamworking was referred to as ‘face-to-face interaction’, while CI and virtual teamworking which is the gap in the literature was referred to as ‘virtual interaction’. The integration of teamwork with e-teamwork (virtual teamworking) was referred to as ‘continuous interaction’. Much research had been conducted on CI and teamworking; teamwork and virtual teamworking; but there is a gap in research involving CI and virtual teamwork triangulated with traditional teamwork. Thus CIT emerged from the triangulation of the three knowledge domains CI, teamworking, and virtual teamworking. However after reviewing the literature on the key three concepts, the problem-solving approach and the interaction medium of team members working in teams were mapped as key themes.

The CIT Model is evidenced by the CTIO (Concern-Task-Interaction-Outcome) Cycle as a means of studying team member interactions in the problem-solving approach using face-to-face and virtual interaction media in retail banking. The type of interactions whether face-to-face and (or) virtual were discussed in terms of different conceptual cycles having a linkage in framing the CTIO Cycle. The Concern-Task-Interaction-Outcome (CTIO) Cycle is the Continuous Improvement initiative framed and structured from other conceptual problem-solving cycles. Many of these concepts and performance cycles have a linkage to the CIT Model/CTIO Cycle, as illustrated in this thesis. These performance cycles or problem-solving cycles are mainly focused in the service sector. Deming Planning, Doing, Checking and Acting (PDCA) Cycle; Six-Sigma Defining, Measuring, Analysing and Improving (DMAIC) Cycle; Root Cause Hypothesis Analysis Cycle; Data Evolution Life Cycle; Neat Methodology Data Life Cycle; Information System Life Cycle; Resulting, Approaching, Deploying, Assessing and Reviewing (RADAR) Cycle; Acceleration of Innovation Ideas to Market (AIM); Innovation Life Cycle; Ethnographic Research Cycle; and Action Research Cycle among others, have an affinity with the CIT Model/CTIO Cycle.

Competition was identified as a primary reason for the emergence of the CTIO Cycle and the adoption of the CIT Model. Without deregulation, which started in the 1980s, banking organisations would not have been so competitive. International banking organisations with expertise in retail banking were compelled to enter the domestic, Australian market due to competitive advantage. With the introduction of the Financial Services Reforms Act (FSRA) of 1988 by the Australian government, following the stock market crash in 1987, competition was encouraged (Hutley & Russel, 2005). Increased competition means that efficiencies in operations and customer service are a key to profitability. The CIT Model promotes effective communication internally among employees and externally with customers. With the increasing use of Internet and web technologies, the CIT concept is integral to promoting both face-to-face and electronic teamwork (e-teamwork) in the efficient resolution of issues as well as meeting the needs of
customers. The CIT Model is a continuous loop focused on problem-resolution. As part of the CTIO Cycle, it offers an organisation the opportunity for effective communication within a process improvement and problem-solving loop.

In the past, routine or traditional teamwork using face-to-face communication was important. Today with emerging technologies for retail banking organisations, teamwork through virtual communication has been gaining importance for increased productivity. This thesis addressed different problem-solving cycles, each of which relates to the mode of interaction (whether face-to-face or virtual) used by team members, facilitators, or managers to resolve problems in the workplace. The thesis focused on understanding the strategic relationship between face-to-face and virtual interaction variables retail banking supply chain. This is important to researchers in identifying retail banking trends using hybrid teams and virtual group networks with routine teamwork. Using virtual over face-to-face interactions in the different problem-solving cycle linkages is also gaining importance from the perspectives of data and information quality in a service quality environment. This can be attributed to the increased use of technologies and virtual network features. Current trends are leading to the triangulation of continuous improvement, routine teamwork, and virtual teamwork in support of retail banking organisations achieving improved productive performance.

Routine teamwork is used in reference to face-to-face interaction, while virtual teamwork is used in reference to virtual interaction media. The CTIO Cycle was researched in a major Australian financial organisation, which employs about 30,000 employees and 1,400 retail branches in all states of Australia. The players involved were the branch managers, team leaders, financial planners, home loan managers, personal bankers, customer service officers, and tellers in retail banking branches. As found from this study, the CIT Model realised by the CTIO Cycle refers to the newly evolving consultative, participative, virtual and interactive virtuous teamworking approach. It reflects the effect of employee interaction using both face-to-face and virtual interaction media in achieving a more productive performance for the organisation. The technology utilisation as virtual interaction media in the financial organisation as mentioned earlier relates to conferencing, teleconferencing, videoconferencing, voicemail, Internet/intranet and many other network features from face-to-face interviews with banking managers.

11.2 The Continuous Improvement Teamwork (CIT) Model /CTIO Cycle

The Continuous Improvement Teamwork (CIT) Model, demonstrated by stages in the CTIO cycle (shown in Figure 11.1), also considers the virtual teamwork approach. The circle in Figure 11.1 represents the continuous working towards resolution of a concern through face-to-face interaction or virtual interaction by team members. This approach is aligned with common organisational
objectives of effective communication using emerging technologies. The CIT Model is illustrative of an evolving, participative virtual approach to teamwork currently used by a major Australian bank. The company’s objective for using the CIT Model is to achieve quality performance for its products and services.

Figure 11.1: The CIT Model realised through the CTIO Cycle.

The CIT Model, shown in Figure 11.1, is comprised of the following phases:

- **Concern (Issue)**–A team member, or team members, identify an issue related to organisational performance.
- **Task (Action)**–The issue identified needs to be addressed as soon as possible through various tasks by team members, facilitators, or managers working for the respective organisation or as an external consultant. The use of quality tools in the problem-solving activity is envisaged.
- **Interaction (Involvement and Connection)**–The various tasks are done through face-to-face interactions and (or) virtual interactions through available communication media between team members.
- **Outcome (Result)**–The CIT is a continuous process in achieving successful and productive outcomes for the benefit of the firm, team, and stakeholders.

The CIT Model evidenced through the CTIO Cycle was researched for about two and a half years in a leading Australian service sector organisation using both a deductive and inductive reasoning approach. The study for this research showed that the adoption of the CIT Model assists in improving retail banking operational activities and in achieving better performance. The CIT Model/CTIO Cycle is presented in this thesis based on observations made in the Australian banking sector. The mixed-methods data collection and analysis conducted showed that the CIT approach addresses organisational issues associated with the smooth, operational activities of a bank through the use of face-to-face interaction as well as through virtual interaction media used to communicate
with internal and external customers. The CTIO Cycle is different from other performance cycles such as, the PDCA Cycle, Neat Methodology data life cycle, Project life Cycle, Benchmarking Cycle, Kolb’s Cycle, and RADAR Life Cycle, among others, as it is the integration of traditional teamworking and virtual teamworking with CI in the performance and problem-solving cycles to achieve more productive performance with continuous interaction of team members. This leads to continuous problem-solving teamworking (refer Figure 3.26 in Chapter 1).

Researchers and practitioners have identified the concepts of teamwork, e-teamwork, virtual communication, and continuous improvement as crucial parameters in the service sector. Each of these plays an important role in addressing customer concerns effectively. They are also part of Total Quality Management (TQM). TQM is comprised of management practices that are applicable throughout the organisation. TQM promotes organisational consistency such that customer needs are met (or exceeded). TQM also promotes process metrics and control mechanisms in order for an organisation to improve continuously. TQM continues to grow in popularity in organisational areas of service quality, data quality, information quality, and performance management. Each of these areas of TQM is supported by effective communication within and external to the organisation. E-teamwork and virtual communication, in particular, allow for customer interaction transcending time and location boundaries.

Virtual electronic communication is leading to the emergence of e-teamwork (Haskins, 2002). Similarly the concept of virtual teamwork added to the concepts of TQM/CI and teamwork in developing the existing CIT Model/CTIO Cycle is leading to the emergence of e-quality management. Traditional quality management is shifting to e-quality management with continual improvement and continuous innovation in technology. This integration of concepts is referred to as the Continuous Improvement Teamwork (CIT) approach, whereby the concepts of teamwork, virtual teamwork, and continuous improvement are amalgamated to foster better productive performance and improved customer service. The CIT approach is presently being used in a major Australian banking institution. Thirty six measures identified from six elements for both face-to-face interaction and virtual interaction dichotomous features of CIT, are presented in chapters 5 and 8.

The Continuous-Task-Interacting-Team (CTIT) was structured from the Proactive Teamwork Way following work done by Atkinson (1999). ‘The Total Teamwork Way model is a potted history of the UK teamwork evolution’ (Atkinson 1995, p.34). However this model does have some similarities to the way teamwork has evolved in the Australian service sector and has been used to show the crafting of the CTIT. The CTIT was used in the CTIO Problem-Solving Cycle which was implemented in the two case studies where productive performance was achieved. The CTIT involves the notion of using Continuous Improvement (CI), teamwork, and virtual teamwork to perform better. Continuous Improvement tools were used in the case studies by integrating the
traditional Deming disassociated PDCA Cycle and DMAIC Cycle common quality tools. Teamwork practices were considered from various team types such as quality circles, workplace improvement team, self-management team, and corrective action teams. Virtual teamwork practices were considered from process-improvement teams (re-engineering teams or a proactive team with defined tasks by management considering technology development) and virtual teams.

11.3 Aims and goals of research

- Integrate knowledge domains of CI, teamworking and virtual teamworking to map the CIT Model/CTIO Cycle continuous interaction and problem-solving approach.
- Apply a sequential mixed-method approach.
- Determine the core components of CIT Model/CTIO Cycle.
- Classify face-to-face interaction (FF) and virtual interaction (VI) with their core elements and measures.
- Implement CTIO Problem-Solving Cycle in two case studies
- Perform face-to-face interviews with managers and a personal survey with branch staff.

11.4 Key points of the research

- **Reviewing the Field:** Introduction to problems in retail banking illustrated by the classificatory framework to show the emergence of Continuous Improvement Teamworking (CIT). Reviewed literature on three knowledge domains Continuous Improvement, teamwork, and virtual teamwork to mapped key themes. Key themes were continuous interaction and problem-solving approach of the team.
- **Theory Building:** Continuous Improvement Teamwork Model realised by the CTIO Problem-Solving Cycle using the Continuous-Task-Interacting-Team (CTIT). CTIO Problem-Solving Cycle crafted from other problem-solving conceptual cycles. CTIT structured from the Total Teamwork Way (Atkinson, 1995). Triangulation of Continuous Improvement, teamworking, and virtual teamworking to show face-to-face interaction and virtual interaction variables.
- **Theory Testing:** Using two research questions and the sequential mixed methods approach. Participant observation using the ethnographic research cycle (Spradley, 1980) to find the key components of CIT; two case studies integrating the original Deming-Shewhart PDCA Cycle and Six-Sigma DMAIC cycle to implement the CTIO Problem-Solving cycle using the CTIT; face-to-face interviews with managers using content analysis sequentially related to research done in the participant observation study; and the personal survey using Microsoft Excel for analysis to confirm the reliability of the research performed with face-to-face interviews.
- **Reflecting and Integrating** (What was learnt; findings):
Interpretation of the entire analysis for mixed methods. Mixed methods assisted the researcher to construct, deconstruct, and reconstruct through reflexivity to identify the six core elements with their respective measures for the CIT Model/CTIO Cycle effectively. There is a new form of teamworking showing a hybrid approach of using face-to-face teamwork and e-teamwork in a Continuous Improvement environment as a viable means of achieving high performance. Routine teamwork used in reference to face-to-face interaction and virtual teamwork used in reference to virtual teamwork are both used in the CIT Model/CTIO Problem-Solving Cycle implemented by the CTIT.

11.5 Evolution of problem-solving teams

Teamwork in the problem-solving approach has evolved as follows:

- The notion of traditional teamwork
- International recognition of teamwork
- Quality circles team approach
- Deming PDSA problem-solving cycle using teamwork
- Six-Sigma DMAIC Cycle problem-solving cycle using teamwork
- The human-computer interaction using teamwork
- Technology usage in a collaborative team environment
- Organisational electronic teamwork and interactive working (e-teamwork–Conner and Finnemore, 2006)
- Group decision support systems, e-collaboration, e-working, and groupware
- Information systems quality using teamwork
- Continuous Improvement Teamworking using CTIO Problem-Solving Cycle.

11.6 Knowledge contribution of the thesis

- The integration of three knowledge domains Continuous Improvement (CI), teamwork and virtual teamwork to show a new type of Continuous Improvement Teamworking (CIT)
- The CIT Model is evidenced by the Concern-Task-Interaction-Outcome (CTIO) Cycle framed from other conceptual problem-solving cycles and Continuous-Task-Interacting-Team (CTIT) from the Total Teamwork Way.
- Identified the six core elements and key measures of the CIT Model
• Practical application of a Continuous Improvement Teamworking Model using the systematic CTIO Problem-Solving Cycle methodology and CTIT

• Evidence of improvement in tangible and intangible outcomes following the intervention of CTIO Problem-Solving Cycle/CTIT, rather than just evidence of implementation

• Participating organisation using both face-to-face and virtual interactions to perform better as a dynamic team

• In the CIT Model, face-to-face interaction is identified in reference to teamwork and virtual interaction is identified in reference to virtual teamwork.

• The gap in research on CI and virtual teamwork is fulfilled with the CIT Model/CTIO Cycle/CTIT.

• The versatility of the sequential mixed methods using a dominant qualitative methodology over a less-dominant quantitative methodology

• The substantial qualitative methods used to be closer to reality, research fields, data, information and research tasks.

11.7 Observations and conclusion

Researchers, practitioners, and managers have seen the evolution of virtual communication, virtual teams, virtual desks, virtual offices and virtual companies. Total Quality Management, after proving itself in the manufacturing sector, has shifted to the financial service sector. Banking organisations are adopting Continuous Improvement and Six-Sigma as change management programs since the banking sector is becoming more competitive. Major organisations seem to have implanted the concepts of teamwork well. With deregulation, financial reforms, competition, globalisation, enabling technologies, virtualisation and network technology, virtual interaction media (electronic communication) is becoming as important as face-to-face communication. The mode of interaction of team members in a continuous improvement approach is important when quality is initiated in an organisation. Similarly, the major Australian bank which has undertaken this study for the justification of the CIT approach embarked on a quality program in 2004. However to gain a more competitive edge the banking organisation is enhancing the concept of teamwork further by combining the Continuous Improvement concept and standard teamworking practices coupled with virtual teamworking activities to be more competitive and to perform better. This research has focused on the adherence of the virtual interactive communication process to the normal teamworking and continuous improvement activities in a major Australian retail banking organisation. This has illustrated the emergence of a new form of consultative, participative, and interactive virtual teamworking approach continually working as a team to
improve performance further and to be competitive according to organisational goals, values, and objectives. Team members adopting the Continuous Improvement Teamwork (CIT) Model evidenced by the CTIO (Concern-Task-Interaction-Outcome) Cycle problem-solving approach are defined as a Continuous Task-Interacting-Team (CTIT).

As a result of the findings, better use of people at work, teamworking, communication technology, and operational and functional systems can be used through the Continuous Improvement Teamworking Approach model to run organisations more efficiently and productively. It is better for an organisation to employ people with up-to-date technological know-how, with a good understanding of Continuous Improvement Teamworking while working face-to-face and (or) virtually to constitute a dynamic team to be competitive and achieve better performance.

The present research not only investigated the key components of CIT but also their measures that are enhancing the interaction structure in the CTIO Cycle by using the CTIT. Using the CTIO Cycle within the existing technological infrastructure results in small improvements in response time from team members continuously interacting in a virtual environment. The end result is significant benefits to customers in the banking sector. The various other linkages to process improvement and data quality approaches, as presented in this thesis, may offer additional benefits in the implementation of the CIT Approach and achieve continual improvement in response time. Thus, the CTIO Cycle framed from the other conceptual cycles and validated in the sequential mixed method demonstrated the importance of using a hybrid team for real-time interaction, thus achieving performance efficiencies.

This research has shown a practical and theoretical linkage of the CTIO Model with other conceptual cycles using face-to-face and (or) virtual interaction media. Without teamwork and virtual teamwork, all the practical project work would not have obtained productive performance in the same period of time. Data quality and information quality are key issues for the success of achieving productivity gains and performance in a team member daily interaction medium.

The CIT Model triangulates the concepts of teamwork, e-teamwork with CI, which is evidenced by the CTIO Problem-Solving Cycle. The CTIO Problem-Solving Cycle was framed from other conceptual cycles. The CTIO Cycle is a problem-solving approach using the CTIT (Continuous-Task-Interacting-Team) philosophy. The CTIT has been derived from the ‘Total Teamwork Way’ as researched by Atkinson (1997). The CTIT has been used in the CTIO Cycle to address problems in the immediate place of work with better team interaction among managers, team leader, and front-line staff in retail banking. Team interaction uses both face-to-face and virtual interactions to achieve greater productive performance. The sequential mixed-method
confirms the six core elements of the CIT Model realised by the CTIO Cycle. This research is relevant to senior managers and managers who are attempting to use Continuous Improvement Teamworking through the CTIO Problem-Solving Cycle as an effective asset for obtaining productive performance, resolving problems in their immediate place of work, and achieving competitive advantage for their firms.

11.8 Recommendations

The CIT Model comprising the CTIO Problem-Solving Cycle methodology can be recommended to senior managers and managers interested in improving the performance of their bank’s retail branches. The CIT Model/CTIO Cycle/CTIT will be very helpful for practitioners using the research findings. It will assist retail banking managers with the application of key quality tools in a bank branch to alleviate problems in their immediate place of work. This will provide evidence of both quantifiable and unquantifiable outcomes with implementation of the up-to-date CTIO Cycle using the CTIT. This research supports the retail banking community with enhanced ability, knowledge, and diversity of experience in problem-solving by extending the boundaries of traditional teamwork. The strength of this systematic problem-solving process lies in its practical relevance which triangulates the effective use of Continuous Improvement initiatives with traditional teamwork and evolving virtual teamwork with the adoption of enabling technologies.

However there may be different innovation adoption rates of the continuous problem-solving approach using enabling technologies in virtual teamwork in the banking sector, which is an area of research in the field of information technology. Adoption can be regarded as the scale of integration of innovation into the ongoing integration of technology, continuous interaction and problem-solving activity in the banking sector. The sequence of stages of the continuous problem-solving virtual interaction media adoption cycle using CI, teamwork, and virtual teamwork can be as follows: (1) Proposal of new continuous CIT Model/CTIO Problem-Solving Cycle/CTIT to the retail banking organisation, (2) Information sought by the bank’s senior managers, (3) Assessment of the new continuous problem-solving methodology for advantages and disadvantages, (4) Test the new approach to see if it is viable, (5) Implementation as change management strategies to assist retail banking managers and staff with the application of key quality tools in the bank branches, (6) Adoption of CIT Model/CTIO Cycle on a larger scale in the banking organisation.

11.9 Team convergence through teamworking and virtual teamworking

Managers’ feedback from the face-to-face interviews mentioned that managers were using teleconferencing and videoconferencing to communicate with each other and at the same time
reporting to their superiors. The online, visual and voice communication process uses the telephone, computer, intercom devices (some named as ‘intergon’), ear phone, keyboard and mouth and in some cases laptop and touch button screen. More sophisticated technology was seen to be used at higher management level. For instance, regional managers from the major bank were using videoconferencing to communicate with their superior where they could see each other through the webcam device.

Similarly, managers communicating with other managers from overseas were using teleconferencing. For instance, Australian organisation at the time of this study was outsourcing some of their operational activities to Bangalore in India. Mostly at the time of face-to-face interviews with nine of the 29 managers, they were communicating daily with the staff from Bangalore in setting up the operational activities in performing better to meet the requirement and standard procedures as imposed by the Australian banking institution. Communication using videoconferencing was being conducted for 30 minutes to one hour. The term used by the manager with the researcher was ‘net meeting’. Thus when they were communicating with each other from overseas, it was a formal meeting where many of the operational procedures and tasks were being reported daily. Minutes of meetings were formally taken and recorded on the online function service or blackboard internally available for the company’s use. The one used by the company was called ‘relationship builder’. The major organisation was also using ‘Siebel 7’ as a powerful network software programme to view many details and electronic communication within the organisation, with different team members not in the same place of work but physically apart. The minutes of meetings were formally taken and what follow-up tasks needed to be completed had a specific deadline as agreed by all team members during the ‘net meeting’. Whenever any work was not completed, explanations and reasons held by any constraints or barriers had to be addressed properly in the ‘net meeting’. Minutes of meetings were saved on the computer intranet functional service and one copy was printed and recorded in a file. The file was kept in a cabinet in the manager’s office.

Copies were also circulated to other team members who were also involved in the project work. Every single task done had to be properly documented and recorded for traceability and follow-up of the working progress. All these were used together with routine teamworking, where every day team members were having a quick huddle for about 10 to 15 minutes and one formal 30 minutes to one hour face-to-face meeting every week. Thus it is an amalgamation of both routine teamworking with virtual teamworking to run the organisation efficiently. Whatever had been inspected was further dissected for achieving efficiency as a Continuous Improvement Teamworking Approach. This approach is a reactive process toward a proactive Total Teamwork Way approach as described by Atkinson (1997). Also as mentioned by Read (2009), the convergence of global economies with
the spread of technologies due to the global financial meltdown, team convergence in retail banking operations is becoming an international standardised practice. This can be viewed with the triangulation of continuous improvement, routine teamworking, and virtual teamworking for enhancing better team interaction and service excellence.

11.10 Policy implications for the retail bank
This paragraph highlights what have explicitly been extracted from the thesis. The following key points have emerged in regards to the major bank.

(1) Six-Sigma in the banking sector is complex and needs very high level of skills particularly mathematical capability.

(2) Front liners have no knowledge or understanding of Six-Sigma as they see no activity or benefit of using it and it is unlikely that they have the high level mathematical capability.

(3) However, there are no education and training courses for retail banking staff in quality methods which are elementary and effective. The focus of Six-Sigma has been more in investment, capital expenditure, and debt collection business strategic units overlooking retail banking which is the engine of the bank. This has been evidenced by the home loan sales referrals and customer satisfaction projects tackled out in this study.

(4) There is a disconnect between what is happening at higher hierarchical level and what is happening at branches.

(5) Leadership is an issue at branch level and disconnect between leaders and local front line staff.

11.10 Discontinuity of quality management methods in a layered banking organization
This research found Continuous Improvement and Six-Sigma happening in a classic case of layered organisation with discontinuity at interface between layers as shown in Figure 11.2. Senior management are aware about quality management philosophy. While branch managers and front line operators have no knowledge about CI and Six-Sigma or basic quality management methods.

Figure 11.2: Discontinuity of quality management methods at the interface between layers of the banking organisation.
CHAPTER 12

REFLECTIONS

The cashier may count millions of dollars for his or her employer, but he or she does not claim an extra cent for himself or herself (Bhaktivedanta Swami Prabhupada, 2007p. 114)

12.1 Limitations and assumptions

Several limitations and key assumptions regarding this research require identification and they are as follows:

1. This sequential mixed method research was performed in a single major Australian organisation only to address a particular problem and cannot be generalised.

2. The main focus of this thesis was to demonstrate the CIT Model evidenced by the CTIO Problem-Solving Cycle. The team using the CIT model by implementation of the CTIO Problem-Solving Cycle named as the Continuous-Task-Interacting-Team (CTIT) was located in a major bank. However this major financial institution authorised this research to be conducted only in specific retail branches of the major regions of Victoria. Considering the time-frame and cost involved it would have been difficult to conduct this study throughout Australia. The senior management team from the bank advised that all retail branches’ operational activities, systems, policies, procedures, products and services including many other issues are the same in all retail branches in Australia. The bank institutes the same type of retail branch and approach around Australia. The senior management team believes that the sample frame and participants involved for this study were adequate to conduct this research.

3. Culture, leadership, labour industrial issues, project management, benchmarking, change management, cost of quality, the present economic meltdown with the financial crisis, competitiveness, e-collaboration, e-business, information quality, continuous innovation, strategic information management, coaching and mentoring are limitations to studies such as this research. Although leadership was found from this study to be an important issue for teamworking, the focus of the research was on face-to-face interaction and virtual interaction features from the six core elements of the CIT Model/CTIO Cycle.

4. The aim of employing the mixed methodology, although involving more work than expected, was to provide more rigour in justifying the CIT model. The mixed method, while versatile, was used to develop, test, and refine the theory and not to generalise the theory; as mentioned earlier, the study is limited to one organisation. Therefore further
testing of findings is necessary in the context of other financial and service organisations before generalisation is possible.

5. The study participants in the retail branches are all based on two region areas owing to considerations of industry access. Therefore, the possibility of generalising findings could be questioned on a geographical basis, as various other service organisations in rural and regional areas and in different states, and internationally, may still differ in their retail practice, people, and the nature of their business operations.

6. This is an Australian retail banking perspective of the Continuous Improvement Teamworking approach. The paucity of knowledge regarding Continuous Improvement Teamworking is limited, as no previous research of this nature has been done before.

7. The focus of Continuous Improvement Teamworking is limited to the problem-solving approach with emphasis on three main knowledge domains of CI, teamworking, and virtual teamworking as used in the field of ‘integrated supply chain management’. Many other issues in CI, teamworking, and virtual teamworking are not examined.

**12.2 Problems encountered and addressed**

- Lack of financial support to attend conferences; researcher self-financed mostly all the conferences to present accepted refereed papers
- Travelling cost to different retail branches self-financed by researcher
- Busy retail branches where investigator had to wait for several hours to be able to talk with participants
- Some health factors undergoing surgery and had severe new flu strain for more than six weeks
- Mixed methods used were very time consuming with an enormous array of data and information which had to be synthesised in a relevant way to focus on the research objectives.
- Paper reviewers were sometimes very unfair and unhelpful with author’s papers submitted for publications in conferences as a new researcher.
- Supervisors not providing support when needed and unnecessary delayed in thesis submission.
- Data overload was reviewed.
- Financial difficulties for personal expenses.
12.3 The dominant strategy and contribution of qualitative research which facilitated the research task for the researcher

By doing the qualitative research first, many hidden details and crucial parameters of the CIT Model were discovered by being closer to the scene, and having closeness to the data. These would not have been seen if a dominant quantitative methodology was used. The research project tasks were facilitated by starting with the dominant qualitative methodology in the sequential mixed method (Cresswell, 2003). The researcher as the participant observer contributed to a better understanding of the research focus and unit of analysis. This exploratory research was conducted to address the research question through observation of patterns, ideas, common features, impressions, key domains, collecting and analysing ethnographic data with the focus on gaining insights and familiarity with the subject area for more rigorous investigation at a later stage, as performed in the case studies, face-to-face interviews, and the personal survey. However, the following key points have emerged:

- Bringing of personal values to the mixed method
- Closeness to data
- Validating accuracy and integrity of data, analysis, and findings
- Researcher established the meaning of the phenomena from the views of the retail banking staff and managers.

12.4 Emerging trend from mixed-method which assisted the researcher

- Pragmatic knowledge claims from case studies which was more problem-centred (problem-solving activity)
- Presentation of results in a simplified manner as each methodology assisted the other
- In the dominant qualitative methodology, the researcher made knowledge claims based primarily on constructivist and participatory perspectives (multiple meaning of experience, observations, social meanings, collaborative and change orientation).
- Both the dominant qualitative research and the less dominant quantitative research supported each other
- Mastery of the philosophy of inquiry and discourse in the business improvement arena
- Making the claims realistic and substantial
- Various roles performed as researcher, observer, ethnographer, facilitator and trainer
- Know how to work better in team from case studies
- Amalgamating theoretical and practical understanding in different methodologies
- Mixed methods assisted to view research critically
Abundance of analysis and synthesis data and information from a variety of sources
• Learning of variety of approaches for investigation
• Learning better to communicate and leadership role as facilitator within a team and working environment
• Develop confidence in performing research though facing various challenges and not easy to perform in industry

12.5 Exploring and exploiting the CIT Model/CTIO Cycle: the author’s views

Can Quality Circles, if re-engineered and integrated with Six-Sigma in the present context of CIT/CTIO Problem-Solving Cycle/CTIT, be considered to enhance better inter-communication, better relationships, connectivity with enabling technology, trust and the interactions of employees to perform better for the organisation?

The quality of service provided to customers was improved by the use of hybrid teams using face-to-face teamworking and virtual teamworking with CI to address their concerns. The present study also tried to understand how efficiently and effectively teamwork synergy and interactions are being utilised through the Continuous Improvement Teamworking Approach. The interaction medium of various branch managers and staff to work as a team and their empowerment by their bank is crucial for effective teamwork. The evolving teamwork approach, type, and structure being implemented at branch level were therefore matters for this study.

12.6 A critical appreciation to review the research

This research could have been finished earlier than scheduled if a mixed-method was not used and adequate support from supervisors. The researcher perhaps engaged in too much work in justification of the CIT Model/CTIO Cycle as this challenging research task could have been recognised and finalised by senior supervisor with the international award obtained with Study 1. Is this research going to revive our understanding on the problem-solving approach about team interactions in the under-estimated field of ‘quality management with integrated operations management perspective’ by practitioners?

12.7 Direction for future research

A further study or extension of this study might investigate in depth the CTIO Problem-solving methodology in relation to various problem-solving conceptual cycles in E-HRM, E-Quality Management, E-Operations Management, E-Networking/E-Teaming, Logistic and Business I.T, Strategic Performance Improvement, E-Entrepreneurship, Supply Chain Management and E-Supply Chain Management.
12.8 Dissemination of research findings with Academia-Industry

The research assisted the retail banking organisation and the relevant community by providing them with access to the knowledge domains of the Continuous Improvement Teamworking Model, the CTIO Problem Solving Approach and the CTIT. The educational facility offered by RMIT University through the researcher for the purpose of applied research was to address a problem in the bank with evidence of improvement in performance. This study enhanced the interaction of an academic staff member with participants and professional members of the banking organisation on research matters of mutual interest. This research will act as a benchmark and encourage academic staff to play an active part in applied research to assist industry in developments and an awareness of new concepts. The research findings can be disseminated internationally to retail banking organisations about the CIT Model/CTIO Cycle/CTIT to make team members including management representatives work better as a dynamic team to deliver superior customer service.

12.9 The gearing mechanism of the Continuous Improvement Teamworking (CIT) Model considered by researcher when conducting case studies in the bank.

The freewheeling and versatile aspects of the CIT Model illustrate similarity to the strength of the gears which makes us realise that quality through Continuous Improvement and teamworking is still remembered.

Figure 12.1: Gearing Mechanism illustrating the CIT Model amalgamating CI, Teamworking and Virtual Teamworking.
The gear mechanism has remained the same except that it has been improved with advanced technology. Similarly, the CIT is still considering the key aspects of traditional quality management such as Continuous Improvement and teamworking. The new consideration with the advance of technological know-how is the gearing mechanism of the CIT model amalgamating Continuous Improvement, traditional teamworking, and virtual teamworking. This shows how quality works well with each gear supporting another to make the financial organisation that participated in this study achieve productive performance. The importance of the gearing mechanism is that it shows continuous interaction and problem-solving approach of team members in addressing tasks. It is as if one gear starts working, and the other gears also need to be continuously working otherwise nothing will work together. This has been the key aspect for the success of both case studies. A gearing mechanism for the retail banking operational sector as the engine of the major bank.

12.10 Virtual Interaction Media in the Concern-Task-Interaction-Outcome (CTIO) Cycle for virtual teamwork

12.10.1 Epilogue and lessons learned
The CTIO Cycle is a variant problem-solving cycle of the traditional Deming-Shewhart PDCA Cycle in the modern context. What can we forecast in the next decade about the interaction of virtual teamwork with routine teamwork with enabling technologies evolving so fast? At present we see the integration of both routine teamwork with virtual teamwork for the banking organisation, triangulated with Continuous Improvement to perform better. At present there is a need for both face-to-face and virtual interactions in the retail banking organisation to satisfy both internal and external customers.

12.11 What did I learn from this research
This study has assisted me to have two steps between the academic life as a researcher and a practitioner in industry. Blending these two fields is challenging as it demands discipline, time management, professionalism, seriousness to finish this industry-based research, and commitment to deliver full research project as agreed with major bank senior management team and RMIT University. Though, the researcher had no real knowledge of time and available resources to perform this project work, there was no real exit route to end this study before completion of all stages. This research helped me to grow as a researcher by learning multiple methods of addressing problems in an organization. What was observed in practice, put into a report and papers submitted in various international conferences have all assisted the researcher to further improve his understanding with reviewer’s comments. Going back to industry several times for different data collection assisted the researcher to refine his findings. This research will benchmark relevant
research involving Continuous Improvement and teamworking. If I was about to do this research again my focus would be more on front liners to gather face-to-face information as it is from them that I have learnt more rather than the management team. Thus my feelings about this research task are described as follows:

(a) What did I find difficult?
   - Waiting time to see participants
   - Waste lots of time as delays to have feedback and coming back to square one
   - Travelling and cost involved as self-financed
   - Paying for most of the conferences
   - Typing and sitting on desk for long hours with health problems
   - Staying over night at University for writing papers and thesis.
   - Moving desks
   - Too much data and information to handle
   - Reducing thesis (only 12 chapters) of about 400 pages to about 244 pages to facilitate reading
   - Lack of motivation from supervisors in difficult times

(b) What did I find easy?
   - Being the observer
   - Conducting the ethnographic research cycle in the participant observation study
   - Application of quality tools (integrating PDCA Cycle and DMAIC Cycle)
   - Face-to-face interviews with managers
   - Conducting the mixed methods using both qualitative and quantitative methodologies
   - Moving from academic field to practical settings in industry and vice versa. Both complemented each other.

(c) What worked well?
   - The two case studies worked well
   - The CTIO Problem-Solving Cycle methodology
   - Relationship with front line operators and team leaders in the bank
   - Integration of theory with practice
   - The sequential mixed methodology

(d) What did not work well?
   - Not much impact on managers
   - Arrogance of some managers
   - Lack of support as mostly everything needed to be done by the researcher
   - Lack of guidance and motivation in difficult times
   - Both supervisors left for other jobs and not always available when needed
• Fine tuning of thesis took longer than expected
• Over-thinking, over-doing, over-critical and over re-arranging of thesis presentation
• Proof reading thesis not as expected
• Stress/Health problems
• Have to always wait for supervisors availability
• Exhaustion and tiring with work overload
• Thesis extension

(e) What would I do differently?
• Looking for proper advice
• Learning form mistakes and not repeat them
• Choosing only one methodology and not take commitment for conducting research on such large scale
• Narrowing focus so as not to handle too much data and information
• Considering time framework
• Considering family, social, spiritual and heath aspects as important as thesis work
• Became a devotee of Krishna Consciousness and realised the love of God during my research journey

(f) What did I learn?
• Follow advice of spiritual masters from ISKON (Krishna Consciousness) which changed my life as brought harmony and inner peace within myself
• Talking to other researchers and academics, asking for their views
• Following your supervisor advice where there is logical thinking
• Changing supervisor not to be done as far as possible
• Not always is your supervisor right
• Tapping on resources made available through research training at University
• Attending conferences for reviewing papers for chapters of the thesis
• Attending doctoral workshops e.g ANZAM, ANZIBA, BAM and so on
• Publishing relevant to the thesis
• Reviewers are tough and highly demanding as will not hesitate to reject a paper for a conference
• Acting as a reviewer and lecture relevantly to your research
• Not everything will work well every time (up and down like a roller coaster)
• Not everything can be perfect and without any error as cannot control everything
• Self discipline, hard working, patience and determination
• Good communication skills important in research and mutual respect to others
• As a researcher be close to front line operators and those who run the operation
• KISS ‘Keep it simple and stupid’
• Active listening, in-depth observation, notes taking and good record keeping for traceability of information when required

12.11.1 Difficulties related to research
It is very difficult to collect data in an organization with no authority and power. Researcher had to be very diplomatic and pains-taking where the organization will the ends of the research, but not the means. The bank senior management was interested in the research but did not want the researcher to disturb banking staff during peak hours or when not desirable with short time frame provided. However, the cooperation of industry partner is recognised.

12.11.2 Leadership modes
‘Even a man of knowledge acts according to his own nature, for everyone follows the nature he has acquired from the three modes of nature which are the mode of ignorance, the mode of passion and the mode of goodness’ (Bhaktivedanta Swami Prabhupada, 2007 p. 115). Similarly, as found from this study leadership style of retail banking managers can be classified into the three modes. This can possibly be considered as leadership mode of ignorance (local leaders not aware at all about quality management and not interested in learning), leadership mode of passion (little knowledge about quality management is enough for the manager just to know what it is all about) and leadership mode of goodness (managers interested in learning more about quality management to improve performance). As confirmed from the personal survey, leadership is a problem in the retail banking sector as viewed by the 149 banking staff. This can be the failure of TQM as seen in many organizations. Xavier and Ramachander (2000 p.107) mentioned about ‘spiritual leadership’ which involves inspiration, passion and higher moral purposes. If the discontinuity of quality management methods in the layered banking organization needs to be improved, mindset of managers can be shifted through training with support of top management to a leadership mode of goodness to learn about team interaction, Six-Sigma, CI , quality methods, CIT/CTIO and so on.

12.12 Awards and HERDC publications obtained for this research
The CTIO Cycle problem-solving technique was implemented with team members to resolve the concern of poor home loan referrals by improving 57 per cent of the causes of the problem over the period of six months. Home loan sales referrals exceeded the normal set targeted figure by the bank for the period under study. The branch came out as the best retail branch over a total of 15 retail branches in competition with each other to perform better. The branch won the competition for improving home loan sales referrals. The senior management team of the major bank came to the
team to congratulate them and awarded Certificates of Excellence to CTIT as significant tangible gains were obtained. The project was nominated in the Quality Awards organised by the bank, and the investigator, as a team member was awarded an Excellence Award by senior management.

Customer satisfaction for another retail branch with different team members but the same facilitator was improved from an average of 67 per cent to 89 per cent over a comparison period of six months. The team and facilitator were awarded trophy and certificate of excellence.

Won the prestigious Caulley Award for the Best Refereed Paper by a PhD Candidate at the AQR International Biennial Conference. The following DEEWR HERDC (Department of Education, Employment and Workplace Relations - Higher Education Research Data Collection) publications collections were done by the author as illustrated in Tables 12.1. Reporting of researcher as a research active student/staff for collection of research publications data for internal and external reporting purposes included in the HERDC reported to DEEWR (formally DEST). Publications weighted for author is expected to be about 19 points. All publications done and statement of progress through the researcher PhD journey are illustrated in Appendix 5.

Table 12.1: HERDC Research Publications Collection (Refereed papers) reporting to DEEWR done by researcher for his PhD in the School of Management and Business Research Office at RMIT University.

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Conferences /Journal/Book Chapter</th>
<th>Number of Publications</th>
<th>Category</th>
<th>Place published</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006/2007</td>
<td>6 Conference papers</td>
<td>6</td>
<td>E1</td>
<td>Australia</td>
</tr>
<tr>
<td>2007/2008</td>
<td>5 Conference papers, 1 Journal article, 1 Book chapter</td>
<td>7</td>
<td>E1, C1 and B</td>
<td>Australia, U.K and USA</td>
</tr>
<tr>
<td>2008/2009</td>
<td>5 Conference papers, 1 Book chapter</td>
<td>6 (ongoing)</td>
<td>E1 and B</td>
<td>Australia and USA</td>
</tr>
<tr>
<td>2009/2010</td>
<td>8 Journal articles</td>
<td>ongoing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: Category B: Book Chapters published (1 point); C1: Journal Article peer reviewed (1 point); E1: Conference Publications peer reviewed (1 point).

Each Chapter from the thesis was presented in different international conferences and improved from more than thirty-five reviewers’ valuable comments. This is demonstrated in Table 12.2 and Table 12.3 in Appendix 5.
Table 12.2 All Chapters of the thesis followed the peer-reviewed process.

<table>
<thead>
<tr>
<th>THESIS CHAPTERS</th>
<th>PAPERS</th>
<th>CONFERENCE/JOURNAL/BOOKCHAPTER</th>
<th>REVIEWERS FOR REFEREED PAPERS</th>
<th>FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>-5th ANZAM &amp; 1st ASIA Pacific Operation Management Symposium, June 2007</td>
<td>2</td>
<td>Research Rationale-Emergence of CIT Model</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>- SCMISO7 and ACKMIDS December, 2007 (Supply Chain and Information System and electronic commerce -ANZIBA-April 2009 -Part of Book chapter-IGI Global, September 2009.</td>
<td>5</td>
<td>Research rationale and literature review</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>-Part of Book Chapter –IGI Global, USA, June 2008. -6th and 7th ANZAM Operations, Supply Chain and Services Management, June 2007 and June 2008.</td>
<td>5</td>
<td>Literature review and Crafting of CIT Model/CTIO Cycle and CTIT</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>-23rd ANZAM conference December 2009 -21st ANZAM conference December 2007</td>
<td>3</td>
<td>CITModel/ Implementation of CTIO Problem-Solving Cycle methodology</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>-23rd ANZAM conference December 2009 -SCMISO7 and ACKMIDS December, 2007 (Supply Chain and Information System and electronic commerce)</td>
<td>4</td>
<td>-Implementation of CTIO Problem-Solving Cycle Methodology and Linkage to ethnographic research cycle (participant observation study)</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>-12th Teamworking Conference (IWOT 12), U.K, September 2008.</td>
<td>2</td>
<td>Face-to-face interviews/Content Analysis</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>-6th ANZAM Operations, supply chain and services management, June 2007.</td>
<td>2</td>
<td>Personal survey sampling</td>
</tr>
<tr>
<td>10, 11, 12</td>
<td>4</td>
<td>-Part of Book Chapter IGI Global, 2009 -ANZIBA, June 2008 -7th ANZAM Operations, Supply Chain and Services Management, June 2008 -12th Teamworking Conference (IWOT 12), U.K, September 2008.</td>
<td>6</td>
<td>-Grafting of CIT Model/CTIO Cycle/CTIT -Sequential Mixed methods used -CI, teamwork and virtual team integrating as hybrid team structure.</td>
</tr>
</tbody>
</table>
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Terziovski, M. (2002). Beyond the Fads: What Can we learn from Deming’s profound knowledge and our research over the past ten years. In Ho, k.m. & Dalrymple, J (Ed.), *Proceedings of the 7th International Conference on ISO 9000 and TQM* (pp. 206-207), RMIT University, Melbourne, Australia.


N.B: The author can be contacted for few references cited by some other authors.
## Appendix 1:

Table 2.1 (related to Chapter 2): Quality definitions from the quality Gurus in relation to Continuous Improvement and teamworking (grounding on the problem-solving approach).

<table>
<thead>
<tr>
<th>Quality Guru</th>
<th>Definitions relevant to CI and Teamworking (problem-solving approach)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walter A. Shewart (1920, 1931)</td>
<td>&quot;Shewhart concluded that assignable cause can be identified and removed, whereas common causes could not be removed without basic changes to the process. Shewhart’s two significant contributions were for two the identification of the Plan, Do, Study, Act (PDSA) cycle (Foley, 2000) which he believed as the dynamic scientific process of acquiring knowledge and the presentation of the Shewhart Charts for his calculations&quot; (Foley, 2000).</td>
</tr>
<tr>
<td>W. Edwards Deming (1982)</td>
<td>“Deming is the most well known quality guru by scholars as he built upon the work of Shewhart (1931). He designed a systematic approach to problem-solving using the PDCA (Plan-DO-Check-Action) cycle. While observing the implementation of 'quality' in the Japanese context he developed his 14 points which he believed for the transformation of western management” (Deming, 1982, pp.22-24).</td>
</tr>
<tr>
<td>Joseph Juran (1988)</td>
<td>“Juran defined quality is ‘fitness for use’. He viewed quality as a planned process of ‘quality trilogy” using the three managerial processes of planning, control and improvement. He also actively defined quality costs for an organization” (Juran and Gryna, 1988).</td>
</tr>
<tr>
<td>Armand Feigenbaum (1991)</td>
<td>“Feigenbaum believed that ‘quality’ should be designed and built into the product itself rather than poor quality being inspected out. He mentioned a ‘Total Quality System’ which reflected an integration of technical and managerial procedures, for improving co-ordination of people, the machines and the information from the company with practical ways to assure customer quality and economical cost of quality. He also mentioned setting standards for improvement (target setting), correcting problems and causes by acting when necessary” (Feigenbaum, 1991).</td>
</tr>
<tr>
<td>Phillip B. Crosby (1979)</td>
<td>Crosby’s philosophy was mostly on conformance not elegance, the final product is the result of management process, it is cheaper to do it right the first time, quality is always measurable and only performance is ‘zero defects’ (Crosby, 1979).</td>
</tr>
<tr>
<td>Kaoru Ishikawa (1989)</td>
<td>Ishikawa advocated the ‘Company Wide Quality Control’ approach by implementation of ‘quality circles’ problem-solving approach to be able to cascade quality to the company’s overall business and not only rely on quality specialists. He believed in creating cheerful workplaces that make life worthwhile and where humanity is respected, exercise people’s capabilities and bring out their limitless potential, promote an environment where employees are continuously looking to resolve problems and change in shop floor attitude enhancement for better organizational performance. His focus was on employees open communication and contributed significantly in the development of quality tools such as his ‘fishbone diagram” which is also called the cause and effect diagram (Ishikawa, 1989).</td>
</tr>
</tbody>
</table>
## Appendix 2:

### Table 2.2: Quality definitions in relation to Continuous Improvement and teamworking

<table>
<thead>
<tr>
<th>Authors as cited by</th>
<th>Definitions reflecting on CI, Teamworking and customer service (Problem-solving approach)</th>
<th>Key focus in relation to the CIT Model and CTIO Cycle in this study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rura-Polley and Clegg (1999 p.407-415)</td>
<td>“meeting or exceeding the needs and expectations, both internal and external.”</td>
<td>Internal and external needs</td>
</tr>
<tr>
<td>Dowse (1993)</td>
<td>“a management philosophy that seeks continuous improvement in the quality of performance of all processes, products and services of an organization. It emphasizes the understanding of variation, the importance of measurement, the role of the customer and the involvement of employees at all levels of an organization in pursuit of such improvement.”</td>
<td>Continuous improvement of processes, products and services with employees involvement</td>
</tr>
<tr>
<td>Schoonover (1993)</td>
<td>“a philosophy that focuses on improving customer and employee satisfaction, as well as profitability.”</td>
<td>Improving customer and employee satisfaction</td>
</tr>
<tr>
<td>Steingard (1993)</td>
<td>“a set of techniques and procedures used to reduce or eliminate variation from a production process or service-delivery system in order to improve efficiency.”</td>
<td>Set of techniques and procedures to improve efficiency</td>
</tr>
<tr>
<td>Houghton (1994)</td>
<td>“Quality control is about … analysing every aspect of how we work. It’s about cutting away bureaucracy … unnecessary levels of management … restrictive work rules … and getting employees directly involved. It’s about empowering employees to do what’s best for the customer.”</td>
<td>Empowering employees to do what's best for customer</td>
</tr>
<tr>
<td>Klimoski (1994)</td>
<td>“an approach to managing organizations which emphasizes the continuous improvement of quality and customer satisfaction, entails the application of systematic tools and approaches for managing organizational processes with these ends in mind, and involves the establishment of structures such as quality improvement teams and councils for maintaining focus on these ends and enacting organizational improvement processes.”</td>
<td>Systematic tools application</td>
</tr>
<tr>
<td>Walker (1995)</td>
<td>“a philosophy and set of concepts and methods employed throughout an organization by individuals with a view toward continually improving the product or service provided to customers.”</td>
<td>Continually improving product or service to customers</td>
</tr>
<tr>
<td>Waldman (1995: 91)</td>
<td>“an integrated, customer focused approach to improve the quality of an organization’s processes, products, and services … Total Quality Management (TQM) may be viewed more as a shift in thinking and organisational culture.”</td>
<td>Integrated customer focused approach</td>
</tr>
<tr>
<td>Lakhe and Mohanty (1995: 139 – 140)</td>
<td>“a quest for excellence, creating the right attitudes and controls to make prevention of defects/errors possible and optimize customer satisfaction by increased efficiency and effectiveness;”</td>
<td>Creating the right attitudes</td>
</tr>
<tr>
<td>Emery, Summers and Surak (1996: 484)</td>
<td>“TQM focuses the efforts of all members of the organization to continuously improve all organizational processes and increase value to customers, while relying on a clear vision of the organization’s purpose.”</td>
<td>Focuses on the efforts of all members of the organization</td>
</tr>
<tr>
<td>Westphal, Gulati and Shortell (1997 : 368-369)</td>
<td>“The TQM philosophy has four basic aspects. First, it has a customer focus … Second, it emphasizes continuous improvement … Third, it involves structured, problem-solving processes for identifying and solving problems</td>
<td>Customer focus, continuous improvement,</td>
</tr>
</tbody>
</table>
Table 2.3: Other Quality definition in relation to Continuous Improvement and teamworking

<table>
<thead>
<tr>
<th>Authors</th>
<th>Quality definitions on CI, teamworking, and customer service (problems-solving approach).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Systems (1996)</td>
<td>“Without teamwork, there is absence of TQM which changes employees to do right thing right first time.”</td>
</tr>
<tr>
<td>Dalrymple (1999)</td>
<td>“The confusion around the meaning of ‘quality’ with a source of confusion may be lying in the evolution of quality from its micro-scale description of a product to its more contemporary macro-scale description of an organization”</td>
</tr>
<tr>
<td>Summers (2000: 96)</td>
<td>“A project team’s tasks don’t end with the solution of one particular problem. The quality and productivity improvement process never ends. Once a problem is solved, teams are reformed to ‘do it all over again,’ this time with a new problem, opportunity, or project. Only through continual improvement can a company hope to move toward the future, improve its customer base, and ensure future profits.”</td>
</tr>
<tr>
<td>Selman and Selman (2002)</td>
<td>“Deming’s message is one of humanistic trust to search for continual improvement in product or services, and try to keep the workers highly motivated.”</td>
</tr>
<tr>
<td>Ching (2002)</td>
<td>“Unearth tacit know-how of employees to facilitate sustainable competitive improvements”</td>
</tr>
</tbody>
</table>
### Appendix 3:

Table 2.6: Definitions of collaboration while managing quality with virtual teamworking.

<table>
<thead>
<tr>
<th>Authors and source</th>
<th>Definitions of collaboration in relation to virtual interaction</th>
<th>Key focus to virtual communication using the CIT model.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray (1989b:5)</td>
<td>&quot;parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible.&quot;</td>
<td>See different aspects of a problem, go beyond own limited vision</td>
</tr>
<tr>
<td>Pasquero (1991:38)</td>
<td>&quot;loosely coupled, multilayered networks of referent organizations designed to lead stakeholders to take voluntary initiatives towards solving a shared social problem.&quot;</td>
<td>Multilayered network, solving a shared problem</td>
</tr>
<tr>
<td>Roberts and Bradley (1991:212)</td>
<td>&quot;temporary social arrangement in which two or more social actors work together toward a singular common end requiring the transmutation of materials, ideas, and/or social relations to achieve that end.&quot;</td>
<td>Two or more social actors work together</td>
</tr>
<tr>
<td>Wood and Gray (1991:146)</td>
<td>&quot;a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain.&quot;</td>
<td>Group interactive process</td>
</tr>
<tr>
<td>Westley and Vredenburg (1991:66)</td>
<td>&quot;a variety of partnerships, strategic alliances, and inter-firm networks.&quot;</td>
<td>Inter-firm networks</td>
</tr>
<tr>
<td>Huxham (1996:240)</td>
<td>&quot;all kinds of inter-organizational relationships.&quot;</td>
<td>Inter-organizational relationships</td>
</tr>
<tr>
<td>Clarke and Clegg (1998)</td>
<td>&quot;manage collaborative quality in these change paradigms and structures of management.&quot;</td>
<td>Manage collaborative quality</td>
</tr>
<tr>
<td>Rura-Polley and Clegg (1999:410)</td>
<td>&quot;Interaction in collaborative settings may occur face-to-face or be mediated by technology (conference call, video-conferencing, etc...) Much collaborative activity occurs through organizations that are heavily networked technologically, often with unexpected liabilities.&quot;</td>
<td>Interaction in collaborative settings may occur face-to-face or mediated by technology (conference call, video conferencing etc...)</td>
</tr>
<tr>
<td>Dalrymple (1999)</td>
<td>&quot;The disparate and, often disconnected activities that can be described as ‘quality management’ have often created confusion.&quot;</td>
<td>Disconnected activities</td>
</tr>
<tr>
<td>Gill and Cormican (2008:1) as cited by Zhao (2008)</td>
<td>&quot;Ambient intelligence (AmI) is a new concept in area of information and communication technology (ICT) using a combination of technologies. The interaction between computerised embedded devices and human user is improving through advancements in the area of natural interaction&quot;.</td>
<td>Using combination of technologies. Interaction between computerised embedded devices and human user is improving.</td>
</tr>
<tr>
<td>Tammela and Salminen (2008:23) as cited by Zhao (2008)</td>
<td>&quot;Interoperability concept supporting network innovation. Knowledge intensive business is in continuous co-evolution. The question is how to integrate and synchronize knowledge, technology, competences, and processes, especially when making something new.&quot;</td>
<td>Interoperability. Continuous co-evolution. Integrate and synchronize knowledge, technology, competences</td>
</tr>
<tr>
<td>Ahmed and Amaqoh (2008:38) as cited by Zhao (2008).</td>
<td>&quot;The portal Web site contains pages that are organized by navigation tools. The navigation tool is designed such that the access page, consisting of logically nested layered Web pages, giving users access to desired information in a single location. Navigation tools have a hierarchical relationship to each other. A web-designed portal contains resources and functionalities that can be made easily available to a user&quot;.</td>
<td>Portal web site. Access page, consisting of logically nested layered Web pages, giving users access to desired information in a single location. Resources and functionalities available to user.</td>
</tr>
<tr>
<td>Sanders; Galloway and Keogh (2008:158) as cited by Zhao (2008).</td>
<td>&quot;Internet environment is defined as all presence and activity on the world-wide Web and all the Internet technologies that support the web. Nowadays Internet is used virtually for everything, and in time, as technology develops and creativity is applied, it will be used for things, and in ways, that we have not yet anticipated&quot;.</td>
<td>Internet environment and Internet technologies. Internet is used virtually for everything.</td>
</tr>
<tr>
<td>DeGori &amp; Zhao (2008:192)</td>
<td>&quot;Electronic communication technologies are providing ability to work together at a distance (Cantu, 1997:p.4); Virtual teams benefit significantly from face-to-face meetings and these are more important in the early stages of team development (Lipnack, 1997 as cited by Cantu,1997). In virtual teams, technology replaces the 'connectedness' that is inherent in the functions of co-located teams. (Conner et al.,2003), the evolution ; The evolution of 'virtual' or 'network' organizations has been facilitated by the growth of teams; To be effective, virtual teams have to develop new ways of sharing knowledge and understanding in the electronic space ( Kimble et al.,2000)&quot;.</td>
<td>Electronic communication. Virtual teams benefit significantly from face-to-face meetings and more important in early stages of team development. Technology replaces the 'connectedness' inherent in functions of co-located teams.</td>
</tr>
<tr>
<td>Akao (2002)</td>
<td>&quot;Building quality as a technology&quot;</td>
<td>Quality as a technology.</td>
</tr>
<tr>
<td>Quality World (Feb 2009:9)</td>
<td>&quot;Business process re-engineering (BRP) was first propounded by &quot;</td>
<td>Information technology</td>
</tr>
</tbody>
</table>
Michael Hammer in an article in the *Harvard Business Review* in July/August 1990. The method was popularly based on an examination of the way information technology was affecting business processes."

Hanna & Newman (2007: 532) “Integrating operations management across the functions also include management information systems when managers are working with same data and operational plans”

For the first nine authors only cited by Rura-Polley and Clegg (1999).
Appendix 4:
Table 4.1: Tabulating axioms description and comparison to debunk the logic of phenomenological, positivistic and critical paradigms as described by various authors (Tabulated by researcher).

<table>
<thead>
<tr>
<th>Axioms</th>
<th>Positioning research objective as described by various authors</th>
<th>Phenomenological / Constructivism Intrepretivist / Naturalist Paradigm (Qualitative)</th>
<th>Positivistic Paradigm (Quantitative)</th>
<th>Critical Paradigm/ Pragmatism (Mixed method)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assumptions</td>
<td>Knowledge representation of world (Cavana, Delahaye &amp; Sekaran, 2001)</td>
<td>Inter-subjective world which science can represent with concepts; social construction of reality</td>
<td>Objective world which science can measure and ‘mirror’ with privileged knowledge</td>
<td>Material world of structured contradictions and/or exploitation which can be objectively known only by removing tacit ideological biases.</td>
</tr>
<tr>
<td>Aim</td>
<td>Meaning of reality (Cavana, Delahaye &amp; Sekaran, 2001)</td>
<td>To uncover the socially constructed meaning of reality as understood by an individual or group</td>
<td>To discover universal laws that can be used to predict human activity</td>
<td>To uncover surface illusions so that people will be empowered to change their world</td>
</tr>
<tr>
<td>Methodological</td>
<td>Data collection and analysis (Minichiello, Aroni &amp; Hays, 2008).</td>
<td>Data are collected through participant observation, unstructured interviews. Data are analysed by themes from descriptions by informants and reported in the language of the informant.</td>
<td>Data are collected through measuring things and analysed through numerical comparisons and statistical inferences. Data are reported through statistical analysis.</td>
<td>Data are collected and analysed qualitatively and quantitatively.</td>
</tr>
<tr>
<td>Methodological</td>
<td>Type of reasoning (Cavana, Delahaye &amp; Sekaran, 2001); Type of logic (Tashakkori and Teddlie, 1998); What is the research process? (Collis &amp; Hussey, 2003)</td>
<td>Inductive; Inductive logic with emphasis on arguing from a particular to the general, or emphasis on ‘grounded’ theory; Inductive process with mutual simultaneous shaping of factors</td>
<td>Deductive; Deductive logic where there is emphasis on arguing from general to particular, or on a priori hypotheses (or theory); Deductive process focusing on cause and effect.</td>
<td>Inductive and Deductive</td>
</tr>
<tr>
<td>Ontology</td>
<td>Nature of reality (Tashakkori and</td>
<td>Naturalists believe that there are multiple,</td>
<td>Positivists believe that there is a single reality.</td>
<td>Accept external reality, Choose</td>
</tr>
<tr>
<td>Epistemology</td>
<td>Relationship of the knower to the known (Tashakkori and Teddlie, 1998); Relationship of the researcher to that research (Collis &amp; Hussey, 2003);</td>
<td></td>
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<tr>
<td>-------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>Naturalists believe that the knower and the known are inseparable; Researcher interacts with that being researched.</td>
<td></td>
<td></td>
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<tr>
<td>Positivists believe that inquiry is value-free.</td>
<td></td>
<td></td>
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<tr>
<td>Both objective and subjective points of view.</td>
<td></td>
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<td></td>
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<tr>
<td>Naturalists believe that inquiry is value-bound; Value-laden and biased Values included and made explicit.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positivists believe that inquiry is value-free.</td>
<td></td>
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<tr>
<td>Values play a large role in interpreting results; Values included and made explicit.</td>
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<tr>
<td>Naturalists believe that it is impossible to distinguish causes from effects;</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Positivists believe that there are real causes that are temporally precedent to or simultaneous with effects;</td>
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<tr>
<td>There may be causal relationships, but we will never be able to pin them down.</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research Plan</th>
<th>Flexibility v/s rigidity</th>
<th>Flexible, and follows the imperative for...</th>
</tr>
</thead>
</table>

Teddlie, 1998; Stance of researcher (Cavana, Delahaye & Sekaran, 2001); Collis & Hussey, 2003) constructed realities; Relativism; Intrepretevist becomes fully involved with research subjects to achieve a full understanding of subjects’ world; Reality is subjective and multiple as seen by participants in a study. Stands all of and apart from research subjects so that decisions can be made objectively. Reality is objective and singular, apart from researcher.
| Research methods | Methodologies (Cavana, Delahaye & Sekaran, 2001); (Collis & Hussey, 2003) | Ethnography; participant observation; interviews; case studies; focus groups; conversational analysis; Action Research, Feminist perspective, Grounded theory; Hermeneutics; Participative enquiry. | Experiments; questionnaire; secondary data analysis; quantitatively coded; documents statistical analysis; Cross-sectional studies; longitudinal studies; Surveys | Field research, historical analysis, dialectical analysis |
| Goodness or Quality of criteria | Procedures (Cavana, Delahaye & Sekaran, 2001); Verification (Collis & Hussey, 2003) | Trustworthiness and authenticity; Accurate and reliable through verification | Conventional benchmarks of ‘rigour’: internal and external validity, reliability and objectivity; Accurate and reliable through validity and reliability | Historical situatedness; erosion of ignorance and misapprehensions; action stimulus |
| Research design | Verification (Collis & Hussey, 2003) | Emerging design – categories identified during research process | Static design – categories isolated before study |  |
Appendix 5:

RELATED HERDC PUBLICATIONS COLLECTION FOR MY PhD THESIS WORK

Published two double blind refereed Book Chapters


Published double blind refereed Journal Article


Ongoing submission (Journal Article)


3. ‘The Ethnographic Inquiry Research Sequence to justify the CTIO Model’, International Journal of Qualitative Research in Organizations and Management.

4. ‘Continuous Improvement, Teamwork and E-teamwork’, Academy of Management Journal, USA.

5. ‘Strategic Performance Improvement for Strategic Retail Banking Operations’, Academy of Management, USA.

6. ‘Traditional Deming-Shewhart PDCA Cycle and Deming PDSA Cycle’, Academy of Management, USA.


9. ‘A correlation analysis between face-to-face and virtual interactions’, China-USA Business Review, USA.

Published refereed Conference papers


Challenges and Opportunities of Operating in Complex Supply Chains), Griffith University Business School, Queensland, Gold Coast (non-refereed).


External recognition associated with PhD research work.

- **November 2007**: The *CAULEY Award for Best Refereed Paper by a Doctoral Candidate* Presented at the Conference of the Association for Qualitative Research supported by Monash University.
- Nomination for Excellence and Quality Subject Matter Expert Awards by participating organization.

Appendix 5 (continued):

Attached my statement of progress and thesis preparation plan according to my schedule of activities done at the beginning of my research.

My statement of progress related to my PhD thesis are as follows:

**Year 1:**
- Research Proposal for Master degree by Research (research rationale, gap in literature, research project design and methodology), candidature review, research method assessment and presentations, attended doctoral workshops and read research papers and books. Completed Research Methods Modules to perform research. No publication done as was still learning.

**Year 2:**
- June: Upgraded research project to PhD. Candidature review.
- January to May: Negotiating with other Australian institutions and the participating major Australian organization (about 30000 employees) to conduct research.
- January to June: Literature review and questionnaire design.
- September to October: Ethics application preparation (Including sequential mixed methods to be used and final questionnaires to be used).
- November: Ethic approval obtained to do research.
- November to December: Participant Observation, paper and thesis write-up.

**Year 3:**
- January to April: Implementation of CTIO Problem-Solving Cycle methodology using Continuous-Task-Interacting-Team in participating institution. Written three papers for ANZIBA and ANZAM conferences.
- December to February: Face-to-face interviews.
- January to April: Personal survey including receiving questionnaires.
- May: Published one book chapter by IGI Global, USA.

**Year 4:**
- October to September: Writing on thesis work and 3 papers for ANZIBA and ANZAM conferences, 1 extended abstract and research work for research student colloquium. Written 2 papers for international Journals of Qualitative Research / and Quality and Reliability Management (Emeralds Group Publishing, U.K). Lectured, tutored and corrected assignments and examination papers.
November: Published Paper in Qualitative Research Journal.
April: Published one conference paper, ANZIBA international conference.
June: Published two conference papers, 7th ANZAM Operations, Supply Chain and Services Management Symposium.
Ongoing affiliation as Fellow with Chartered Quality Institute (FCQI).
Writing 4 more papers for Academy of Management Journal (2), International Journal of management Reviews (1) and China-USA Business Review (2).

**Personal Development as a PhD Candidate:**

- Completed 4 online modules (each module 20 hours) for ATN LEAP (Research Commercialisation, Entrepreneurship, Leadership and Communication, and Project Management). Read relevant research papers and books. Attended Business Research methods classes, Nvivo training, Qualitative and Quantitative methodologies for mixed methods, Doctoral seminars etc…
- Lectured, tutored and examined tertiary students in field undertaking research and other management fields. Attended doctoral workshop and international conferences.
- Presented part of thesis at BAM doctoral symposium.
- Research thesis work proposal to ANZIBA Research Students’ Colloquium, Queensland University of Technology.
- Published seventeen conference papers and two book chapter.
- Reviewer for book Chapter, ANZAM symposium and ANZAM conference.
- Presented to academic panel at RMIT University for my PhD Completion Seminar. Thesis presentation accepted by panel for thesis submission. Presentation to panel members including discussion was for one hour.
- Final thesis writing and submission.
Appendix 6:
Face-to-face Interview (Approved by RMIT University Ethics Committee):

RMIT UNIVERSITY (School Of Management and Business Research Office/ Research Development Unit)
Face-to-face Interview Questions

Place:……………..                    Time………             Questionnaire No…………..

Hello, my name is Vinay, and I am currently a research student at RMIT. We are presently doing some research today concerning continuous improvement teamwork in the retail banking sector and wonder if you could spare about 30 minutes to answer some questions that I will be asking and taking notes.

1. Sex
   1. Male
   2. Female

2. Which age group do you fall into?
   1. Under 20
   2. 20 -25
   3. 26 -30
   4. 31 -35
   5. 36 -40
   6. 41 -45
   7. 46 -50
   8. 51 -55
   9. 56 - 60
   10. 60 – over

3. How long have you been working in the banking organization?
   1. Months……………
   2. Years………………

4. Have you had previous work experience where you were needed to be involved in teamwork?
   1. Yes
   2. No

5. Is it important to make everyone work as a team in your organization? Yes  No
   If Yes, Why?

6. In recent years in the organization you are working, has there been emphasis on teams, teamwork and teaming in the retail banking sector? Yes  No
   If Yes, Why?

7. Do you agree that teams usually perform better than individual? Yes  No
   If Yes, Why?
8. A team is an effective unit when cooperation, communication, leadership style of superior, commitment, engagement, consultation and participation amongst team members are good?  
   True  False  
   If True Why?

9. A team that performs well in retail banking also provides excellent customer service?  True or False  
   If True why?

10. What according to you are the characteristics of a high performing team to provide a high level of customer service in retail banking?

11. When people in a team are co-operating well it shows that team members are putting the team’s welfare above their own? True  False  
    If True, Why?

12. Do you feel a sense of loss of control of your team capability when you cannot see your team members interacting to solve a problem or concern?  Yes  No  
    If Yes, give explanation why?

13. Do you communicate virtually for a common purpose with other people from your organization who are geographically remote from you (Not in your immediate place of work).  Yes   No  
    If Yes, How?

14. Do you or any of your colleagues/subordinates need to be proactive about learning and accrediting yourself or themselves to your or their respective roles before interacting and communicating virtually?  Yes   No  
    If Yes, How do you normally perform the learning and accreditation before communicating virtually?

15. Are you or any other team members in your work place provided with sufficient time and training to use the available intranet/internet resources provided to you?  
   Yes   No  
   If No, why?

What solutions do you propose?
16. Do you have too much information to decode in a reasonable time frame due to communication overload (e.g. the recent explosion of electronic media, internet and intranet you find yourself with dozens of messages and information sent by your company head office waiting on your computer screen)? Yes  No
If Yes, How do you cope with that and what remedial action do you propose?

17. Is there any information communicated to you by your head office available on company’s website re-address or discuss again in team meeting? Yes  No
If No, why?

18. What according to you are the benefits of and barriers to effective virtual communication?

19. How do you communicate with your superior, staff, colleague and other related persons working together as a team?

Do you use any other means of communication?

20. Can you explain what team approach do you use to address concerns raised by customers?

21. What are the factors contributing for competition in the retail banking sector?

22. Why do you think the banking sector is becoming competitive?

23. (a) How is the banking sector becoming competitive?

(b) Does your company provide competitive intelligence activities (e.g. vital information on your markets and competitors) linked on your company’s intranet portal website to situate your banking organization on the competitive market?
   1. Yes
   2. No
If No, go to question 24.
If yes, what type of competitive information does your bank provide?

…………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………
(c) How do you make the use of such vital information with your team members to make your organization gain competitive advantage?
…………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………

24. Are there established measures for controlling cost in the retail operational activities of the bank?

…………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………

25. Are you aware about the concept of Six-Sigma, Continuous Improvement and TQM being implemented in the banking sector?

…………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………

Do you have any other comments you would like to make about this face-to-face interview about Continuous Improvement Teamworking?

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THANK YOU FOR YOUR ASSISTANCE.

Please kindly note that a copy of the report compiled from this research will be sent to the participants upon request.

Job Ref : VSK /RMIT/FF 06-10
Appendix 7:

QUESTIONNAIRE FOR PERSONAL SURVEY (Approved by Ethics Committee)

RMIT UNIVERSITY (School Of Management and Business Research Office/ Research Development Unit).
Personal Survey.

Place:……………..                    Time………             Questionnaire No………….

Hello, my name is Vinay, and I am currently a research student at RMIT. We are presently doing some research today concerning continuous improvement teamwork in the retail banking sector and wonder if you could spare about 20 minutes to answer some questions.

1. Sex         1.  Male
               2.  Female

2. Which age group do you fall into?
   1.  Under 20
       2.  20 -25
       3.  26 -30
       4.  31 -35
       5.  36- 40
       6.  41 -45
       7.  46 -50
       8.  51 -55
       9.  56 - 60
       10.  60 – over

3. Experience you have in the banking organization you are presently working?
   1. Months……………
      2. Years………………

4. Have you had previous work experience where you were needed to be involved in teamwork?
   1. Yes
      2. No

5. For each of the following statements, please tick the box which best describes your opinion. (Please rate your agreement or disagreement by ticking the appropriate box using the following five points Likert scaled-response.)
   1= Strongly disagree
   2=Tend to disagree
   3=Undecided/uncertain
   4=Tend to agree
   5=Strongly agree
<table>
<thead>
<tr>
<th>No./Abbr-</th>
<th>Below is a list of statements about continuous improvement teamworking approach. Please tick for the corresponding extent of your agreement/disagreement with each statement.</th>
<th>Strongly disagree 1</th>
<th>Tend to disagree 2</th>
<th>Undecided/uncertain 3</th>
<th>Tend to agree 4</th>
<th>Strongly agree 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACE-FACE INTERACTION (FF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1-CL</td>
<td>The team deal with cost control and cost reduction</td>
<td></td>
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<tr>
<td>2-PI</td>
<td>I try to understand process improvement regarding banking operational and technical activities.</td>
<td></td>
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<tr>
<td>3-SS</td>
<td>I understand what Six-Sigma is all about</td>
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<tr>
<td>4-CR</td>
<td>Working as a team improves work performance more quickly than individually working alone because there is continuous follow-up of what being done</td>
<td></td>
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<tr>
<td>5-CM</td>
<td>I try to make other team members more productive by assisting whenever needed. I make myself a team member more committed and involved towards achieving team’s expectation.</td>
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<tr>
<td>6-OO</td>
<td>I obtain one-to-one coaching from team members and team leader</td>
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<tr>
<td>7-AV</td>
<td>We use any of the followings: T.V / video player /VCR/DVD in team meetings.</td>
<td></td>
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<tr>
<td>8-VS</td>
<td>I use verbal communication (e.g face-to-face via Speech). I use non-verbal communication (e.g facial gestures, body language etc…).</td>
<td></td>
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<tr>
<td>9-VM</td>
<td>I use Telephones/faxes/voicemail.</td>
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<tr>
<td>10-GI</td>
<td>I have become multi-skilled (increase use of skills) as a result of team membership and I learn from other team members</td>
<td></td>
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<tr>
<td>11-TR</td>
<td>I perform team training and learning on my turn in team meetings.</td>
<td></td>
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</tr>
<tr>
<td>12-BR</td>
<td>In team meeting, we use brainstorming activities to generate more ideas (e.g each one has got the opportunity to say something about the subject or issue undertaken in the team meeting or the manager/team leader ask each team member in turn if they have anything to say etc…).</td>
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</tr>
<tr>
<td>13-CA</td>
<td>I use electronic communication using available peer-to-peer networked system only with team members in our branch</td>
<td></td>
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<tr>
<td>14-RD</td>
<td>I have to organize communication with peers/colleagues to co-ordinate problems, needs, advice, feedback, efficiency, clarity, quality of information and strengthen existing communication network etc…</td>
<td></td>
<td></td>
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<tr>
<td>15-RR</td>
<td>I try to improve customer service through role play during training, coaching and give feedback.</td>
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<tr>
<td>16-CI</td>
<td>I try to make myself someone more connected towards teamworking and networking in group. I continually improve ways of performing operational tasks better by learning with team experience.</td>
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<tr>
<td>17-TS</td>
<td>I try to maintain better team structure and co-herence by following our team guidelines and values.</td>
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<tr>
<td>18-CT</td>
<td>In team meeting we discuss how to work as a team to complete team tasks and achieving team goals. Team members identify their roles and operational procedures, open communication and high commitment to team.</td>
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</table>
I also notice that each team member start to be proactively using the three streams of development in instructional technology interactive website namely Computer-mediated communication , Interactive media and world wide web to better form and develop the team.(e.g Team members using of internet/intranet organizational website, electronic learning intranet portal for training and accreditation ,voicemail, conferencing, memos, manuals, newsletters, T.V/ video player and so on for communication and sharing of general information to team etc…). Minutes of team meeting is also taken. Areas where needed attention is discussed with team support and with a course of action (e.g during a particular time you and your team members need to increase sales for a particular product and to improve customer satisfaction index). The leader or manager of the team uses emotional intelligence (e.g acting humble, exercise fairness, friendliness, flexibility, sympathetic and easy going etc…). The leader or manager of the team uses relationship team-building by exercising good leadership and interpersonal skills to drive team, recognised team effort , provide support , trust team, show concern and advice to staff {e.g when having batching or balancing problem , cashing a cheques, walk the talk (is a communication champion) etc…}. **VIRTUAL INTERACTION (VI)**

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1-SC</td>
<td>I use synchronous conferencing (i.e I communicate, interact and participate simultaneously with team members at same time).</td>
</tr>
<tr>
<td>2-AC</td>
<td>I use asynchronous conferencing (i.e As a participant, I do communicate, interact and participate at different times with team members).</td>
</tr>
<tr>
<td>3-AU</td>
<td>I use audio-conferencing.</td>
</tr>
<tr>
<td>4-CC</td>
<td>I use computer-conferencing.</td>
</tr>
<tr>
<td>5-VT</td>
<td>I often interact virtually across time and distance (not face-to-face) using enabling technologies with my colleagues and team members for working together as a team.</td>
</tr>
<tr>
<td>6-IQ</td>
<td>I understand the importance of data quality and information quality in retail banking operations.</td>
</tr>
<tr>
<td>7-SE</td>
<td>I use the search engines everyday.</td>
</tr>
<tr>
<td>8-EM</td>
<td>I make use of electronic meeting in my job</td>
</tr>
<tr>
<td>9-VG</td>
<td>I use virtual communication in my work with other branch staff from other co-located branches within our bank</td>
</tr>
<tr>
<td>10-EL</td>
<td>I use E-learning/Electronic learning and E-Academy for my online assessment</td>
</tr>
<tr>
<td>11-CO</td>
<td>I make use of Computer-Mediated Communication (e.g internet/internet services, electronic mails etc…)</td>
</tr>
<tr>
<td>12-IM</td>
<td>In team meeting I can see that we use Interactive Multimedia Communication (e.g We use any of the followings: Video player/T.V, Floppy disc, CD Rom, Optical Disc Technology, graphics/sound etc…)</td>
</tr>
<tr>
<td>13-AI</td>
<td>I can see that the use of enabling technologies emulating employee capabilities.</td>
</tr>
<tr>
<td>14-WW</td>
<td>I use World wide Web Communication [Computer-managed learning e.g Using any of the followings: Online service, Hypertext transfer protocol (HTTP), Hypertext Mark-up language (HTML) etc…].</td>
</tr>
<tr>
<td>15-VW</td>
<td>Retail banking is changing to a virtual working environment with enabling technologies and virtual interaction media.</td>
</tr>
</tbody>
</table>
6. According to you is the banking sector becoming more competitive?
   1. Yes
   2. No

If Yes, how is the banking sector competitive?
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If you have any comments you would like to make about this survey relating to Continuous Improvement Teamworking, please write them below.
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Your contribution to this personal survey is very greatly appreciated.
A copy of the report compiled from this survey will be sent to participants upon request.

Job Ref: VSK/RMIT/ PS 06-11
Appendix 8:
Few relevant direct quotes from face-to-face interview (transcripts) with managers in retail banking:

1. ‘We use continuous reinforcement with team members all the time using face-to-face interaction, While in synchronous conferencing we share and synchronise information among team members at a particular but same time using enabling technologies’

2. ‘Change Management is a continuous improvement initiative for retail banking to save time and be more productive. As regards to asynchronous conferencing, it is a change management tool where team members can productively communicate at different time when the branch is closed or off-peak time’

3. ‘In relation to audio conferencing, it is being used amongst team members in six sigma projects to facilitate communication where not all team members need to be presented face-to-face at same time in team meeting’

4. ‘Computer conferencing is also being used with audio, video and T.V sets to communicate the same messages with all team members’

5. ‘E-learning is gaining momentum for the banking organization to train its employees online by not only relying on in-door or out door face-to-face interaction in the form of visual communication. E-learning also save time, is productive and also cost effective for the bank. For instance, customer service officers in retail branch are accredited online from the branch itself by attending several online modules without being face-to-face in a training room as in the past’

6. ‘Voicemail is mostly used in face-to-face meeting where group team members sit together before opening of banking hours to discuss weekly issues and listen to voice mail. Voicemail is not only the communication channel as has been for the past decade, but some team members higher in the hierarchy level are now interacting virtually using electronic meetings’

7. ‘Search engine is becoming an important tool for the banking organization because there is so much information available on the internet/intranet and organization’s Web server. All information are available online, that team members start to get the habits of using the search engine, where brainstorming is mostly being used by team members in team meetings or in case of any serious problem to be tackled. In the 1980’s where teamworking gained more importance in organization, brainstorming was a quality tool which was more used to have team members views about improving processes, operational activities and services. Nowadays, brainstorming seems to be used to a lesser extent than before’

8. ‘As I am an IT expert in the banking sector, computer assisted work is more related to peer-to-peer network relationship in which computers on the network, communicate with each other as equals. Each computer is responsible for making its own resources (such as
files, directories, application programs or devices such as printers, modems, fax) available to other computers used by team members on the network in the branch. Peer-to-peer network is for smaller network with fewer than 10-15 users interacting face-to-face (FF) in the same place of work. Retail banking which has been using peer-to-peer network has also moved towards virtual group networking which relates to a client/server network, where the retail branches are all run by centralised management, where all decision and resources are made centrally with more users than peer-to-peer network. VG is more secure, gives better performance, centralised back up and very reliable. With virtual group network, the software being shared to team members in the branch is controlled by a server. Thus, there are more virtual interaction network features such as file sharing, printer sharing, internet/intranet, e-mail, application services (keep application centralised reducing the amount of disk space needed for each work station), no remote access (only for managers who can access their files and e-mail when they’re travelling or working from remote location)

9. ‘I have been also involved as a training manager and I think training as face-to-face interaction is changing with virtual interaction facilities. The retail branches are using computer mediated communication such as conferencing, internet and intranet services to provide online training to staff. Computers are available at the back of the retail branch specially used for training of employees’

10. ‘Coaching is still being done by us who are mostly the team leader or branch manager in the branch. However, interactive multimedia communication such as online T.V player, optical disc technology and online graphics are also being used. We also do mentoring to assist staff in the day-to-day operational activities of the retail banking supply chain’

11. ‘We provide continuous support to team members which is enhanced by the use of WWW communication such as electronic learning, hyper transfer protocol (HTTP) and Hypertext Mark-up Language (HTML)’

12. ‘We use brainstorming quite often during team meeting and also while working, especially when we have a serious issue to tackle’

13. ‘We do mostly indoor and online training as I believe it is cost saving strategy for the banking senior managers. If we are sent to do training outdoor, the bank will loose on productivity issues and also more expenses such venue, trainer, transport and other associated variable cost etc…’

14. ‘We have one-to-one coaching which means that mostly every two weeks we have to be coach by senior managers especially what we can do better to improve the business and on the other hand what mentoring strategies we will be using to motivate our staff. Everything is recorded’
15. ‘I believe there is too much pressure for change management which is causing employees to change job as I think change management should be more of a gradual process while understanding employees needs and the working environment. Nowadays with technology, www communication, electronic meeting, e-learning and electronic communication are becoming vital for the business to succeed. Employers need to develop the right strategy for employees to accept such change.’

16. ‘The banking sector especially in the retail operations is becoming very competitive with products and services that are being provided by other banks, both nationally and internationally. Continuous help and support to motivate employees is important for the managers to consider as they need to be closer to their employees. Both synchronous and asynchronous conferencing as you rightly mentioned is gaining more and more importance nowadays.’

17. ‘Yes I have heard about six sigma and I know that our banking organization started to implement it in Sydney first since 2004. I have heard that they will be coming to Melbourne in the Home loan division first. I don’t much about six sigma but I know it a methodology for business improvement which is not easy to achieve.’

18. ‘We also use audio and computer conferencing every day in our retail banking operations as it is the engine of the bank. The tellers are the engine of the bank as they run the retail banking sector which we as managers sometimes fail to recognise.’

19. ‘Search engine is a very important daily computer tool we use to track information in the retail banking supply chain’
Appendix 9:
Original Deming-Shewhart PDCA Cycle to the variant Deming PDSA Cycle

- In the present research context, the PDCA Cycle has a greater affinity and interest than the PDSA cycle as being mentioned, used and designed for TQM and continuous improvement by the following authors: Cole, 2010 (Dr. Kaoru Ishikawa expanded Dr. Walter Shewhart’s PDCA cycle); Sorbek& Smalley, 2008 (understanding A3 thinking: a critical component of Toyota’s PDCA management system); Lewis, 1999 (PDCA/Test presents a continuous quality tool framework for software testing based on Dr Deming’s famous rapid application ‘spiral’ development model for quality through a continuous improvement process to promote effective testing methods in both structured and unstructured environments; Van Gennip & Sillevis Smitt, 2000 (Use of the PDCA Cycle ‘Check’ requirements from accreditation guide for intensive care accreditation of hospitals for the standard Quality System); Snee, 1995 (Using the PDCA cycle to design a process speeds the learning process); Piskar, 2006 (Using PDCA cycle for Quality audits and their value added); Brawner, Anderson, Zorowski & Serow (A Qualitative assessment process was used by the National Science Foundation sponsored SUCCEED Engineering Education Coalition used to support the Check stage of the PDCA cycle).

- Stahan, 2002 (Transition to ISO 9000:2000 with integration of the PDCA Cycle as explained on page 19 of the thesis); Ballard, Howell, 1994 (recommended adaptation and use of traditional PDCA cycle developed in the 1930’s by Walter Shewhart, perhaps better known as W.Edwards Deming mentor); Zairi, 1995 (The Quantum Performance Measurement Model as it is dynamically driven by continuous improvement i.e PDCA Cycle); Conti, 2002 (the best known models like EFQM, Malcolm Baldrige and Deming Application Prize can guide the organization its way to excellence through the use of a corporate PDCA cycle; Hines & Rich, 1998 (5S programme was achieved within a PDCA awareness). Lyu, 1996 (The basic mechanism of the kaizen approach makes any possible improvements under the PDCA cycle, standardizes the improvements, and continues for another PDCA cycle); Snee, 1995 (In listening to the voice of the employees, the six-phase survey process was based on the PDCA cycle); Holloway, 1994 (It is evident that it is not only desirable but essential to the success of any TQM programme that staff are involved at every stage of the PDCA cycle); Shutt, 2003 (Deming expanded the PDCA cycle and established his 14-point program of recommendations, which was created for management to improve quality).
• Johannsen, 1992 (The activities Plan-Do-Check-Action also referred to as the ‘Deming Cycle’ or the ‘PDCA Cycle’); Kolesar, 1994 (In Japan, however, the Deming cycle and the PDCA cycle are not two different names for the same process); Bateman, 2002 (The Deming’s cycle ensures a continuous Improvement approach and its application permeates the use of the common approach by industry forum); Okada, 2004 (Process of Risk Management as a PDCA Cycle EQTAP APPROACH); Lee, 2002 (A review of other major quality awards such as Baldrige, EQA, etc… to sustain business excellence through a framework of best practices in TQM also indicated that the key requirements in most of the criteria are formulated and organized to adhere to the PDCA cycle); Plsek, 1993 (The phrases PDCA cycle, Shewhart cycle, and Deming cycle all appear in the quality management literature and are synonymous); Wood and Munshi, 1991 (described the activity for Hoshin Kanri PDCA cycle); Roth et al., 1994 (referred to the Deming-Shewhart PDCA cycle); Crosby, 1991 (The PDCA cycle is a structured, decision-making process for continuous quality improvement); Eklund, 2000 (The PDCA cycle is a concept for creating improvement and development as mentioned by Dr Deming in 1986).

• The use of PDSA Cycle, used by Sargiacomo (2002) (page 58 of thesis) demonstrated the use of the methodological approach of study according to the Plan-Do-Study Act Cycle of improvement which is more relevant and appropriate to the health care sector and not necessarily to the retail banking strategic operational sector. Though, the author believes that the PDCA Cycle (as supported and described by many other authors) is more appropriate to the retail banking operational sector rather than the PDSA Cycle.
**LIST OF ACRONYMS USED**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ABEF</td>
<td>Australian Business Excellence Framework</td>
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<tr>
<td>ACCC</td>
<td>Australian Competition and Consumer Commission</td>
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<tr>
<td>ADRI</td>
<td>Approach-Deployment-Results-Improvement</td>
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<tr>
<td>AEPS</td>
<td>Annual Employees Perspective Survey</td>
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<tr>
<td>AIM</td>
<td>Innovation Ideas to Market</td>
</tr>
<tr>
<td>AOQ (SA)</td>
<td>Australian Organization for Quality (South Australia) Inc</td>
</tr>
<tr>
<td>ANZ</td>
<td>Australian and New Zealand Bank</td>
</tr>
<tr>
<td>ANZAM</td>
<td>Australian and New Zealand Academy of Management</td>
</tr>
<tr>
<td>ANZIBA</td>
<td>Australia and New Zealand International Business Academy</td>
</tr>
<tr>
<td>AQCA</td>
<td>Australian Quality Circles Association</td>
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<tr>
<td>AQR</td>
<td>Association of Qualitative Research</td>
</tr>
<tr>
<td>ASIC</td>
<td>Australian Securities and Investment Commission</td>
</tr>
<tr>
<td>ATM</td>
<td>Automatic Teller machine</td>
</tr>
<tr>
<td>B2E</td>
<td>Business-to-Employee</td>
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<tr>
<td>BAM</td>
<td>British Academy of Management</td>
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<tr>
<td>BCS</td>
<td>British Computer Society</td>
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<tr>
<td>BSC</td>
<td>Balance Score card</td>
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<td>BIT</td>
<td>Business Improvement Team</td>
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<tr>
<td>CAT</td>
<td>Corrective Action Team</td>
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<tr>
<td>CBA</td>
<td>Commonwealth bank of Australia</td>
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<tr>
<td>CI</td>
<td>Continuous Improvement</td>
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<tr>
<td>CIP</td>
<td>Customer Investigation Process</td>
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<tr>
<td>CIT</td>
<td>Continuous Improvement Teamworking</td>
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<tr>
<td>COI</td>
<td>Continuous Interaction</td>
</tr>
<tr>
<td>CPI</td>
<td>Continuous Process Improvement</td>
</tr>
<tr>
<td>CMC</td>
<td>Computer-mediated communication</td>
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<tr>
<td>CMM</td>
<td>Capability Maturity Model</td>
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<tr>
<td>CQI</td>
<td>Chartered Quality Institute (UK) previously IQA</td>
</tr>
<tr>
<td>CQP-CQI</td>
<td>Chartered Quality Professional-Chartered Quality Institute (UK)</td>
</tr>
<tr>
<td>CTIO</td>
<td>Concern-Task-Interaction-outcome</td>
</tr>
<tr>
<td>CTIT</td>
<td>Continuous-Task-Interacting-Team</td>
</tr>
<tr>
<td>CSCW</td>
<td>Computer-supported cooperative work</td>
</tr>
<tr>
<td>CWE</td>
<td>Collaborative Working Environment</td>
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<tr>
<td>DEEWR</td>
<td>Department of Education Employment and Workplace Relations</td>
</tr>
<tr>
<td>DFSS</td>
<td>Design for Six-Sigma</td>
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<tr>
<td>DPMO</td>
<td>Defects Per Million Opportunities</td>
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<tr>
<td>DMAIC</td>
<td>Define-Measure-Analyze-Improve-control</td>
</tr>
<tr>
<td>DMAIR</td>
<td>Define-Measure-Analyze-Improve-Realise</td>
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<tr>
<td>DMADV</td>
<td>Define-Measure-Analyze-Design-Verify</td>
</tr>
<tr>
<td>DMEDI</td>
<td>Define-Measure-Explore-Develop-Implemen</td>
</tr>
<tr>
<td>EFQM</td>
<td>European Foundation for Quality Management Excellence Model</td>
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<tr>
<td>FF</td>
<td>Face-to-face Interaction</td>
</tr>
<tr>
<td>FCQI</td>
<td>Fellow of the Chartered Quality Institute</td>
</tr>
</tbody>
</table>
FRSA  Financial services Reform Act
GDSS  Group Decision Support System
GSS  Group Support Systems
HACCP  Hazard Analysis Critical Control Points
HCI  Human-Computer Interaction
HERDC  Higher Education research Data Collection
HLSR  Home Loan Sales Referrals
ICT  Information and Communication Technologies
IMS  Integrated Management Systems
IPT  Integrated Product Teams
IQ  Information Quality
IQA  Institute of Quality Assurance (UK)
IQMS  Integrated Quality Management System
IS  Information system
ISO  International Standards Organization
IT  Information technology
KPI  Key Process Indicator
MAAOE  Multinational Alliance for Advancement of Organizational Excellence
MCQI  Member Chartered Quality Institute (UK)
MCQI-CQP  Member Chartered Quality Institute-Chartered Quality Professional
NAB  National Australia Bank
NSQT  National Society for Quality through Teamwork
OHSAS  Occupational Health and Safety Management
OSI  Open System Interconnection
PCA  Paired Comparison Analysis
PDCA  Plan-Do-Check-Action
PDLM  Plan-Do-Learn-Measure
PDSA  Plan-Do-Study-Act
PIT  Process Improvement Team
QC  Quality Circle
QCC  Quality Control Circle
QIP  Quality Improvement Team
QMC  Quality Management Control
RADAR  Resulting-Approaching-Deploying-Accessing-Reviewing
SERVQUAL  Service Quality Model
SGS  Societe Generale Surveillance (French company)
SMT  Self-Managed Team
SS  Six-Sigma
STA  Singapore Technologies Automobile
TQC  Total Quality Commitment
TQM  Total Quality Management
UK  United Kingdom
USA  United States of America
VI  Virtual Interaction
VR  Virtual Reality
VT  Virtual Teamworking
WIT  Workplace Improvement Team