

**FACTORS DETERMINING THE SUCCESS OF
INFORMATION TECHNOLOGY PROJECTS**

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ABSTRACT

Information Technology (IT) is a key component of an organisation's business strategy. By leveraging from it, organisations are able to create a sustainable competitive advantage and ultimately enable overall business success. IT has the power to transform an organisation and as a result comes accompanied with a set of issues that challenge the status quo. These issues need to be addressed because good implementation alone will not suffice. By adopting a project management view to the implementation of IT, the structured approach provides a forum within which the transformation can be managed.

A number of studies conducted on IT projects indicate that they are prone to failure due to poor management. This research paper seeks to determine the necessary factors that prevail to ensure IT project success. A field study on Controlled Sprinkler Supplies Pty Ltd is the basis for this research. The IT project at Controlled Sprinkler Supplies encompasses the changeover of its Unix based accounting system to a more progressive enterprise business management solution, Navision Software. Both quantitative and qualitative data is collected by means of administering questionnaires, conducting interviews with the project manager and the chief executive officer of the company, and by observations made by the researcher.

An analysis of the data highlights some interesting points. Without a doubt, training plays a major role in the success of a project. In addition, while management support is of paramount importance, clear communication of the vision is not enough. Participation by organisational members should not be overlooked as it enhances ownership and develops champions of the change and the technology. Furthermore, despite the fact that the literature associates organisational change with resistance, this study demonstrates the contrary. This is due to the change agent's hands-on approach and commitment to the project.

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CHAPTER 1 - INTRODUCTION

1.1 Background

The key to success in information technology deployment is in managing people, not technology (Thomsett 1989). An essential management technique which is vital in ensuring the success of an IT project is the Project Management phenomenon. It is a well-established, people-oriented methodology adopted to 'unlock a tremendous potential for productivity and quality' (Thomsett 1989, p. xi). Turner and Cochrane (1993, cited in Cicmil 1999, p. 7) define a project as:

“an endeavour in which human, material and financial resources are organised in a novel way, to undertake a unique scope of work of given specification, within constraints of cost and time, so as to achieve unitary, beneficial change, through the delivery of quantitative and qualitative objectives.”

Burke (1992, cited in Smith & Dodds 1999, p. 4) defines project management as 'making the project happen.'

Projects are being increasingly deployed as a means of achieving business objectives, to such an extent that management by projects is being articulated as a central management strategy; a strategy which reflects the relentless increase in complexity with which companies are having to cope. Inevitably, projects are linked to change and when properly chosen can provide opportunities for project owners to increase their understanding of organisational change processes and, to a degree, bring about desirable change. For many, 'the project experience is a microcosm of the growing part of their role as managers of change' (Smith & Dodds 1999, p. 6).

The adoption of project management methodologies can help to ensure the successful deployment of Information Technology, itself a change process accompanied with various issues and challenges.

1.2 Statement of Topic

Statistics indicate that 31.1% of projects will be cancelled before they ever get completed, 52.7 % of projects will cost 189% of their original estimates, and only 16.2% of IT projects succeed [HREF1]. The results of the study present a comparison of large, medium and small organisations.

Table 1: Standish Group Study Results

	Resolution Type 1	Resolution Type 2	Resolution Type 3	Cost Overruns	Time Overruns	Content Deficiencies
Large	9	61.5	29.5	178	230	42
Medium	16.2	46.7	37.1	182	202	65
Small	28	50.4	21.6	214	239	74

- Resolution Type 1

Project success

The project is completed on-time and on-budget, with all features and functions as initially specified
- Resolution Type 2

Project challenged

The project is completed and operational but over-budget, over time estimate, and offers fewer features and functions than initially specified
- Resolution Type 3

Project impaired

The project is cancelled at some time during the development cycle

These statistics indicate that there is very little success achieved by organisations. More often than not, the projects are challenged, sometimes even cancelled. Projects undertaken in all three sectors come in over time and over budget, but clearly without having fully addressed the problems. Something seems to be amiss. This research will explore the prevalent factors that influence the success of IT projects.

1.3 Aim of Research

1.3.1 Research Objectives

This research will:

- Identify the factors that are essential in enhancing the success of IT projects;
- Provide a tool for IT project managers when embarking on a new project; and,
- Highlight issues that were prevalent in the Controlled Sprinkler Supplies project and to learn from this experience so as to apply it to other projects of this size and nature.

1.3.2 Research Question

The following question will be addressed:

What factors determine the success of an IT project?

1.4 The Research Setting

In an attempt to pinpoint the necessary factors that ensure the success of IT projects, this research focuses on an IT project undertaken at Controlled Sprinkler Supplies (CSS), a national importer and distributor of sprinkler supplies to a wholesale client. In November 1998, CSS engaged the services of HLB Consulting – Information Systems, the consulting arm of HLB Mann Judd, a large firm of chartered accountants and business advisers. Collectively, they commenced the IT project at CSS on a national basis, adopting certified project management techniques. This involved the changeover from Distrib, a UNIX based accounting system, to Navision Software. Navision Software is an Enterprise Business Management Solution that is developed in Denmark, distributed through local channels and sold, implemented and supported by solution centres worldwide.

1.4.1 Company Background

Controlled Sprinkler Supplies was founded in 1978. The company supplies a comprehensive range of irrigation equipment throughout Australia to its target market, the “Irrigation Professional.” The company’s vision is to be the best in the irrigation industry. Its mission is to deliver the right selection of products at a competitive price, on time, with a high degree of accuracy, and to maintain the high level of customer support that CSS has built its reputation on. The business focuses on four main areas comprising its customer, products, distribution and infrastructure. The company has an employee base of 42 people nationally. Head office and the Melbourne operation are ideally situated in Heidelberg Heights, in the northern region of Melbourne. It provides easy access to the city and surrounding areas including the Melbourne wharf areas and airport. In addition, there are four interstate offices that control their own sales operations, three of which house their own warehouse facilities.

Along with customers, products and distribution, infrastructure plays a vital support role in ensuring the company achieves its goals and objectives. The existing systems were not fulfilling the company's objectives and as a consequence were hindering growth and efficiency. When it meant they would not have the support of an IT infrastructure to maintain competitiveness, the company turned its attention to the most cost effective way of solving its problems, initiated by an assessment of all systems in place at the time, including networks, operating systems and databases. As a company without vast experience with technology, they selected Navision Software to give them the major operating benefits they were seeking. A primary factor contributing to this choice was simply its ease of use. The system can be easily adapted by CSS to help their growth.

1.4.2 Enterprise Business Management Solution

HLB Consulting – Information Systems is still a new and developing area of the business comprising thirteen team members. It was established with the primary aim of assisting clients with their information technology requirements. The division has shown the fastest rate of growth of all HLB Mann Judd services, reflecting the high rate of change, innovation and development in the information technology industry.

As a team, this division specialises in providing sound business acumen not only to the firm's current client base but also to a wider market segment. The services provided include IT project management encompassing such things as business process re-engineering (BPR), computer system reviews, computer equipment recommendations, strategic planning for both information technology and general business, system's analysis, computer training, implementation, development and on-going support of Navision Software and other network systems.

Navision Software is designed to target the small to medium sized enterprise. In 1995, the Australian regional office was established in Brisbane. One of their initial responsibilities was to seek Navision Solution Centres (NSC) whose primary purpose is to sell, service and support the product. In 1997, after an invitation to the launch of the product in Melbourne, HLB Consulting - Information Systems made a strategic decision to become a Navision Solution Centre, and thus reviewed its long-term vision.

Traditionally, "enterprise solutions" have been associated with the Fortune 500 companies. Such solutions are stigmatised as being very expensive, complex systems with typically long

implementation periods. What the smaller organisations need is similar functionality, but scaled down considerably. Hence the emergence of the financial management software with enterprise functionality. A solution of this nature offers an 'integrated architecture for solving the problems of an entire business organisation' (Whiting 1998, p. 94). What this means for the small to medium contingent is an ability to remain competitive in an ever evolving technology-driven world. According to Garth Laird, Managing Director of Navision Software Australasia, 'information technology is now one of the most strategic parts of any organisation. If you get your IT strategy wrong, it can be worse than getting your product delivery to market wrong' (Grayson 1999, p. 56).

1.5 Limitations and Assumptions

Limitations of the study:

- A relatively small sample size was selected due to the type of study embarked upon. Future research in this area could endeavour to provide a comparison of projects undertaken at various organisations therefore providing a greater understanding of the unique factors associated with diverse IT projects; and,
- Comparisons could have been made amongst the same set of subjects at different time periods, for example, just prior to going 'live' with Navision Software, at the beginning of the changeover, a few months after the changeover. In other words, a longitudinal study could have been beneficial, but due to time constraints, a cross-sectional study was more appropriate.

1.6 Thesis Outline

In the subsequent chapter, Chapter 2, an analysis of the literature pertaining to change management and project management is presented. An emergent theme in the literature is one that considers the implementation of information technology as a change management process that is best managed through the adoption of appropriate project management methodologies.

Chapter 3 outlines the methodology adopted in undertaking the research. It includes the research design incorporating the study setting, unit of analysis, selection of population and sample, time horizon and sources of data. The data collection methods are presented, accompanied by the instruments adopted in measuring the variables and analysing the data.

Chapter 4 analyses the qualitative data collected from the questionnaires. Chapter 5 presents a detailed case study of Controlled Sprinkler Supplies encompassing a historical perspective of the

company, its evolution, strategies, and the impetus for the change of systems. In addition, it takes a look at the company HLB Consulting – Information Systems, whom CSS engaged for the deployment of its new system. Furthermore, it provides an insight into Navision Software, the enterprise business management solution. Finally, it draws together the qualitative data collected from the interviews, survey results and observations.

Chapter 6 provides the conclusion to the research by summarising the findings and addressing the research question. Suggestions for future research are provided.

CHAPTER 2 - LITERATURE REVIEW

2.1 Introduction

'A project is like a journey; it involves identifying a destination, setting out, travelling and ending up somewhere, hopefully the place you intended to be' (O'Connell 1996, p. 2).

Put simply, a project is about having a vision, achieving a goal and embarking on a path to fruition. 'Projects are inevitably linked to change' (Smith & Dodds 1999, p. 3), hence they are the key vehicles via which organisations change what and how they do things. Therefore, in pursuit of the goal, a structured and methodical process is recommended. This is known as project management. 'It is an essential management process that can make the difference between a project's failure or success' (Thomsett 1989, p. 3), which incidentally is relative to the organisation. It encompasses the managerial and business aspects of a project, such as the 'costs, benefits, risks, people, deadlines, deliverables, contingencies, productivity and priorities' (Thomsett 1989, p. 3). Svetlana Cicmil (1999) explains that 'a significant number of contemporary organisations, consciously or unconsciously, institutionalise the implementation of change as a project' (p. 7).

The process of change within an organisation, more often than not, involves an alteration to the status quo. Sometimes it can be enforced, other times intentional. It comes accompanied with obstacles and challenges that invariably involve people, management, processes and structures. To ensure as little chaos as possible, change must be managed appropriately. The introduction of new technology into an organisation to achieve certain objectives is one such force for change. Information technology projects often fail due to poor management generated from the outset whereby organisations mistakenly think that by deploying new technologies they are improving their business value. 'IT exists to enable business' (Thorp, cited in Iggulden 1999, p. 32). Organisations need to be driven by value to the business, not by technology. The technology is the capability that will enable business improvements and ultimate success. Essentially, IT is a powerful means to an end. Business value will be achieved by leveraging from the information technology. According to John Thorp (cited in Iggulden 1999), 'we assume all we have to do is manage technology and everything else will flow. This is patently wrong. The reality is that we're not implementing technology anymore, we're implementing change' (p. 30).

As a result, we are faced with the phenomenon of the information paradox which states that 'increased spending by large corporations on IT rarely results in better IT performance' (Iggulden 1999, p. 30). The underlying cause of the paradox lies in the way technology is managed; its management

has not evolved as quickly as the way the technology is being used. With the emergence of this paradigm shift, organisations need to re-evaluate their management methodologies and learn to respond to and manage change, so as to reap the benefits of the technology. Smith & Dodds (1999) claim that the harnessing of information technology and the acceleration of technological change will require an effective integration best achieved through project working.

‘IT is no longer an additional limb of the company – sometimes seen as removable – but an essential part of every sinew, blood vessel and vital organ, without which no modern organizational body is able to operate’ (Moreton & Chester 1997, p. 4). As it continues to develop and advance at such a rapid rate, organisations will continue to be confronted with the challenges with which it is accompanied. IT has the power to transform products, processes, companies, industries, and even competition itself (Porter 1998). Every organisation needs to understand the strategic issues associated with IT and the overall organisational benefits to be gained in order to create and maintain substantial competitive advantages, or risk placing themselves at a significant disadvantage to their competitors.

Daniels (1994, p. 33) provides a definition of Information Technology:

An Information System (IS) is a means of delivering information from one person to another. Information Technology (IT) is the technical apparatus that conveys the information.

Quite clearly, an organisation cannot plan to survive without IT's presence. Michael Porter (cited in Daniels 1994), highlights three vital ways that the information revolution can affect the nature of competition. First, IT has the potential to change the industry structure and alter the rules of competition. Secondly, IT creates competitive advantage by giving companies new ways to outperform their rivals, and finally, it spawns whole new businesses, often from within a company's existing operations. Ignorance of its potential can ultimately be detrimental to an organisation.

Consequently, if IT is perceived as an enabler of change that is not managed properly, and a project is a generic form of change implementation, then if an organisation is to overcome the information paradox, project management methodologies need to be adopted to ensure the successful implementation of information technology.

2.2 Change Initiatives

2.2.1 What is Change

Organisational change has been defined as ‘an alteration in people, structure or technology’ (Robbins & Mukerji 1990, p. 330) that can be driven by internal or external forces. Fundamentally, for an organisation to survive and maintain its competitive advantage, change needs to be accepted and managed appropriately. Unavoidably, organisations operate in a dynamic and changing environment and must learn to adapt if they are to prosper. Adaptation is about making adjustments that involve innovative ideas, new products or services, new ways of getting things done and even establishing new values and assumptions. It is about developing a capacity to manage “perpetual change” (Schein 1994). With cultures manifested in structure and process, organisations must “learn how to learn” (Argyris & Schon 1978; Schein 1980, cited in Schein 1994, p. 125) and must become ‘self-designing’ (Weick 1977, cited in Schein 1994, p. 125).

Powerful external forces, over which the organisation has little or no control, such as high inflation rates, changes in government bringing with them new priorities and policies, technological advances, and competitive actions, pressure an organisation to modify their structure, goals and methods of operation. On the other hand, internal forces that are driven from within the organisation emerge as a result of a new CEO with an alternative vision, new organisational strategies, technologies and employee attitudes and behaviours (Stoner *et al* 1985). Such forces challenge the status quo, and force the organisation to surface from their comfort zone.

2.2.2 IT Initiated Change

IT is a package of ideas about how people should work differently (Markus & Benjamin 1997, p. 58). Hence, ‘new technologies are a force for change in their own right’ (Bolman & Deal 1991, p. 373). A survey conducted in conjunction with CFO magazine, the Gartner Group and the Australian Association of CPA’s, highlighted that chief financial officers of organisations believe IT has a lot to contribute to an organisation (Philipson 1999). There was strong agreement that its contribution can potentially:

- Help end users solve IT problems,
- Provide IT direction to the organisation,

- Gain a competitive advantage,
- Help end users solve business problems,
- Lower costs,
- Re-engineer the business,
- Get closer to the customer,
- Achieve product excellence; and,
- Raise Revenues.

There has been a fundamental shift in its application, from a technological phenomenon driven by IT experts, to a strategy-driven management resource (Mutsaers *et al* 1998). Monash University's ERP (enterprise resource planning) implementation was driven by its strategy of becoming a global university and tackling the Y2K problem. 'It needed an efficient central administration system to support its strategy of becoming a global university in the current turbulent higher education environment' (Forsyth 1999, p. 16).

In addition, results from a survey conducted by the Standish Group on the Hyatt Hotel's reservation system indicated that technology was a key component of their business strategy [HREF1]. Their patrons can dial in from a mobile phone at 35,000 feet, check into their Hyatt Hotel room, schedule the courtesy bus to pick them up from the airport, and have their keys waiting for them at the express desk. Without a doubt, information technology has the power to change the way companies operate (Porter 1998). However, while good implementation of IT is important, the management of change at all levels of the organisation is vital.

2.3 Managing Change

'Successful change takes good ideas, skills and plain hard work – but it does not take magic' (Markus & Benjamin 1997, p. 67). There are many variables to consider when dealing with the management of change, including the people aspect, the management aspect and the information technology aspect. According to Turner and Crawford (1999, cited in Iggulden), 'what we're saying is, that the organisation has to be managed. Not the change, but the organisation. Not just the implementation of IT, but the whole organisation has to be managed, of which IT may be a part' (p. 26). Simply, there is no magic bullet solution.

This is where a lot of IT specialists and managers struggle. While they may see themselves as change agents, they mistakenly believe in the magic bullet theory which states that IT itself has the power to create organisational change; IT is the gun that fires itself. These change agents do not envisage that their role is to ensure that the change targets employ the technology to achieve the desired results. 'People who believe in the magic bullet theory do not feel a need to learn and practice change management techniques' (Markus & Benjamin 1997). As a result, change management practices are neglected, potentially resulting in failure. Change is everyone's job, and in order for it to begin to be successful it involves changing people's minds. Markus & Benjamin (1997) claim that managers and IT specialists must change their own minds first so that they can alter their change management behavior if they wish to achieve success with IT-enabled transformation.

Kurt Lewin (1951, cited in Stoner *et al* 1985; Cited in Schein 1994; Cited in Vrakking 1995; Cited in Whitman & Gibson 1997), founder of change theory, in his studies on bringing about effective change, noted that individuals will experience two major obstacles. Firstly, the individual may be unwilling or unable to alter long-established attitudes and behaviour. They may not possess the appropriate skills or knowledge and may not perceive any benefits in the change. Secondly, after a brief period of trying things differently, individuals will try to return to their comfort zone whereby they revert back to their traditional patterns of behaviour.

In order to overcome these obstacles, Lewin (1951) introduced the "unfreeze, move, freeze" theory. He viewed the organisation as a stable situation that has to be 'opened up' to accept new changes. Changes then need to be introduced, after which the organisation can return to a stable situation. While still considered a classic model, it can be argued that the concept of 'refreezing' would indicate the end of a change process. However, change should be embedded in the organisation's culture whereby the organisation commits itself to continual change so as to remain competitive (Schein 1994).

Many change intervention models have their roots embedded in the Lewin model. Barczak *et al* (1987, cited in Whitman & Gibson 1997) identified 4 key elements that 'involve the dissolution of existing patterns (structures or processes) and the creation of new ones' (p. 26). These elements include:

- Pattern breaking: freeing the system from structures, processes or functions that are no longer effective or useful;

- Experimenting: generating new patterns better suited to the present environment;
- Visioning: choosing a new perspective around which a system can reorganise;
- Bonding and attunement: harmonizing members to move the system toward new ways of doing, thinking and learning.

Traditionally change literature focussed on linear, rational approaches (De Cock and Rickards 1996, cited in Clarke & Meldrum 1999), sometimes complemented by 'the truth, trust, love and collaboration approach' (Buchanan & Boddy 1992, cited in Clarke & Meldrum 1999, p. 79; Cicmil 1999). This implies the use of incremental modes and consultative techniques in managing change implementation. More recently, change has become more 'an amalgam of analysis, education/learning and political activity' (Pettigrew and Whipp 1991, cited in Clarke & Meldrum 1999, p. 79).

In addition to managing change, an organisation must manage transition. While change relates to a specific situation such as the deployment of a new financial accounting system, transition, on the other hand, is psychological in nature (Bridges 1991, cited in Hudson 1999). 'It is a gradual process, internal to the individuals who are going through it' (Hudson 1999, p. 36). Bridges (1991) states that 'there can be any number of changes, but unless there are transitions, nothing will be different when the dust clears' (p. 36, cited in Hudson 1999). Monash University, as part of its IAS (Integrated Administrative System) project, ran a "pre-production client" during the transition phase. This pre-production client was 'a fully configured system with Monash University's data in it. It wasn't, however, a live client and didn't keep data up to date' (Forsyth 1999, p. 20). This served to help people get acquainted with the new system before they had to begin relying on it and to allow them to test new processes, make mistakes and ask questions without fear of destroying 'real' data.

Implicit in major IT-enabled change projects are expectations that the organisation and its people will operate better when the technology is successfully installed and used. Nevertheless, many aspects of these changes are contentious. According to Markus & Benjamin (1997), goals such as reducing costs can create organisational conflicts by interfering with individuals' career goals and financial incentives or with organisational culture and managerial autonomy. 'It is widely known that many large-scale change management projects involving new information technology (IT) fail for reasons unrelated to technical feasibility and reliability. It is also well known that good technology "implementation" and "change management" techniques can substantially increase the chances of success' (Markus & Benjamin 1997, p. 55).

Tamall & Davey (1997) suggest that the following factors will promote success in the implementation of systems:

- Clearly defined implementation goals,
- Adequate resource allocation,
- Support of senior management,
- Competent project management,
- Good and clearly expressed plans and schedules,
- Competent members of the implementation team,
- Adequate communication between team members,
- Responsiveness to the needs of end-users and clients; and,
- Well planned change management strategies.

2.3.1 Vision

Providing a clear vision is the essential starting point. 'Where a business vision is not articulated, strategic benefits do not occur. Instead, IT investments result in random, "bubble-up" benefits' (Norton 1995, p. 30). The business vision needs to be clearly stated and clearly communicated with the rest of the organisation, so that everyone involved understands where the organisation is attempting to go. Where organisations fail, more often than not, is that they establish a technology-driven vision as opposed to a business-driven vision. The Monash University project director attributes the main success of the implementation of the IAS to the fact that it was directed as a business project rather than an IT project (Forsyth 1999).

'No element is more important like a sensible vision' (Kotter 1996, p. 7). Vision plays a vital role in producing useful change in that it helps direct, align and inspire actions on the part of large numbers of people within the organisation. The vision needs to be communicated if it is going to achieve the desired results. Without an appropriate vision, a transformation effort can easily dissolve into a list of confusing, incompatible and time-consuming projects that head towards the wrong direction or nowhere at all.

Norton (1995) believes that when an organisation first experiences a new wave of technology, their vision is dominated by technology. By this he means that organisations will no doubt go through a process of learning when they introduce new technologies. But visions change, and an organisation

must be able to refocus. Once the experimentation period comes to an end, in order to harvest the benefits of the IT investment, the technology-driven vision needs to be replaced by a business-driven vision which clearly defines the strategic business objectives remembering that IT is the enabler of business value.

'The purpose and goals of a project must be effectively communicated to all those who contribute to its implementation - there is no substitute for providing knowledge about the overall objectives to enhance buy-in and ownership by participants' (Laszlo 1999, p. 157). This also enables the project manager to rally the team to act for the cause and enables the team to focus on the overriding goals. Jeff Gooch (1997) agrees that if effectiveness is to be demonstrated on an ongoing basis the project requires visibility of objectives, plans, status and other indicators of the project's progress. He states that if the project goals are clear so that everyone can strive for the same thing, then readily available information about the project status and the issues facing the project will maximise the potential for the project team to contribute towards achieving goals.

As it is therefore the task of senior management to point out the direction for IT, they need crystal-clear vision for the company as a whole. A study by Clarke & Meldrum (1999) into the effectiveness of a general management program indicated that the clarity that a firm-wide vision provides teams seems an invaluable contributor to success and should not be underestimated. In their study of four cases, one that stands out is when the senior line manager of an international retail bank was interviewed, he responded that he needed his team to see how uncertain the unit's future was and what needed to be done to work strategically in the future. 'This involved me talking to each of my team individually about their motivations, ambitions and contribution levels. In turn, this forced them to consider what they did in their jobs, how they added value to the unit and the extent to which they were prepared to commit themselves to the strategy. It was hard, but the result was a clearer atmosphere in which people knew what they were doing and why.' Without the clarity gained through this analysis and communication, change was unlikely to have been achieved.

The ultimate benefit of a clear vision is threefold. It reduces resistance to the IT-enabled change, facilitates organisation-wide commitment, and ensures ultimate project success.

2.3.2 Organisational Culture

Culture can be defined as 'the pattern of learned basic assumptions that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to the problems of survival and integration' (Schein 1994, p. 128). It is embedded in the values, norms and behaviours of a group of people within an organisation who share common experiences. 'Culture provides stability and predictability. Once in place, culture is a conservative force' (Schein 1994, p. 129). Attempting to break this force is a challenging task, but a necessary one nonetheless. It is this process that can cause most resistance in a change initiative because it contests the status quo and removes people from their comfort zone by altering established organisational norms. 'The introduction of IT may be one of the most powerful ways of unfreezing a culture and starting a process of change toward more innovative capacity in general' (Schein 1994, p. 142). It is the process of changing the 'unwritten rules of the game' (Scott-Morgan 1994, cited in Clarke & Meldrum 1999, p. 77).

Schein (1994) asserts that 'we need to create a synergy between IT and culture in order to achieve the long range benefits we are seeking' (p. 145). Turner and Crawford (cited in Iggulden 1999) agree with Schein (1994). They state that there are some changes that are purely technological, but most changes are technology plus something, namely cultural change. 'You use this technology plus part of a strategic orientation, technology plus cultural change, to get people to operate differently in a new technological environment' (Turner & Crawford 1999, cited in Iggulden 1999, p. 26). They go on to say that cultural change needs to be a shared characteristic throughout an entire organisation and has to be re-invented by the organisation, but you also need stability in an organisation to be able to reform (Turner & Crawford 1999, cited in Iggulden 1999).

2.3.3 Top Management Support

'Sustained executive involvement is a prerequisite for success' (Norton 1995, p. 30). Major change is said to be impossible unless the head of the organisation is an active supporter. Efforts to change without a sufficiently powerful guiding coalition might make apparent progress in the short-term, but sooner or later, countervailing forces undermine the initiatives. In a study designed to enhance the understanding of IT's impact, Norton (1995) researched a group of 8 companies. Apparent in each of the successful organisations was the presence of leadership from executive levels.

Leadership can appear in different forms. In one case the CEO had a burning personal identification with the vision. In another case, the vision was developed from a consensus-building process encouraged by the executive leaders. Strategic visions must be 'nurtured, refined, revised and protected from those who would resist' (Norton 1995, p. 31). Such leadership can come only from the executive levels of the organisation. In addition, executive involvement must be sustained over the entire life cycle of the project, and beyond. Without the sustained involvement from above, strategic benefits from IT are unlikely.

The Chief Executive Officer (CEO) of an organisation plays a major role in the management of a change process. Kurt Lewin, (1951, cited in Stoner *et al* 1985; cited in Vrakking 1995; cited in Whitman & Gibson 1997; cited in Schein 1994) founder of change theory, viewed the organisation as a stable situation which has to be 'opened up' to accept new changes. Changes then need to be introduced, after which the organisation can return to a stable situation. He believed that these steps took place through the intervention of a person labeled the change agent; the CEO. More specifically, as 'IT has an ever increasing role to play in the realisation of success in most organisations, then this implies that IT needs the appropriate (increasing) attention of top management' (Mutsaers *et al* 1997, p. 117).

An example whereby a change initiative ground to a halt was in NCR's programmatic change of 1994-1995. The planned shift towards a customer-focussed organisation failed because many of the key country managers did not fully understand or buy-in to their new role as "coaches" (Patching and Higginbottom 1994, cited in Clarke & Meldrum 1999). Clearly, it is up to senior management to drive an IT implementation. Turner and Crawford (1999) insist that 'one of the interesting things that came through in our research was that technological change actually benefits more if there is a strong commitment by senior management' (cited in Iggulden 1999, p. 29). Their research suggests that strong commitment from senior management is not always available and in such cases there is a disconnect in technological change that is not there in the re-organisation of culture which is always driven by top management. The evidence suggests that when that occurs, the chance of a successful result is less.

Furthermore, the role of senior management is critical in Thomsett's Associates approach to project management (Thomsett 1989). Senior management must be treated as the high-level project management and problem-solving group in a project. Senior managers are a vital support network for

the project manager. Simply put, senior management must 'add value' to the project management process (Thomsett 1989, p. 6). Senior management must be placed in the role of problem solving as well as in the traditional roles of approval, monitoring and review.

2.3.4 Participation and Ownership

Many of the factors related to the failure of projects have been related to the human element. While it is clear that management is responsible for the ultimate decision, information from the people who will be affected by the results is invaluable. Taking advantage of the different styles and viewpoints in search of the best solution can serve dual purposes. Firstly, it will maintain, if not increase, people's motivation, and secondly, it will reduce any pending resistance to a change initiative handed down from the top. Furthermore, the likelihood of success increases as a sense of ownership emerges.

According to Adizes (1996), it may take longer to make a judgement with a group of people, but generally the decisions can be implemented more quickly and easily when people feel some ownership of the problem (cited in Hudson 1999). The team approach has the added advantage that some problems will be identified and solved as part of the discussion. To effectively use the energy of conflict and stress, it is important to create a climate where mutual trust and respect are encouraged. (Hudson 1999). It is a vital component in making the team work together. In times of change, misunderstanding of other points of view and miscommunication can increase the level of conflict and stress (Adizes 1996, cited in Hudson 1999). If you have a good foundation of trust and respect, it is easier to work out the misunderstanding and conflict.

A recent study of a project undertaken within the Australian banking industry to increase the use of technology to support internal business functions and also to improve internal service quality was considered successful by both the IT project team and the human resources department. According to Lloyd-Walker & Cheung (1999) however, there were some aspects of the project that stood out and hence caused an otherwise successful change project not to achieve its intended aims. Primarily, this was a lack of user involvement. Neither the project manager nor the HR manager on this project mentioned user involvement in planning of the project. A trial by branch staff conducted mid-way through the project was the first mention of the involvement of users. This is typical of an environment to be confronted with resistance.

Encouraging responsible participation can be as frustrating in the beginning as it can be rewarding when it's more mature, especially if the culture in its current state adopts a traditional top-down style of management. However, the payoff from diligent practice now is an easier time later when the next major IT-enabled change comes along. In their recent work on 'individualized corporation,' Bartlett & Ghoshal (1997 cited in Clarke & Meldrum 1999) point out that 'this realization implies a fundamental reconceptualization of the underlying management philosophy. Instead of forcing the individual to conform to the company's policies and practices, the overall objective is to capture and leverage the knowledge and expertise that each organizational member brings to the company' (p. 71).

Thus a fundamentally different approach to organisational change emerges. Organisations will need to become continually evolving organisms in which change is more likely to start around the edges of companies in response to specific business problems or opportunities rather than being driven purely from the top (Beer *et al* 1990, cited in Clarke & Meldrum 1999). In turn, these problem-solving groups can become communities or pockets of good practice that can act as role models for organisational change (Butcher *et al* 1997, cited in Clarke & Meldrum 1999). The importance of individual action is paradoxically even more important with the rise of teams as a key organisational unit, because the teams' ability to surpass individual effort is founded on the abilities of individuals to create that synergy (Butcher *et al* 1997, cited in Clarke & Meldrum 1999). The project team at Monash University found that 'involving everyone in the decision-making process was crucial' (Forsyth 1999, p. 20). 'The fundamental principles we worked on are that the process owners should own the system' (Julian 1999, cited in Forsyth 1999, p. 20).

2.3.5 Communication

Effective communication techniques can improve employees' ability to adjust quickly to change. In other words providing timely, straight forward information can increase the staff members sense of control (Budd 1995, cited in Hudson 1999) and this is generally agreed to be one of the best ways of reducing the level of stress. Lynne Crawford, director of the Project Management program at University of Technology, Sydney (cited in Mace 1999), argues that the 'notoriously poor success rate of IT projects usually has more to do with failed communications than lack of technical expertise' (p.

85). In establishing appropriate strategies, management must consider communicating across distance, functions and cultures when considering how the project team and end-users will communicate.

In order to minimise the negative impact of rumours, gossip and miscommunication, management is responsible for seeing that correct, relevant information is available. A communication channel needs to be established from the outset. Also, it is equally important to encourage communication among staff members. Recognition of the degree to which job responsibilities are interdependent can help staff reach a more complete understanding of the changes taking place.

Keiserman & Knutson (1999) claim that effective communication within a project team will grease the group processes, making problem solving, decision-making and conflict resolution much easier.

2.3.6 Training

Too often the benefits of training, particularly that which is IT related, is overlooked. Without a doubt, training is an expensive portion of the implementation process, but if it is forgone, the consequences can prove to be more costly to an organisation. Markus & Benjamin (1997) claim that better implementation implies better training and support of users and ultimately improves the chances of IT success.

Training is the process of 'unlearning old habits and procedures and learning to understand the new software' (Hudson 1999, p. 35), especially when an organisation is undergoing radical changes to their workflow. 'Learning can be defined as the extent to which participants change attitudes, improve knowledge, and/or increase skill as a result of attending the program' (Kirkpatrick 1996, p. 22). Ultimately, 'HRD (human resource development) is meant to produce something of value to the organization, something that will help the organization to better meet its goals' (Brinkerhoff 1987, p.9). Experience has proven that if the investment is not made initially to ensure adequate training, the likelihood of resistance to change and subsequently increased costs associated with system support and maintenance is highly probable. Furthermore, in order to determine whether the needs have been met, an organisation must evaluate the training program. The reason for a thorough evaluation is to ensure that learning has taken place, that the results originally set out to be achieved have in fact been achieved.

Lloyd-Walker and Cheung (1999) state that when implementing IT-supported changes to business processes, a combination of appropriate technology to support use of the program and

investment in training for the people using it is required. Bashein *et al* (1994, cited in Lloyd-Walker & Cheung 1999) suggests that training 'may equal or even exceed the budgets set aside for new information systems' (p. 36). Cost cutting when it comes to training could bring the technology to its knees and end users are more likely to blame the deployment rather than lack of education.

According to Zeffane (1994), 'lack of training in computer skills can be a major problem for firms' (p. 11). The results of a study conducted by Raymond (1988, cited in Zeffane 1994) of 34 small-and medium-sized manufacturing firms indicated that the presence of computer training or education is significantly associated with better user comprehension and more online usage and diversity of administrative applications. In addition, Nykodym *et al* (1989, cited in Zeffane 1994) collected data from 130 middle-level managerial and staff personnel in a variety of Midwestern business organisations so as to gain some insight into computer apprehension. The results were to be expected. What was revealed was a significant statistical correlation between computer apprehension and the amount of education in computer usage.

2.4 Resistance to Change

Resistance to change is a common problem occurring in varying degrees as a result of the change process. It is fundamentally the 'make or break' of a successful implementation. Organisations will encounter resistance when organisation members are uncertain about the causes and effects of organisational change; where they are unwilling to give up existing benefits; or, they are aware of weaknesses in the changes proposed (Stoner *et al* 1985). This is exactly why organisations need to ensure they appropriately adopt the change management techniques of providing clarity in their vision, changing the unwritten rules of the game, sustaining executive involvement, seeking people's ideas and opinions, ensuring clear communication channels, and providing adequate training.

According to Mockler & Dologite (1997), many cultural and behavioural barriers within the workplace that potentially could affect the smooth introduction of the IT system need to be taken into consideration. Individuals can be apprehensive when confronted with technological change. Change itself, as well as technology, can be threatening. Experience has shown that technology can have a negative impact on an individual's position in an organisation. These types of negative results are particularly common with the introduction of new technology and advanced technology and create resistance to change. People's level of stress may be affected by the anxieties that change raises in individuals and in the group as a whole. Some of these anxieties are based on rational concerns and so

can be addressed. They relate to such things as job security, career prospects or a fear a staff member may have about the ability to function effectively after the changes are implemented (Brook 1978, cited in Hudson 1999). During automation, most managers have worked with at least one person who doubted his/her ability to operate a computer. It is vital to address these anxieties as part of the transition process. The ultimate goal is to create an atmosphere where the energy created by conflict and stress can be turned into a positive force.

2.5 Project Management

2.5.1 What is Project Management

'A project is a one-off change to be achieved by a finite, time-ordered and interrelated set of tasks. The one-off change is the project; the time-ordered set of tasks is called the project sequence. Project management is the identification of the one-off change and the management of the project sequence' (Healy 1997, p. 9).

According to Kort (1999), 'the change process should be treated as a project' (p. 33). Projects are inevitably linked to change and when properly chosen can provide opportunities for project owners to increase their understanding of organisational change processes and, to a degree, bring about desirable change. For many, 'the project experience is a microcosm of the growing part of their role as managers of change' (Smith & Dodds 1999, p. 6). IT projects need to be managed as a portfolio, rather than individually, with a focus on enabling business change rather than successful deployment of a new technology (Iggudlen 1999). Hence, project management is the process by which change is managed by means of a structured methodology with a principal aim to ensure successful deployment of new technology and ultimately deliver business value.

A key proposition is that for a project to be effective it must continually demonstrate how it has delivered, is delivering, and will continue to deliver the expected business value - the overriding aim of the implementation of IT (Gooch 1997). Gooch (1997) claims that a properly managed project will produce the specified objectives:

- To an agreed schedule;
- Within agreed budget or investment constraints;
- According to specifications; and,
- And at a quality level that serves business needs, meets the management's expectations and meets professional standards of the participants (p. 133)

Furthermore, Thomsett (1989) states that a project is successful when:

- It meets agreed upon requirements;
- Meets agreed upon deadlines;
- Meets budget as measured in people, equipment, and so on;
- That the project team feels that they have done a professional job.

2.5.2 The Project Management Methodology

Fred Brooks (1987, cited in O'Connell 1996), the authority on software project management, stated that 'despite all the advances in hardware and software technology, there seemed to have been no corresponding "development in either technology or management technique" that would enable IT people to bring projects in on time, within budget and deliver what was required' (p. xxvii). Hence, a methodology is adopted when deploying IT so as to help guide, define and manage the project.

O'Connell (1996) provides ten steps that he believes to be the cornerstone of Structured Project Management:

1. Visualise the goal; set your eyes on the prize;
2. Make a list of the jobs to be done;
3. There must be one leader;
4. Assign people to jobs;
5. Manage expectations, allow a margin for error, have a fallback position;
6. Use an appropriate leadership style;
7. Know what's going on;
8. Tell people what's going on;
9. Repeat steps 1-8 until Step 10;
10. The Prize.

Clearly, from this methodology we can see aspects of change management emerging. Step 1, by visualising the goal, we can see a link with the essential starting point for managing change, establishing the vision. Secondly, the process of managing change requires that the vision be communicated to the entire organisation to ensure clarity and focus, undoubtedly aligned with Step 7 and 8 of O'Connell's (1996) methodology. Furthermore, we established earlier that top management

must be committed to the change to ensure its success, accentuating the relationship with O'Connell's (1996) Step 3 and 6.

Similarly, Rob Thomsett (1989) proposes a model of project management. It involves four management processes, and one system development process:

1. Project selection, approval, and review;
2. Project planning;
3. Project tracking or monitoring;
4. Project review; and,
5. Develop terms of reference/business case or feasibility study

Thomsett (1989) explains that while senior managers are the critical people in the first stage of selection, approval and review, they depend on a crucial set of information that is developed by the project manager and business analysts in determining whether the project is viable in a business/management and technical perspective (p. 14). In other words, during a strategic planning exercise, senior management identify the major projects that reflect their preferred corporate mission and direction. Consequently, what they are in effect doing is stating their intentions, and from a technical viewpoint are being guided by the IT experts on the practicality of it all. Once again, they are visualising their goals. The second process, project planning, 'is a team-driven process; all team members should be active in planning their project' (Thomsett 1989, p. 24). Thomsett Associates' approach to project planning is based on a participative planning session involving the project manager, his or her team, representatives of key external groups and project, and any technical support groups (Thomsett 1989). If this is not possible, there should be at least one key stakeholder and where necessary, other stakeholders should be brought in to contribute during the project lifecycle. This highlights an association with the participation and ownership theory recommended in the management of change.

These alternative approaches, while structured differently, purport to achieve the same thing, and that is success in change management. Project management is the vehicle that drives the success of a change initiative. The findings of a study conducted by Svetlana Cicmil (1999) further emphasise this supposition. Cicmil (1999) identified 'the ability of leaders and managers to define and communicate the tangible and measurable deliverable/objectives of a change project from the start (the *what* aspect of the initiative), and to design a set of tasks to enable the necessary input of competence,

expertise and participation for the accomplishment of those objectives (the *how* aspect of the project), with the additional effort in facilitating the systems view and strategic congruence (the *why* aspect of the change project)' (p. 14) as significant.

One of the organisations researched in Cicmil's (1999) study, a financial services organisation, implemented a new IT system in the hope of creating a dynamic and paperless working environment which would support the provision of higher quality service in the market where product differentiation as a competitive strategy has a very limited scope. The organisation failed to achieve its initial purpose and goals and the exercise proved to be a costly one. After some investigation it was highlighted that:

- Inadequate communication of project goals caused a significant misinterpretation of project purpose and caused resistance and fear among employees;
- Only a discrete part of the department was included in the project because of uncertainty associated with a new system development project. The reason was not communicated effectively nor in a timely fashion, causing suspicion and insecurity amongst employees. The project management approach lacked an awareness and anticipation of problems associated with such change;
- The implementation was rapid, leaving little time for preparation in terms of education of, or communication to, staff affected by the system;
- Staff felt demotivated and threatened by the fact that workloads increased but no incentives were offered to match the individual contributions. Subsequently, this led to increased staff turnover.

On the other hand, still as part of the same research undertaken by Cicmil (1999), another organisation, a transport service company, undertook to revive and develop a service within the portfolio by designing and implementing an IT system. This case differed substantially from the former one in that:

- A competent and enthusiastic person was made responsible for the project (the service development manager);
- Good communication among different levels of management helped in overcoming existing resistance among senior managers towards this type of service;

- Particular attention was paid to the education of the staff in terms of both the operations of the new service and its marketing which turned out to be critical for an effective implementation of the change project;
- Presentations conducted to the UK offices helped to communicate and explain why the new service was an important venture for the company; the benefits available for everyone employed; who was doing what; and measures being taken to prevent the initiative ending up as a failure;
- Implementing the principles of continuous improvement;

As a result of the effective management of the new service development project, the company has been witnessing a rapid success rate of the new service and an effective achievement of associated financial and operational goals. Therefore, it is evident that the adoption of appropriate project management techniques, increases the likelihood of IT project success.

2.5.3 The Project Manager

During the project management process, the role of a project manager is critical to the ultimate success of the project. Gooch (1997) describes the project manager as a conductor who brings it all together. As the individual responsible for overseeing the management of the project, it is his or her responsibility to behave as though they are running a business and be fully accountable for the projects and the decisions they make drawing on knowledge, experience and insights of those around them so they make the most informed decisions (Whitten 1997). According to Hallows (1998) 'the project manager's role is to provide a product that is capable of 'producing' benefits' (p. 47). The project manager must understand what the benefits are and must be satisfied that they are achievable.

Gadepken (1999) goes on to say that to be truly successful, a project manager's emphasis must shift from that of a project management professional to a leader of organizational change (p. 45). They must become full partners in the quest for organizational change and renewal. Overwhelmingly, there are four key leadership roles for future project managers – strategy setter, consensus builder, systems integrator, and change agent (Gadepken 1999, p. 46). By adopting a next generation philosophy and paying attention to some key considerations, project managers can better position themselves for delivering greater success with technology implementations.

2.5.4 Project Sponsor

A project sponsor is normally a 'manager or executive who is organisationally responsible for the project's resourcing, costs and success' [HREF2]. The sponsor is another key factor to the project's success as he or she will be expected to support the project manager and the team in areas beyond the team's control and authority. They usually drive the change initiative and therefore ensure that the project remains a priority throughout its lifecycle.

2.5.5 Project Team

A team approach in the management of projects is fundamental according to Thomsett (1989). 'The use of team-based techniques and formal problem-oriented methods are integral to effective project management' (Thomsett 1989, p. 6). By involving as many team members, project users, and key support groups as possible during the project management activity, they become the champions of the change. Apart from their participation and organisational knowledge, the project team are the representatives of the project and it is their responsibility to communicate the proposed changes to the rest of the organisation. In addition to the technical staff recruited for the IAS project at Monash University, the project also involved the time and effort of approximately 100 staff from various faculties and departments (Forsyth 1999). The non-technical staff formed what they called the 'reference group' (Forsyth 1999, p. 18). They were considered to be the key users of the new system and who the project team consults to understand users' needs. Additionally, it was their key role to champion the project at their departments by helping their own staff get up to speed with the new system (Forsyth 1999).

Thomsett (1989) pinpoints a number of advantages that result from the adoption of team-based project management (p. 6):

- The project plans, supporting information and project tracking information will be more accurate;
- The team members will have a commitment to the plans as the team is integral to the development of the plans;
- The project information will be more politically acceptable because of the broad base of input; and finally,
- It's more fun.

2.6 Conceptual Framework

Table 2: Concept Map

Problem	What factors determine the success of an IT project
Need for Study	Requires an understanding of IT, Change Management and Project Management
Innovation	Case Study of Controlled Sprinkler Supplies
Outcome	Better understanding of what constitutes a successful or unsuccessful IT project

The following framework is designed to illustrate the dependent, independent and moderating variables associated with this study, and the relationship that exists between them.

Table 3: Concept Diagram

Dependent Variable	Successful deployment of information technology
Independent Variables	Clear goals/Vision Culture Top management support User involvement Communication Management of client expectations Project Management
Intervening Variable	Time and Budget Constraints
Moderating Variable	Training

- Dependent variable:

This is the successful deployment of information technology in an organisational context. Statistics indicate that IT projects are prone to failure and this research will determine what variables are necessary to increase the likelihood of success.

- Independent variables:

These are the factors, according to the literature, that will enhance the chances of success:

1. By establishing a vision from the outset, with clearly communicated goals, everyone in the organisation understands the objectives to be achieved and can therefore work towards the achievement of those goals cohesively.
2. The culture of an organisation needs to be re-invented so as to make way for pending changes. By attempting to introduce technology into an organisation without having interrupted the unwritten rules of the game first, then the chance of success is minimised.
3. Top management support is of paramount importance in a change process, otherwise, the literature states that without it, successful change is said to be impossible.
4. Incorporating staff involvement will enable a smooth transition to any new system, in other words they will feel a sense of ownership and resistance will be reduced. Training will also aid in this.
5. Establishing effective communication channels ensures that people involved in the deployment of IT are not misinformed, enabling them to adjust quickly to changes.
6. When organisations decide to invest in information technology, they usually have a thorough understanding of what it is they are trying to achieve. By neglecting to meet their expectations, it is very unlikely that the deployment of IT will be successful.
7. Adopting project management methodologies to the deployment of IT will provide a structure to bringing about effective change and ultimately business value.

- Intervening variable:

Time and budget constraints, while not the sole measures of success, still play a major role in the deployment of IT. If a project experiences time and cost overruns, there is a greater chance that it will be challenged and it will lose priority.

- Moderating variable:

Training, as the moderating variable, changes people's attitudes, improves knowledge, and increases skill levels. Without it, organisations increase the likelihood of resistance and consequently, costs are substantially multiplied.

2.7 Conclusion

Successful deployment of Information Technology is regarded as a change process where formal and highly disciplined project management techniques are mandatory. In order to accomplish such a massive undertaking, management must be aware of a wider range of factors. Those which appear to be crucial are:

- Clear vision
- Appropriate culture
- Top management support
- User participation and ownership
- Communication
- Understanding and meeting client expectations
- Project management incorporating planning

In an attempt to explore this further, a research endeavour was undertaken at Controlled Sprinkler Supplies. It concentrated on the implementation of Navision Software, an enterprise business management solution, as the change initiative. The following chapter details the methodology adopted for data collection and analysis.

CHAPTER 3 - METHODOLOGY

3.1 Introduction

The IT project conducted at Controlled Sprinkler Supplies (CSS) comprised the implementation and transition of their current financial system Distrib to Navision Software (an enterprise business management solution). Having obtained verbal consent from the CEO of CSS, research into this implementation project formed the basis of this thesis.

3.2 Aim of Research

According to Sekaran (1992), research serves two purposes. The first, known as *applied* research, aims to solve a currently existing problem in the organisational context. The other purpose is to add or contribute to the body of knowledge already existing in a particular area so as to improve the understanding of problems that commonly occur in the organisational context. This is generally referred to as *basic, fundamental* or *pure* research.

The aim of the research at Controlled Sprinkler Supplies is considered basic or fundamental research in that it attempts to determine what factors are necessary to ensure the success of an IT project of the size and nature as that which was undertaken at CSS. It will attempt to establish the components of the project that can be applied to other projects that are carried out across industries. Hence, the study is considered to be of an *exploratory* nature. Sekaran (1992) tells us that this study is an exploration of the 'situational factors so as to get a grip on the characteristics of the phenomena of interest' (p. 99).

3.3 The Research Design

3.3.1 Approach: Type of Investigation

Due to the nature of the research in identifying the factors that contribute to the success of IT projects, a *correlational* study is being undertaken. The reason for this choice of investigation is to single out the important factors associated with the problem (Sekaran 1992). A correlational study is conducted when the researcher wants to delineate the important variables that are associated with the problem (Sekaran 1992). A study of this nature is conducted in the natural environment of the organisation with minimal interference to the normal flow of events by the researcher. The only disruption necessary involved the time taken to interview the CEO and administer the questionnaires to the staff at CSS.

3.3.2 Study Setting

As identified earlier, the research conducted at CSS is one of a correlational nature, conducted in a noncontrived setting. This sort of study is otherwise referred to as a *field study* (Sekaran 1992).

The location of the study was predominantly carried out at the Heidelberg Heights head office of Controlled Sprinkler Supplies located in Melbourne, Victoria, although, questionnaires were also sent to the interstate locations in Queensland, Western Australia and South Australia.

3.3.3 Time Horizon

The time horizon of a study can be distinguished by its cross-sectional or alternatively longitudinal nature. The data from CSS was gathered just once over a period of 6 weeks, in order to shed light on the research question at hand. Hence, this study would be considered a ‘one-shot’ or ‘cross-sectional’ study (Sekaran 1992). A longitudinal study, on the other hand, would study people or phenomena at different points in time so as to answer the research question.

3.3.4 Sources of Data

There are several sources by which data can be gathered for purposes of carrying out this research. The primary source of data begins with seeking individuals’ opinions through interviews or questionnaires based on issues related to the research question. In addition, observing events and people, and how they interact can provide a valuable source of information. Secondary sources of data include books, journals, magazines, internet searches, database searches, and other students’ theses.

3.3.5 Unit of Analysis

‘The unit of analysis refers to the level of aggregation of the data during subsequent analysis’ (Sekaran 1992, p. 106). In this case, the unit of analysis is focussed on the organisation.

3.3.6 Population and Sample

Controlled Sprinkler Supplies employs 42 people throughout the entire organisation, of which 23 are based in Melbourne, 2 in Sydney, 5 in the Gold Coast, 6 in Perth, and 6 in Adelaide. The population of a study refers to a group of people, events, or things of interest that the researcher is interested in investigating (Sekaran 1992). As the research at CSS is attempting to determine the

factors necessary to ensure IT project success in an organisational context, then the population for this study is every employee of Controlled Sprinkler Supplies. A sample, on the other hand, is the subset of the population. The sample size for this study is 38 staff members of CSS, as well as the CEO and the Project Manager (from HLB Consulting). This sample excludes the Chairman and the NSW contingent, as they were not a part of the Navision implementation. According to Sekaran (1992), sample sizes larger than 30 but less than 500 are appropriate for most research.

Due to the small sample size, no rigorous sampling is required. Rather, probability sampling is the method adopted, whereby the elements in the population have some known chance or probability of being selected as sample subjects.

3.4 The Research Process: Data Collection

Data can be gathered in a variety of ways. For purposes of this research, conducting face-to-face interviews and administering questionnaires were the two preferred methods of adoption. In addition, observing people and events was a powerful means of collecting data, as the researcher was also the business system's consultant involved in the project team. 'Interviewing, administering questionnaires and observing people and phenomena are the three main data-collection methods in survey research' (Sekaran 1992, p. 189).

3.4.1 Interviews

Interviewing subjects provides a certain amount of flexibility that allows the researcher to adapt, adopt and change questions as the interview proceeds. Interviews can be structured or unstructured. The method adopted in this field study is the structured option whereby a predetermined list of questions is prepared and the interviewer knows exactly what information to elicit. These interviews were best carried out face-to-face as geographic boundaries in this study were not an issue. Separate appointments were scheduled to conduct the interviews with firstly the Project Manager of HLB Consulting then the CEO of CSS. Their opinions were sought primarily because of their significance in the project and for the mere fact that they could provide more in-depth insights about specific variables related to the research question. Additionally, detailed information on the company's background and the methods adopted in the management process were imparted.

Each interview was of 1 hour's duration approximately and was intended to explore different perspectives on the IT project at Controlled Sprinkler Supplies. They focussed on the issues

confronting these key people during the course of the project. Furthermore, it drew on the their perceptions of the Navision implementation, particularly, the strategies they adopted in making it a smooth transition. The interviews were taped and then transcribed with the participants' approval. These interviews were conducted over two consecutive evenings, six months after the project had 'gone live' effectively. Both interview participants were very supportive of this research endeavour and were more than willing to share their experiences and insights. Sample interview transcripts are provided in *Appendix 2* and *3*.

3.4.2 Questionnaires

While interviews provide qualitative data for the research, questionnaires provide quantitative data. The significance of questionnaires is that they obtain data more efficiently in terms of time, cost and energy. Questionnaires are a 'preformulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives' (Sekaran 1992, p. 200). They can be administered personally, or mailed to the respondents. In this case, the questionnaires distributed to the Melbourne contingent were hand-delivered by the researcher, and questionnaires to the interstate offices were sent in an overnight bag via the Melbourne office, in conjunction with their nightly delivery. A total of 38 questionnaires were administered to CSS employees, with 28 responses representing a response rate of approximately 73.7%. The questionnaires were accompanied by an opening letter briefly introducing the IT project undertaken at CSS, the purpose of the research endeavour and an outline of the participants' contribution to the research (*see Appendix 1*).

3.4.3 Observations

While both interviews and questionnaires elicit responses from the subjects directly, it is possible to gather data without asking any questions, but rather observing people in their natural environments and recording behaviours. According to Sekaran (1992), the researcher can play one of two roles while gathering field observational data: nonparticipant-observer or participant-observer. The researcher in this case would be considered the participant-observer. The researcher was actually a member of the project team, and subsequently made privy to the subjects' fears, experiences, challenges, obstacles and achievements from the outset. The researcher was in a unique position, as business system's consultant, in dealing with the CEO and liaising with each staff member and

potential user of Navision Software as it provided a more in-depth look at and understanding of the project variables. As business system's consultant, the researcher could analyse the reactions to the change, the advantage or disadvantage of involving people in the implementation process, whether there was adequate and effective communication between management and staff, if the new system was accepted and understood, and ultimately whether there was a general consensus regarding the project's success.

The benefits to be achieved from observation are that the subjects' might be reluctant to disclose information about the project on a questionnaire fearing that they may expose their weaknesses; however, with observation, the researcher can witness their actions which portray their real thoughts. Furthermore, comments that are often made can provide further insight into people's feelings, attitudes and reservations or conversely expose their confidence in the change. Consequently, this adds an ethical dimension to the research as it is the researcher's obligation to ensure absolute confidentiality. By disclosing sensitive information about the organisation or observations made, the researcher potentially places HLB Consulting – Information Systems, and of course, HLB Mann Judd, at risk. Failing to address the ethical issues could be detrimental to the on going relationship.

3.5 Measurement of Variables

The questionnaire was designed to capture the views of the end-users about the project. It incorporated a combination of nominal scales and interval scales. An example of the nominal scale is typically illustrated by question 1 which categorises the sample by gender. The interval scale, on the other hand, measures the magnitude of differences of opinion among the sample. A common interval scale is the Likert scale where responses can be tapped on an eight-point scale and can be analysed by item (Sekaran 1992, p. 166). This is a common measurement tool adopted for its simplicity and minimal time constraint and effort. It is best illustrated by question 9 to 46, where the eight-point scale ranged from Slightly Disagree to Strongly Agree (1 to 7) with number 8 marked as Not Applicable where the question bore no relevance to the respondent or was difficult to understand. At the end of the questionnaire, three open-ended questions were asked, and provision for further comments was provided to allow the respondents to elaborate on topics discussed during the survey.

The questionnaire was organised in distinct sections providing some logic to its design. The four sections included (*see Appendix 1*):

1. Demographic Information;

2. Information Technology;
3. Change Management; and,
4. Project Management.

3.6 Analysis of the Data

The study conducted at Controlled Sprinkler Supplies was carried out approximately six months after the Navision system was implemented. Once all the questionnaires were returned, responses were transcribed into Microsoft Excel. The file was imported into the statistical software package known as SPSS for Windows Release 7.5.1 for analysis. The variables were defined and values were labelled. The next step was to produce the summary statistics. The output of this process was the frequency distributions, the measurement of central tendency, and dispersion or spread (see *Appendix 5*). Following on was the generation of the bivariate correlations using Pearson's correlation coefficients (Sekaran 1992). In addition, Cronbach's alpha reliability measure was established by testing for both consistency and stability of the survey instrument (Sekaran 1992). The results from the quantitative data collected from the questionnaires is analysed and presented in the following chapter.

Furthermore, qualitative data was collected from the interviews, survey results, and observations made by the researcher. Primarily, its purpose was to provide greater insight into the project by its leaders, but also to shed light on any differences in opinion found between the CEO, the Project Manager and the staff at CSS. In analysing this data, the researcher adopted a three-step approach: data reduction, data display, and conclusion drawing/verification (Miles & Huberman 1984). Once the interviews were transcribed, the process of data reduction included 'selecting, focusing, simplifying, abstracting, and transforming the "raw" data that appear in the written-up field notes' (Miles & Huberman 1984, p. 21). This was a process whereby the researcher reread the notes and with a highlighter, important issues that arose were emphasised. The next step was in displaying the data in a matrix format for ease of use and accessibility (see *Appendix 4*). In building the matrix, several heuristics were adopted. These included thick descriptions, direct quotes and close-up detail. Codes were used to tag the location of the data portion in the written up field notes, to make it easier to refer to if necessary. Drawing justified conclusions based on data in a compact form was ultimately more useful and less complicated.

CHAPTER 4 – QUANTITATIVE DATA ANALYSIS

4.1 Introduction

The previous chapter described the methodology adopted in the collection of the data. This chapter presents the data analysis.

4.2 Questionnaire Responses

In order to ensure their guaranteed delivery to Controlled Sprinkler Supplies' staff, the questionnaires were hand-delivered by the researcher on 7th September 1999. Within two weeks, 21 responses had been mailed back to the researcher. By 8th October 1999, an additional 2 were received following a reminder call and a request from staff to re-fax a copy of the questionnaire to CSS again. The researcher phoned several times seeking more responses but was advised that if they were not already completed, it was unlikely any additional responses would be received. At that point, a total of 23 questionnaires were returned from a target population of 38. On the 18th October, 5 more responses were mailed to the researcher. Eventually, a response rate of 73.7% was attained.

4.2.1 Limitations

As part of the analysis phase of this research endeavour, it became apparent that two respondents answered '8' indicating 'Not Applicable' to all statements in the Information Technology, Change Management and Project Management sections of the survey. The obvious explanation for this is that there have been new recruits to the company since the implementation of Navision at CSS. A decision was made to disregard these results, as they would have been irrelevant to the research. Hence the final sample size totaled 26.

Furthermore, when in doubt people often select the impartial stance of 'Neither Agree nor Disagree' which could infer a lack of knowledge or understanding in terms of the goals and objectives to be achieved by the company.

4.3 Analysis of Questionnaire Results

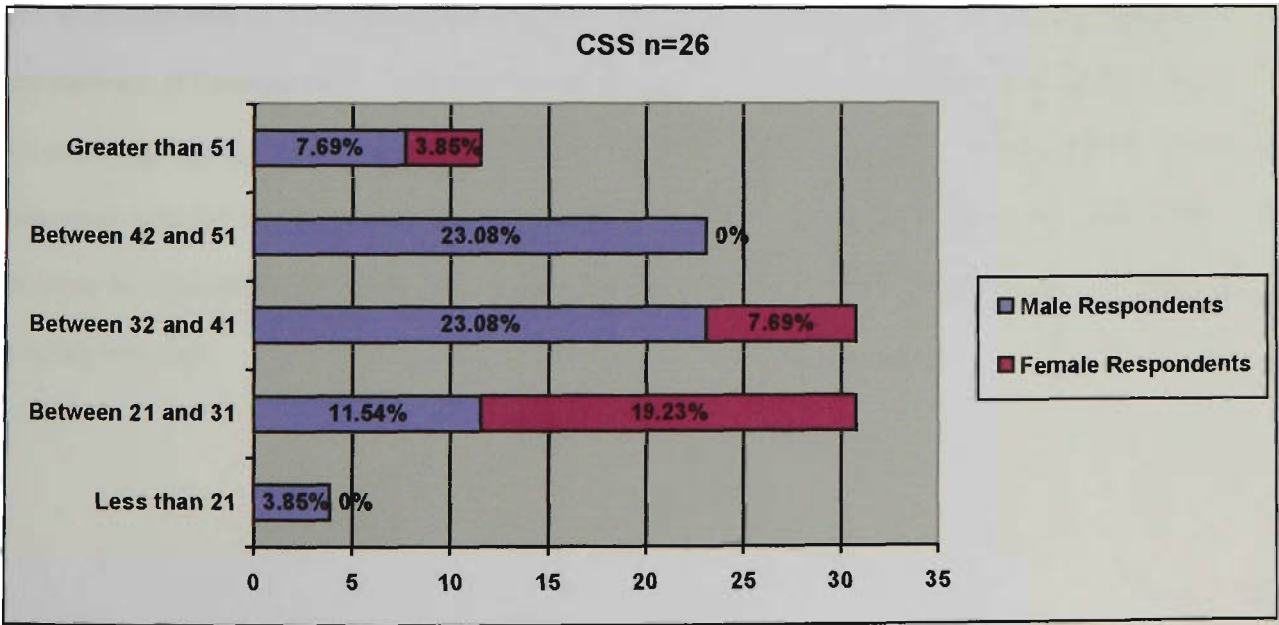
The data analysis is presented here in these categories:

- 1. Demographic Information
- 2. Information technology
- 3. Change Management
- 4. Project Management

4.3.1 Demographic Information

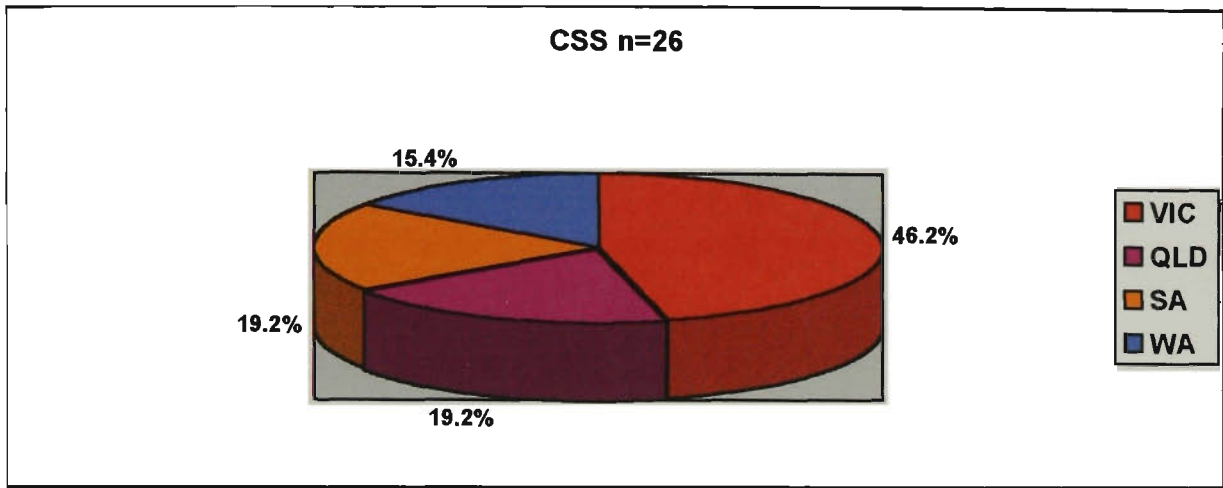
The initial 8 questions of the survey attempt to explore the demographic details of the sample population, focussing on the gender division, age variance, staff tenure and dispersed roles, geographical segregation and computer literacy and system utilisation. Obtaining this information allows the researcher to categorise the responses so as to gauge the effects on the dependent and independent variables. Of 26 respondents, 69.2% were male and 30.8% were female. The age spread amongst the respondents indicated that 61.6% were between the age of 21 and 41 reflecting a relatively young team, and one possibly not threatened by change in technology. Figure 4.1 provides a breakdown of respondents by age and gender.

Figure 4.1: Percentage of Respondents by Age and Gender



The geographical segregation of the sample size included 46.2% in Victoria, 19.2% in South Australia, 15.4% in Western Australia and 19.2% in Queensland. This highlights a bias towards Victoria due to the fact that the company’s central distribution centre and head office resides there. Figure 4.2 presents the geographical representation of respondents.

Figure 4.2: Geographical Distribution of Respondents



In analysing the dissection of respondents by tenure, Figure 4.3 portrays a strong indication of growth and loyalty to the company. 34.6% of respondents have been working for Controlled Sprinkler Supplies for 1-5 years. Likewise, another 34.6% of respondents have been working for the company for 5-10 years. 23.1% have been working for more than 10 years while only 7.7% have been working at CSS for less than 1 year. Furthermore, the segregation of roles reveals that 26.9% of the respondents are members of the sales team. This clarifies the fact that the company is sales-oriented and focussed on providing superior customer service. With 23.1% of management amongst the respondents, their commitment to the project is seemingly apparent. In addition, the results obtained prove interesting because the respondents are drawn from a cross section of the organisation, as well as from the various satellite branches.

Figure 4.3: Role and Tenure Division

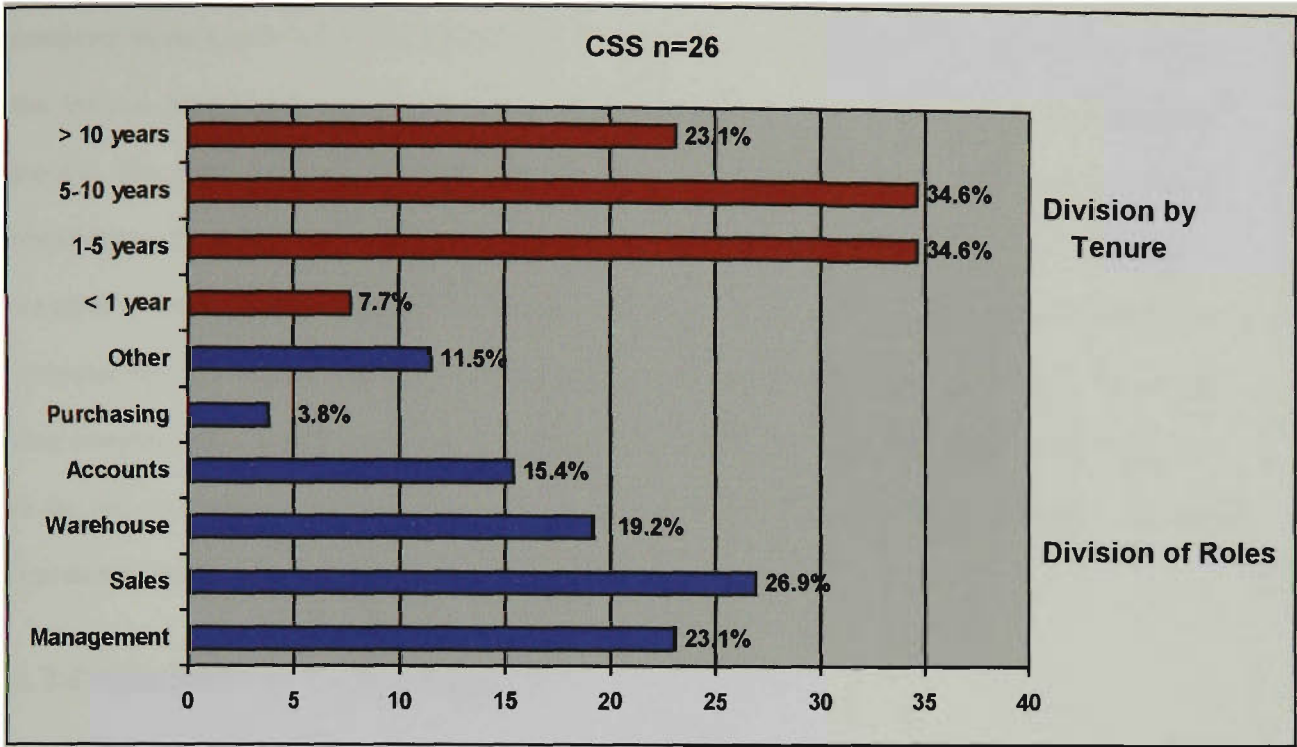


Figure 4.4: Computer Literacy, Formal Computer Training & Use per Day

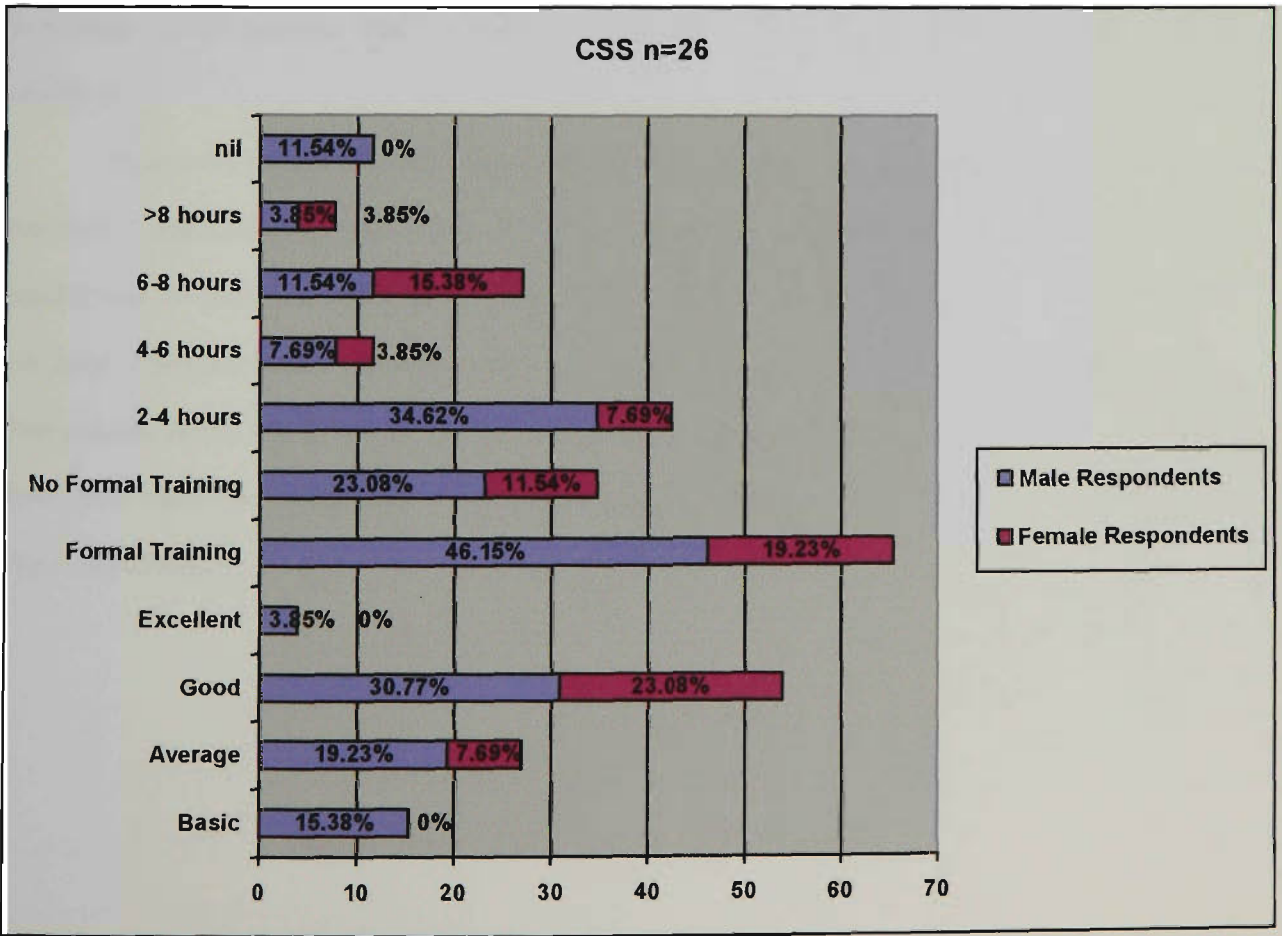


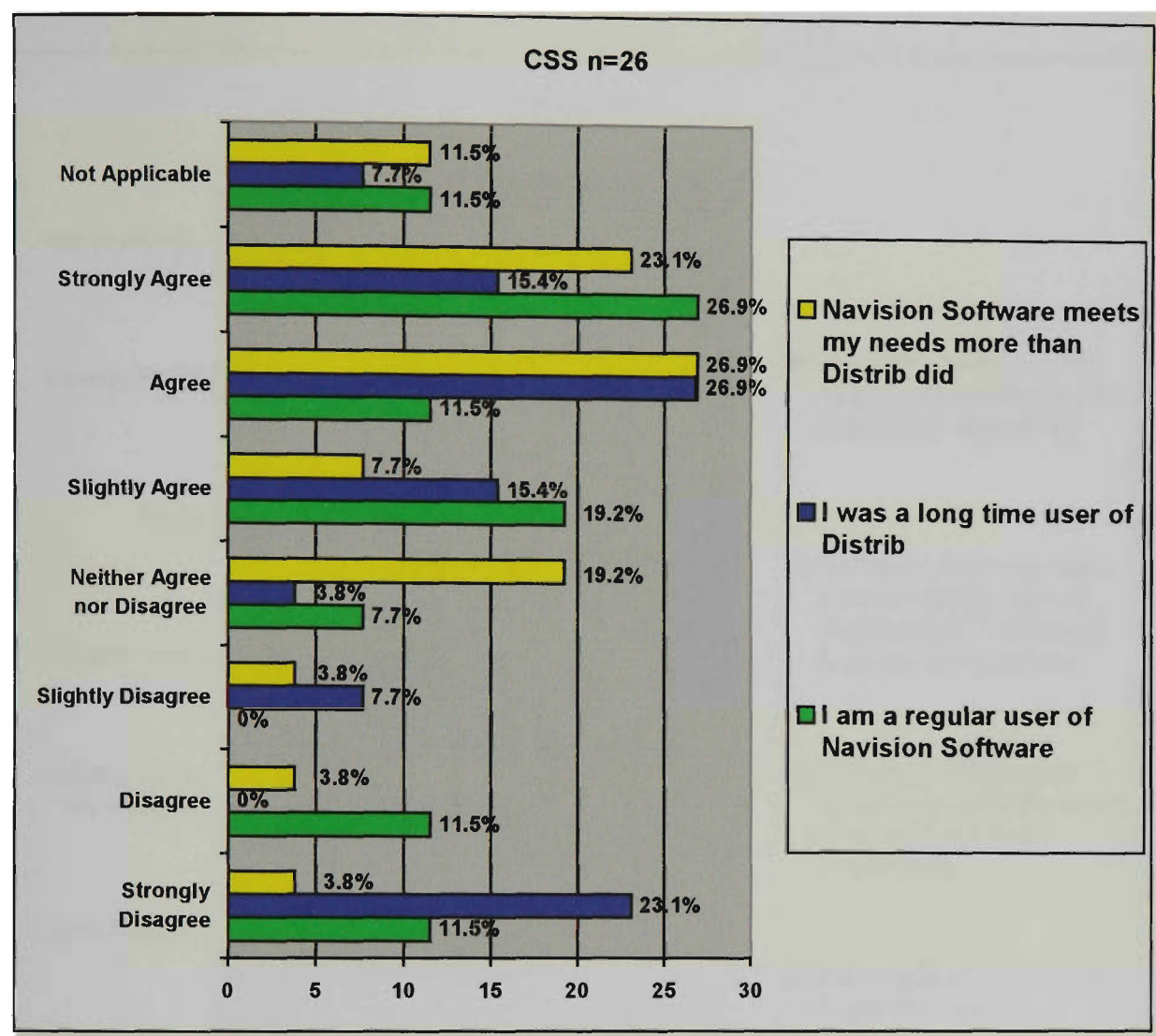
Figure 4.4 indicates that the male contingent at CSS is more likely to have had formal computer training with 46.15% of respondents answering 'yes' to this question, while only 19.23% of the females have had formal computer training. Consequently, 30.77% of the male respondents thought that their level of computer literacy was 'good,' compared to 23.08% of the female respondents. In terms of the time spent in any one workday using the computer, 42.3% of respondents are more likely to use their computer between 2 to 4 hours a day, 11.5% of respondents will use their computer between 4 and 6 hours a day, while 26.9% use it 6 to 8 hours a day. Only 7.7% claim to use their computer more than 8 hours a day. Another 11.5% maintain that they do not use a computer due to the fact that they do not have access to a terminal. These respondents were generally from the interstate branches where resources are currently limited.

4.3.2 Information Technology

The Information Technology section of the questionnaire sought to determine the level of awareness, acceptance and use of Navision Software and whether or not the new system had met the expectations of staff members. Moreover, it sought to determine whether staff felt that the change in technology would improve their competitive advantage and help CSS achieve their goals and objectives.

Figure 4.5 clearly illustrates that while 23.1% of respondents strongly disagreed with the statement 'I was a long time user of Distrib,' only 11.5% strongly disagreed with the statement 'I am a regular user of Navision Software.' This indicates that more people have access to and rely on Navision to perform their duties or to extract information pertinent to enhancing their overall service. Furthermore, 26.9% and 23.1% respectively 'agree' and 'strongly agree' that Navision Software meets their needs more than Distrib did, while 19.2% took a neutral stance in declaring that they 'Neither Agree nor Disagree.'

Figure 4.5: Usability of Navision Software



The following figure, Figure 4.6, highlights some mixed reactions to the strategic benefits of Navision Software. The majority of respondents ‘Neither Agree nor Disagree’ with the statements ‘Navision Software has helped CSS achieve its goals and objectives’ and ‘Navision Software has helped CSS to gain a competitive advantage over its competitors.’ This infers a lack of understanding of the strategic benefits to be attained. When asked, however, to respond to the statement ‘The new system has enabled CSS to be more responsive to its customers,’ 23.1% ‘Neither Agree nor Disagree,’ while most responses appear prominent in the higher end of the Likert scale, with 19.2% choosing to ‘Agree,’ 19.2% selecting ‘Slightly Agree,’ and 11.5% agreeing strongly. Interestingly, there is a union among 30.8% of the respondents who agree that ‘The system has met my expectations,’ and 15.4% who chose to slightly agree, while 15.4% disagree, and another 15.4% slightly disagree.

Figure 4.6: Strategic Benefits of Navision Software

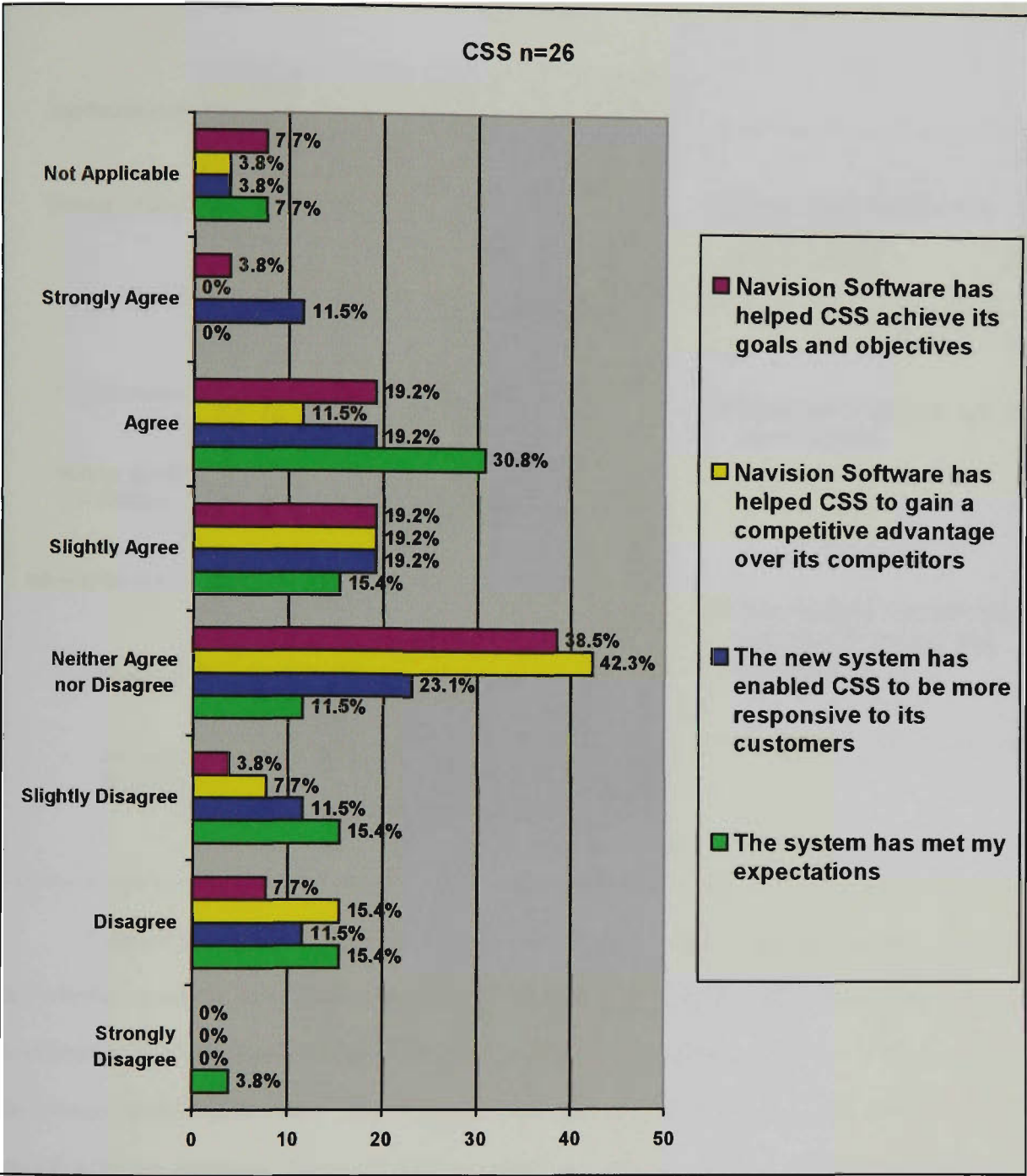


Figure 4.7: Ease of Use of Navision Software

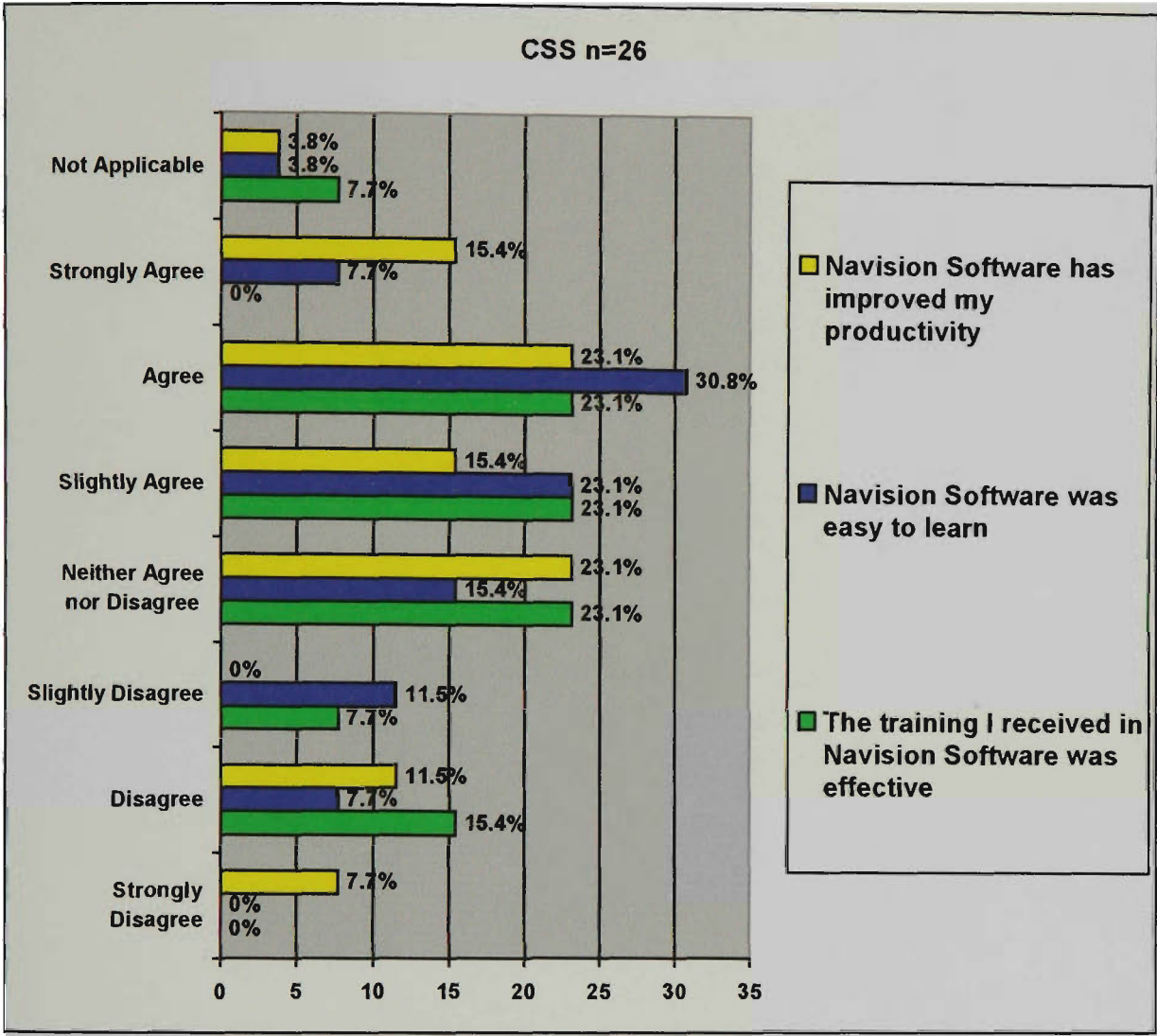


Figure 4.7 analyses whether the training was effective, whether Navision was easy to learn and whether or not the new system has improved the respondents’ productivity. The statistical mean calculated for the statement ‘Navision Software has improved my productivity’ was 4.77, just above the average on the 8-point scale. This should be viewed in light of the fact that 38.5% of respondents agreed with the statement ‘Navision Software provides information that is up-to-the-minute,’ and another 26.9% agreed strongly. In addition, 46.2% of respondents asserted that ‘Navision provides the information I need,’ signifying the system’s reliability and accuracy, thus allowing CSS staff to make decisions based on real-time data.

It is seemingly apparent that ‘Navision Software was easy to learn,’ particularly with a mean calculated at 4.96, and a standard deviation of 1.54, demonstrating once again the higher than average score obtained. As a result, the training received was effective with 23.1% in slight agreement, an

alternative 23.1% in agreement and an extra 23.1% impartial to the idea. This difference of opinion needs to be viewed in accordance with the qualitative data obtained from the interviews, questionnaires and observations.

4.3.3 Change Management

The purpose of the Change Management portion of the survey was to ascertain how respondents perceived the change from Distrib to Navision Software. This included establishing whether or not respondents were kept informed of pending changes, whether the CEO was a good role model in the change over, if top management was committed to the success of the change and whether respondents felt threatened or challenged by the change. In addition, it was designed to ascertain whether the training provided was effective so as to reduce resistance to the change or if further training was required.

Figure 4.8: Factors Associated with Change Management

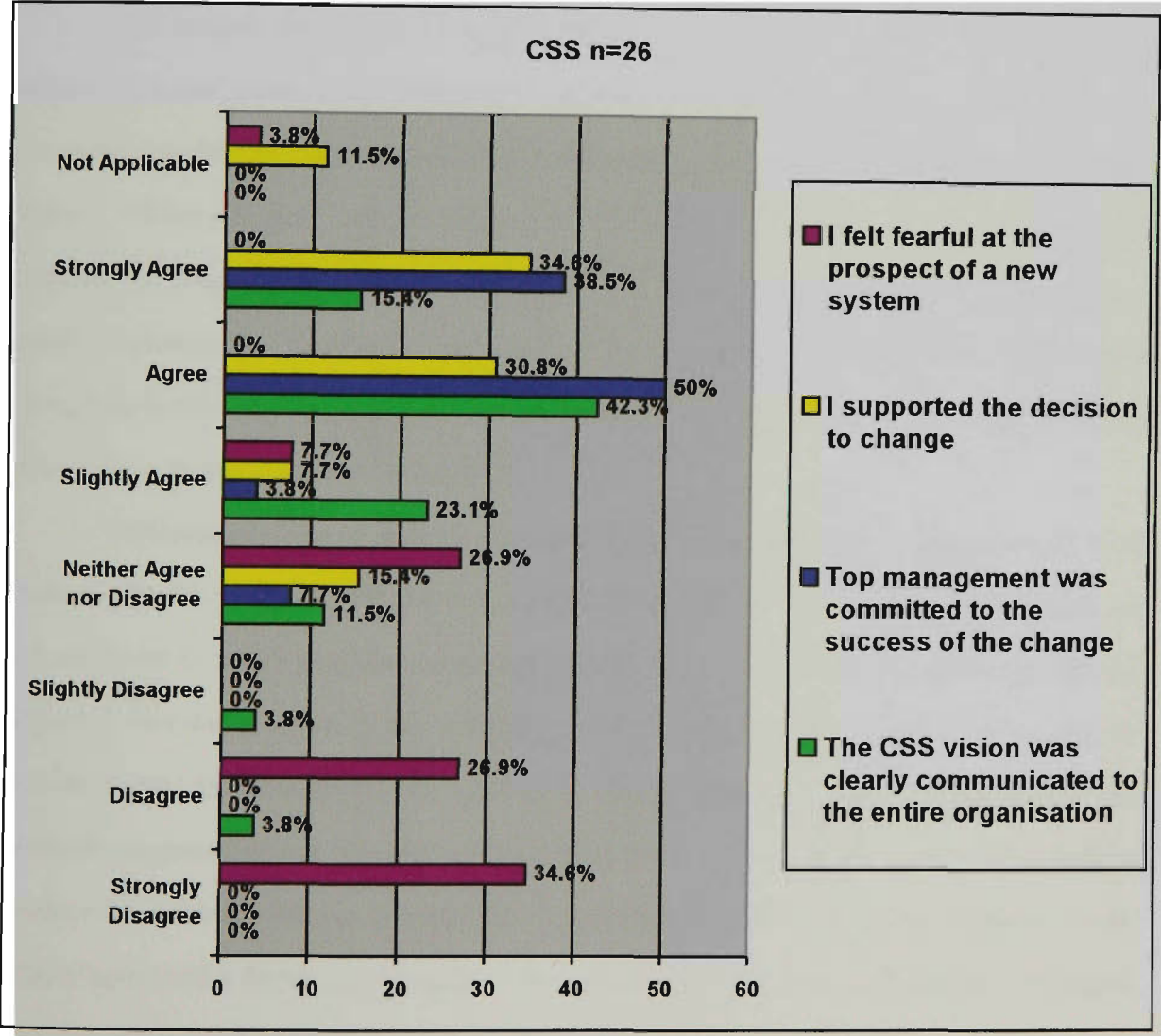


Figure 4.8 provides a very strong view in support of the decision to change, with a statistical mean of 6.19, a higher than average score on the 8-point Likert scale. The standard deviation of 1.23 indicates that the measure of dispersion or spread from the mean is very minimal. In other words,

respondents have tended to either agree or strongly agree with the statement. Likewise, it was the respondents' perception that top management was committed to the success of the change. 50% agreed with the statement and 38.5% strongly agreed. There was no disagreement. From this we can deduce therefore that the CSS management team was aware of the benefits to be attained from Navision Software in realising their goals and objectives. What's more, management ensured that their vision was clearly communicated to the entire organisation so as to create and maintain an element of cohesion among staff. Respondents agreed with this. The statistical mean for this statement scored 5.42 with a standard deviation of 1.24 on either side of the mean. Once again, a higher than average score indicative of a strong agreement with the statement 'The CSS vision was clearly communicated to the entire organisation.' This is extremely positive for an organisation undergoing a change initiative of this size and nature.

The analysis represented a strong disagreement with the statement 'I felt fearful at the prospect of a new system.' An astounding 34.6% 'strongly disagree' while 26.9% either disagree or are impartial to the statement, re-iterating the fact that the majority of people supported the decision to change. Conversely, only 7.7% of respondents slightly agreed that they felt fearful which could insinuate that it is a consequence of age or gender, or alternatively a fear related to a naïveté when it comes to technology. Qualitative results elicited from the questionnaires reflected some diverse viewpoints in relation to the change over, from anticipation to apprehension. The following chapter will elaborate on qualitative data collected.

Following on, training plays a major role in the management of a change initiative. More often than not it is usually the first time that users will have come into contact with the new system, but can also begin to reduce people's resistance to the change. At CSS, 26.9% of respondents strongly disagreed with the statement 'I saw a demonstration of Navision Software prior to attending the training course,' 19.2% disagreed, and a further 19.2% indicated that it was 'Not Applicable,' which obviously suggests that they were not invited to a screening of the product. Hence, when asked to evaluate the statement 'Training provided for the transition to the new system was effective,' 34.6% slightly agree, and a further 19.2% agreed. Opposing the statement was 19.2% of the respondents. This could be a result of incomplete training due to time constraints. In terms of needing additional training now that the system has been in use for a while, 11.5% slightly agree, 30.8% agree, and 19.2% strongly agree. Only 7.7% strongly disagreed, 11.5% disagreed outright, and 3.8% were impartial to

the idea. While the qualitative results will be explored in detail, it was highly obvious that when respondents were asked to suggest improvements to the change process, the common response that emerged was related to the training.

4.3.4 Project Management

The final segment of the questionnaire sought to elicit opinions from respondents on whether the IT project at Controlled Sprinkler Supplies was a success. It was interesting to note their views on whether or not they believed the implementation of Navision Software to be a change management project. Additionally, it set out to establish if the project team kept respondents informed after each team meeting, if respondents were given the opportunity to contribute to the implementation, whether respondents were involved in team meetings, if access to the project plan was provided as a means of communication on proposed changes, and whether the IT project at CSS was managed appropriately by HLB Consulting. *11 Sept.*

34.6% of respondents agreed that the project undertaken at Controlled Sprinkler Supplies was a success. This is illustrated in Figure 4.9. In addition, 34.6% of respondents chose to 'Neither Agree nor Disagree.' This infers lack of knowledge in technology and its potential benefits, reinforced by the responses to the statement 'Navision Software has helped CSS achieve its goals and objectives.' Only 7.7% slightly disagreed. Furthermore, 46.2% identified that the implementation of Navision Software was a change management project.

In terms of ensuring the staff at CSS were kept informed after each team meeting, there seemed to be a wide spread of responses. The statistical mean was calculated at 4.31, just a little above average with a standard deviation of 2.56 from the mean, an indication of contrasting thoughts on the statement. Similarly, there was very little agreement with the statement 'I contributed to the implementation of the project' accentuating that the project team comprised only two representatives from CSS. These two representatives were the CEO and the IT manager, thus decisions impacting the project, in most instances, were made collaboratively by them alone, except where particular people were brought in to shed light on certain issues, for example, the national sales team who were approached regarding special pricing matters. Hence, 23.1% strongly disagreed that they were involved in some team meetings, 7.7% slightly disagreed, but 19.2% adopted the impartial stance or

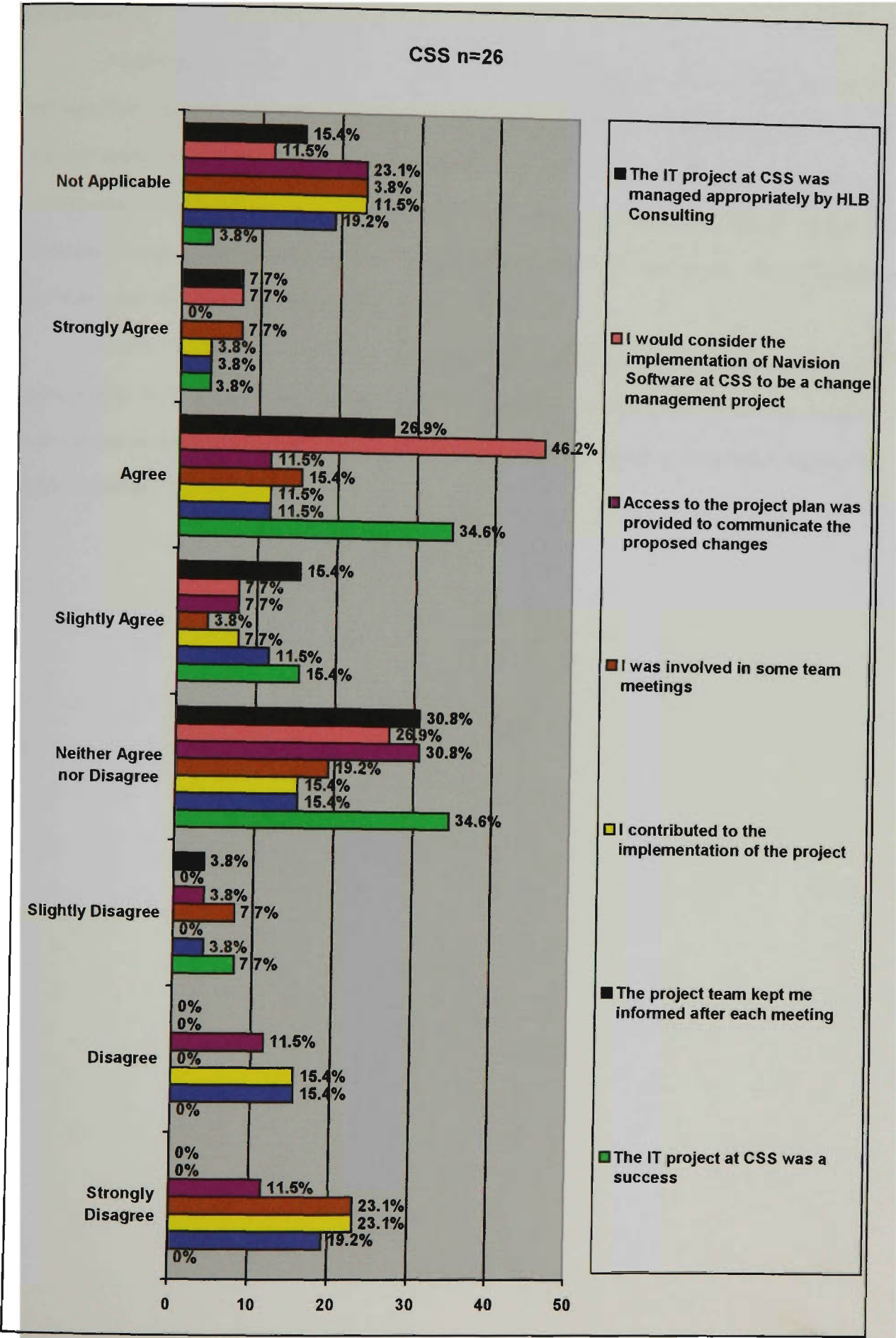


Figure 4.9: Factors Associated with Project Management

regarded the statement as 'Not Applicable.' There was very little agreement from the respondents on this statement.

Access to the project plan as a means of communicating proposed changes to the IT infrastructure was met with some skepticism. 30.8% neither agreed nor disagreed, and 23.1% felt it was not applicable. There was very little conformity with this statement. We can deduce that as a consequence of this respondents were unsure about whether Navision had enabled CSS to achieve its goals and objectives and whether it had enabled CSS to gain a competitive advantage. They simply did not understand the strategy behind the change.

Lastly, the statistical mean calculation based on the statement 'The IT project was managed appropriately by HLB Consulting' scored 5.50 with a standard deviation of 1.50. In other words, there was a strong tendency to agree, suggesting that the structured project management approach adopted by HLB Consulting was effective.

4.4 Pearsons Correlation

Up to this point, descriptive statistics have been presented, incorporating frequencies, measures of central tendency and dispersions. The forthcoming section will concentrate on the inferential statistics, testing for relationships amongst variables, 'the nature, direction and significance of the bivariate relationships,' (Sekaran 1992, p. 265) if any. The Pearson correlation matrix has been used in this case (*see Appendix 6*). Sekaran (1992) states that theoretically, a perfect positive correlation between two variables is represented by 1.0, while a perfect negative correlation would be -1.0 (p. 265). Furthermore, while the correlation could range between +1.0 and -1.0, its statistical significance will highlight whether or not the relationship is due to chance alone or if there is a high probability of its true existence.

4.4.1 Positive Correlations

In this study, many positive correlations were established. Among them, was a strong correlation between Navision Software meeting staff's needs more than Distrib did, and that Navision Software has improved staff's productivity (0.719, $p=0.000$), met staff's expectations (0.618, $p=0.001$), and enabled CSS to be more responsive to its customers (0.534, $p=0.005$), indicating that Distrib reduced their productivity levels, and could not enable them to be responsive to their customers. This indicates that Navision Software was a good 'fit.' In addition, the fact that Navision Software met staff's needs more than Distrib did correlates with the staff contribution to the implementation of the project (0.496, $p=0.010$). Furthermore, staff members who were involved in some team meetings (0.536, $p=0.005$) are more likely to believe that Navision Software meets their needs more than Distrib did because they would be in a better position to understand the goals and objectives behind the change initiative and would be champions of the change. This is confirmed by a statistical mean calculated for the statement that Navision meets my needs more than Distrib did at 5.54 with a standard deviation of 1.84. As the significance level ranges from $p=0.000$ to $p=0.005$, we can be 100% to 95% confident that the correlation amongst these statement is not just due to chance.

Other positive correlations established highlight that Navision Software has improved staff productivity because Navision provides the information they need (0.725, $p=0.000$). Once again, as

Navision provides the information staff need, it appears that it has consequently met staff expectations (0.543, $p=0.004$), and further enabled CSS to be more responsive to its customers (0.506, $p=0.008$).

Subsequently, we can confidently assume that because Navision Software has improved staff productivity, the system has met staff expectations (0.659, $p=0.000$), enabled CSS to be more responsive to its customers (0.759, $p=0.000$), and the CEO at CSS has been a good role model in the change over (0.706, $p=0.000$). In terms of the Information Technology data collected in the questionnaire, generally the system has met people's expectations, and as a result Navision Software has helped CSS achieve its goals and objectives (0.628, $p=0.001$), the CEO at CSS has been a good role model in the change over (0.581, $p=0.002$), and staff contributed to the implementation of the project (0.505, $p=0.009$). From this we can deduce that the CEO played a major role in the changeover. The choice he made in Navision Software was the right one because not only has it enabled people to be more productive as the information they seek is at their fingertips and is readily accessible, but it has also met people's expectations.

Moreover, there was a very high correlation between Navision Software's ability to enable CSS staff to be more responsive to their customers and consequently help CSS to gain a competitive advantage over its competitors (0.822, $p=0.000$). In addition, as staff are able to be more responsive while utilising the new system, it has helped CSS to achieve its goals and objectives (0.689, $p=0.000$). It seems apparent, with a high correlation, that as Navision Software has helped CSS achieve its goals and objectives it is very likely that it is due to the CEO at CSS being a good role model in the change over (0.671, $p=0.000$). He had a vision, and a thorough understanding of the objectives of the project, and Navision brought that to fruition.

Interestingly, due to the fact that the old system caused inefficiencies in business processes, Navision Software has enabled changes to the existing business processes for the betterment of CSS (0.639, $p=0.000$), and as a result, the IT project at CSS was a success (0.573, $p=0.002$). Furthermore, as the old system caused inefficiencies in business processes, the implementation of Navision Software at CSS has been considered, confidently according to the results, to be a change management project (0.569, $p=0.002$). Likewise, the IT project at CSS was a success because the implementation of Navision Software at CSS is considered to be a change management project (0.579, $p=0.002$). This could infer that the project was a success because the inefficiencies have been removed as a result of the implementation of Navision Software.

The strong correlation between the two statements 'The project team kept me informed after each team meeting' and 'I was involved in some team meetings' (0.845, $p=0.000$) should not be viewed in isolation because the descriptive statistics highlight the contrary. Among the respondents, only 3.8% strongly agreed that the project team kept them informed, 11.5% agreed and another 11.5% slightly agreed, the remainder of respondents stated it was not applicable, were impartial or disagreed outright. Likewise, 'the project team kept me informed after each team meeting' and 'access to the project plan was provided to communicate the proposed changes' (0.905, $p=0.000$) scored an extremely high correlation, but again the distribution results indicate otherwise. Perhaps if more people were involved in team meetings, and access to the project plan was made more readily available, there would have been a higher correlation between project success and user involvement.

Finally, there is a very high positive correlation between the project team keeping staff informed after each team meeting and that communication between the project team and the rest of the organisation is considered to be effective (0.831, $p=0.000$). In other words, those kept informed had been recipients of information by the project team via effective communication channels. This eliminated any chance of misinformation being passed onto the rest of the organisation. Results indicate, however, that there was very little exchange of information between the team and the rest of the organisation. This correlation highlights a need to enhance on-going communication. CSS could have benefited greatly as a result.

4.4.2 Negative Correlations

All negative correlations that were established among statements were less than 0.5000.

4.5 Reliability Analysis

Table 4: Reliability Analysis – Scale (ALPHA)

		Mean	Std Dev	Cases
1.	ACCESS	4.6154	2.3677	26.0
2.	ACCURACY	5.5769	1.6291	26.0
3.	ADDTRAIN	5.4615	2.1768	26.0
4.	CHANGEPR	5.6923	1.2890	26.0
5.	COMMITME	6.1923	.8494	26.0
6.	COMMUNIC	4.1923	2.1170	26.0
7.	COMPADVA	4.1923	1.4148	26.0
8.	CONTRIBU	4.3462	2.7268	26.0
9.	DECISION	6.1923	1.2335	26.0
10.	DEMO	4.2308	2.9025	26.0
11.	EASYLEAR	4.9615	1.5357	26.0
12.	EXPECTAT	4.5000	1.9026	26.0
13.	FEARFUL	2.6538	1.7876	26.0
14.	GOALSOBJ	4.8077	1.5237	26.0
15.	INEFFICI	4.8462	1.4055	26.0
16.	INFO	5.1154	1.6082	26.0
17.	INFORMED	4.3077	2.5576	26.0
18.	INVOLVED	4.7308	2.6315	26.0
19.	LIKE DIS	5.1538	1.8696	26.0
20.	MANAGED	5.5000	1.5033	26.0
21.	MODIFY	5.4615	1.5028	26.0
22.	NEEDS	5.5385	1.8381	26.0
23.	OPINIONS	4.3846	2.4832	26.0
24.	PROCESSE	5.1923	1.4148	26.0
25.	PRODUCTI	4.7692	1.9454	26.0
26.	RELIABLE	4.6538	1.6719	26.0
27.	RESPONSI	4.7308	1.6627	26.0
28.	ROLECHAN	4.4231	1.9426	26.0
29.	ROLEMODE	5.4615	1.3033	26.0
30.	SUCCESS	5.0385	1.2484	26.0
31.	SUPPORT	5.5000	1.7720	26.0
32.	TRAINING	4.6154	1.6752	26.0
33.	TRANSITI	4.5769	1.5792	26.0
34.	UPTOMINU	5.7692	1.3359	26.0
35.	USER	4.6923	2.3962	26.0
36.	USERFRIE	5.2308	1.8179	26.0
37.	USERNAV	5.1154	2.3208	26.0
38.	VISION	5.4231	1.2385	26.0

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	187.8462	1378.0554	37.1222	38

Reliability Coefficients			
N of Cases =	26.0	N of Items =	38
Alpha =	0.9295		

The measurement of variables in the theoretical framework is an integral part of any research endeavour. 'The reliability of a measure indicates the stability and consistency with which the instrument is measuring the concept and helps assess the "goodness" of a measure' (Sekaran 1992, p. 173). In order to test the interitem consistency reliability of the questionnaire used in this study, Cronbach's coefficient alpha was applied.

Using SPSS for Windows, the Cronbach's alpha for the 38-item questionnaire (Q9 – Q46) used in this research is 0.9295, as per Table 4.1. According to Sekaran (1992), the closer the reliability coefficient gets to 1.0, the better. Thus, the internal consistency reliability of the measures used in this study can be considered quite strong.

4.6 Conclusion

This chapter presented extensive analysis of the data collected from the survey instrument. The following chapter will present a case study analysis of Controlled Sprinkler Supplies, including a brief historical perspective on how it all began, the industry in which they operate, the target market, the organisation's strategies and the reason for the change. In addition, it will provide an insight into HLB Consulting – Information Systems and its role in the CSS project. Furthermore, it will explore the benefits of Navision Software and the methodology used by HLB Consulting in deploying the technology at CSS. The qualitative data collected from the questionnaires, as well as the interview data and observational data are analysed and presented in the following chapter.

CHAPTER 5 - CASE STUDY – CONTROLLED SPRINKLER SUPPLIES

5.1 Background Information

The case study on which this research paper is based is that of Controlled Sprinkler Supplies, a privately owned company, one of the largest importers and wholesale distributors of irrigation products to the wholesale market in Australia. In 1997, the company was acquired by Collins' family interests, with Peter Boyle as CEO, whilst the company founder remains as the Chairman. Head Office is situated in Heidelberg Heights in Melbourne, Victoria. Additionally, there are four further locations around Australia. These are situated in Adelaide (South Australia), Perth (Western Australia), the Gold Coast (Queensland) and Sydney (New South Wales). Australia-wide, the company employs 42 people.

Controlled Sprinkler Supplies was selected as the case study on which to base the research because of the researcher's relationship with the company. The researcher was employed as the business system's consultant for the IT project undertaken at CSS.

5.2 Methodology

Chapter three described the methodology adopted in the data collection process, which encompassed administering questionnaires, conducting interviews and making observations. This chapter will present information pertaining to CSS in conjunction with the qualitative data obtained during the process. In order to gain a more in-depth insight into the IT project undertaken at CSS, two separate interviews were conducted with the Project Manager, Ms. Angela Johnson, and with the CEO, Mr. Peter Boyle, respectively. Permission to make direct references and use names in this paper has been granted.

The interview with the Project Manager focussed on the recommended method of managing IT projects. Additionally, issues such as change management and essential factors that ensure a project's success were explored. On the other hand, the interview with the CEO was intended to provide an alternative viewpoint. It concentrated on aspects such as the driving force for the change and employee attitudes about the change, including the interstate teams. Furthermore, the change management aspects of the project were also explored as well as the elicitation of the CEO's opinion on the method of managing the project as adopted by HLB Consulting – Information Systems.

5.3 Company Particulars

Controlled Sprinkler Supplies was established in the garage of the home of its original founders, Hal and Pamela Collins on September 14, 1978. The “warehouse” at that time occupied some 250 square feet. The first commercial warehouse for CSS was established in Bulleen, Melbourne in 1980 where the company remained for 18 years. During that time CSS developed into a recognised national operation with the creation of sales offices in New South Wales and Queensland in 1987 and warehousing and sales offices in Western Australia and South Australia in 1988. Warehousing was finally introduced in Queensland in 1991. In 1998, head office relocated to a new warehouse and sales complex comprising some 60,000 square feet in the heart of Melbourne.

Today the company relies on products and services from over 700 suppliers both nationally and internationally and maintains approximately 1500 customer accounts Australia wide. Their unrivalled national distribution network is acknowledged throughout the industry. The brands they represent are recognised worldwide for their first class quality and applications. The secret to the success CSS enjoys is the fact that the company does not manufacture its own products however has actively sought the most comprehensive range of products from a wide and varied group of the world’s leading manufacturers over the past twenty-one years. CSS is now one of the largest importers and distributors of irrigation products to the wholesale customer in Australia attaining number one market share amongst “the Irrigation Professional.”

5.3.1 Mission, Vision, Goals

It is the company’s philosophy to build upon the foundation already laid and inject new impetus to offering its valued customers an even higher level of service. With warehousing and sales offices throughout most of Australia, CSS is well positioned to serve its customers promptly and efficiently with quick delivery of most orders to their door. Since the company’s inception, their product range may have changed and grown but the basic philosophy that the company adopted initially has not, and that is that ‘quality of product and service is the foundation of our business.’

CSS has experienced substantial growth over the past two years by concentrating on its core business activities of the distribution of quality irrigation equipment. The challenge for the company and its people is to continue to meet the demands placed on its operations by its customers. These demands involve delivering the right selection of products at a competitive price, on time with a high

degree of accuracy and maintaining the high level of customer support that CSS has built its reputation on.

The vision, mission and goals need to be communicated to the entire organisation so as to form a cohesive environment whereby everybody understands the goals of the organisation and works toward the achievement of those goals. According to the survey results, there was very strong agreement that the CSS vision was clearly communicated to the entire organisation. One employee, when asked what they believe the mission, vision, goals and objectives of CSS are expressed 'to be ahead of our competitors in technology and also to be a leader not a follower.' The majority of responses to this question indicated a high degree of consistency. As a group, the team at CSS clearly understood that the vision of the company is to be a 'leading company for the importation and wholesale distribution of irrigation and other products.'

Furthermore, to manage the change initiative successfully, not only does the entire organisation need a thorough understanding of the organisation's direction but so too must the project manager. After all, it is the project manager's role to 'take the executive sponsor or CEO's vision of change and you facilitate it for them with their assistance,' Angela Johnson conceded.

CSS has developed an approach of a 'local branch and local knowledge backed by a National strength'. The individual branches manage sales and service functions closer to the customer, while drawing on Head Office as a central processing centre for functions which require greater scale to achieve lower costs. But, none of this is possible without the commitment and dedication from its people. CSS places great emphasis on the importance of the people that make it all happen. They interact with and support the customer on a daily basis. It is their philosophy that knowledge is a company's most vital asset.

5.3.2 Organisational Strategies

The focus of CSS has been on establishing a solid, but adaptable, foundation for the future. The four key areas of its business include:

- Customers
- Products
- Distribution; and,
- Infrastructure

Based on these key areas, strategies have been adopted to ensure success for the company. Firstly, the customer is the most important person in the company. CSS concentrate on creating a loyal customer, not a one-time sale. Price is not their major focus. They have continually focused on the customers they have traditionally served and that is “the Irrigation Professional.” The aim has always been to get as close as possible to those customers, to understand their needs, support their activities and provide outstanding service. It is vitally important that as a team they collectively provide the drive and enthusiasm to position Controlled Sprinkler Supplies as the first choice provider of service, advice and products with their customers. Conversely, the same approach must apply to their suppliers.

The second area of focus for the organisation is its product range. As its market becomes more competitive, its customers have more choice. CSS has ensured that its products remain desirable and relevant to the customer’s needs. Product development and selection is a vital factor that dictates their future success, and it is constantly undergoing review to remain current and in demand. With the introduction of new warehousing at Heidelberg Heights, one of the main initiatives was to deliberately reduce stock within the branches to improve cash flow.

A third area of focus is distribution of these products to the customer. The challenge for the company is to get products and services to people faster, in more innovative ways, no matter where, when or how they wish to conduct their business, with a greater degree of accuracy. CSS is a national wholesale distributor of professional irrigation equipment. They do not have the distraction of manufacturing as their competitors HR and Toro/Irritrol have. It is estimated that in terms of dispatch, CSS can now deliver to over 95% of Australia overnight. This is an important and primary factor for a number of key customers retaining their services. CSS pride themselves on their ability to meet their customer’s demand of reliable, overnight delivery, while their opposition can seldom match this service.

Providing the backbone to the business in enabling it to provide competitive product and service is the infrastructure, of which information technology plays a major role. While this is less visible to customers and suppliers, efficient behind-the-scenes operations are crucial to CSS. Looking forward, their competition is expected to remain intense and this may lead to further pressure on the gross margins. In such an environment, consistent and steady growth will depend increasingly on improvements in efficiency in all areas of the company’s operations. With any business experiencing

growth, its management, administration and subsequent financial control and infrastructure is fundamental in its continuing ability to expand in a controlled and timely fashion. With this objective in mind CSS commenced the development of a comprehensive computerised Management Information System (MIS).

This system forms an integral part of their infrastructure and provides the management team and their individual divisions with financial data enabling daily business decisions, which effect both the company and its clients, to be made based upon accurate and current information. The system has been redesigned over a period of 12 months to create a reliable, large volume-processing environment, which can accommodate the company's data requirements over the next five years. Additionally the question of Year 2000 compliance has been addressed and rectified where necessary. Significant difficulties in the overall design of the original system has necessitated a number of positive modifications to be made to the current design to overcome the uncertainties and design faults of the past. The MIS has been designed to facilitate trending of data and improve decision making, allowing management to focus on critical information. With the 3500 product lines and 1500 customers, CSS maintain it is of critical importance that they have the ability to detect trends and identify problem areas promptly to ensure that the necessary corrective action is taken.

Utilising synergies, and sharing information and resources between the various divisions is an important daily function of the group. As with any expansion you need to continually re-engineer and develop various processes to improve the MIS and overall infrastructure. Using customised software applications, CSS is now able to interface with all areas of its operation. This application of technology enables the company to complete its tasks more efficiently and effectively. Every possible area of operation within CSS is computerised with specific customer and financial data reports being generated daily, weekly or monthly for review and analysis by both management and clients. Eventually, customers will have access to their own corporate information electronically, via the Internet which will include full access to account status, invoicing, credit memos, back orders and current stock availability, sales history and on line ordering. The idea is to remove the focus on maintaining paperwork and putting focus back into servicing customers and ensuring delivery of products into the marketplace.

Finally, one of the key factors in maintaining customers is consistency in the way they conduct business. Consistency is a vital ingredient to a successful business. An organisation needs to remain consistent in the way it conducts itself with customers, with its business methodology, pricing and discount structures, reliability and dependability, ongoing support and service, delivery (both on

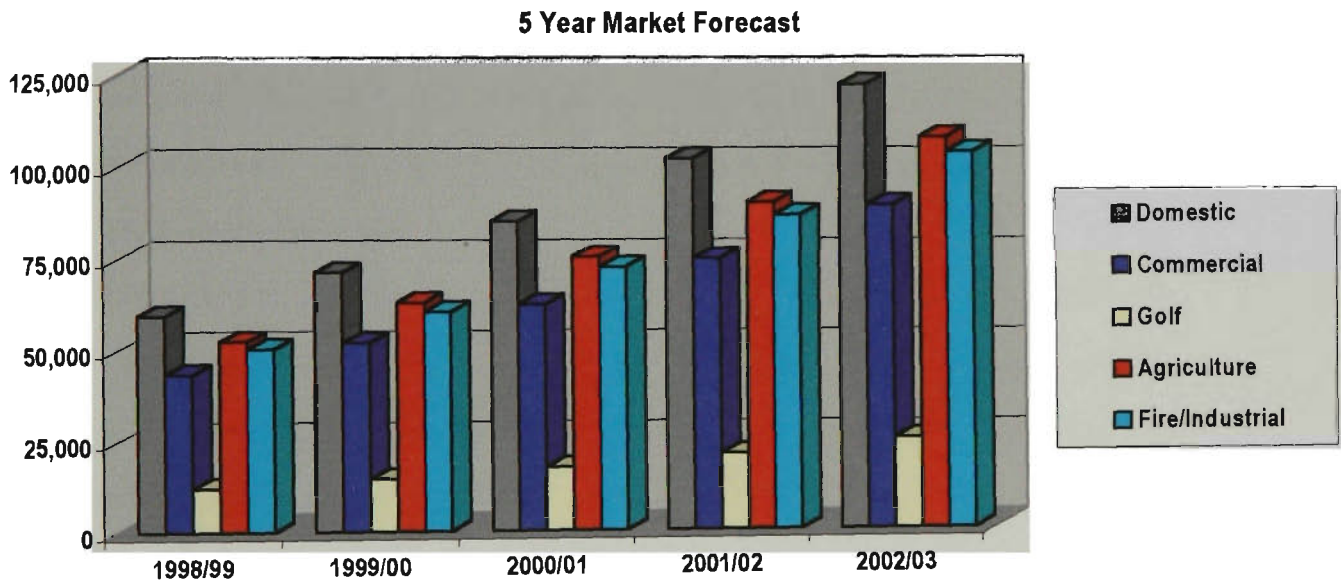
time and with accuracy), responsibility and ownership of mistakes and their prompt rectification, marketing, promotion and advertising, regular calls by representatives and customer service. All these areas need a consistent approach. Consistency builds trust between the customer and Controlled Sprinkler Supplies and by incorporating information technology into their business strategies, this is made possible. Adopting this attitude ensures that they sustain ongoing business with customers, and in due course the growth they seek will be accomplished.

5.3.3 Irrigation Industry

One of Controlled Sprinkler's greatest challenges is to be the best within its industry: the irrigation industry. The overhauled information technology infrastructure puts CSS at the forefront of the competition. Mr. Peter Boyle described that 'I think what we have done is create a technology that is above and beyond a lot of our competitors. A lot of our competitors are running old products. We work in a very unsophisticated sort of market.' The current Australian demands for CSS irrigation products comprise the Domestic/Professional Do-It-Yourself, Commercial, Agriculture, Golf, Fire Protection and Industrial markets. It is estimated that their core product lines currently represent a total market potential of some AUS\$216 million. Based on company research the breakdown of these markets is as follows:

Table 5: Controlled Sprinkler Supplies Five Year Market Forecast

5 Year Market Forecast - Targeted Market Segment Only (,000)					
	1998/99	1999/00	2000/01	2001/02	2002/03
Domestic/Professional DIY	59,000	70,800	84,960	101,952	122,342
Commercial	43,000	51,600	61,920	74,304	89,165
Golf	12,000	14,400	17,280	20,736	24,883
Agriculture	52,000	62,400	74,880	89,856	107,827
Fire Protection/Industrial	50,000	60,000	72,000	86,400	103,680
Total Market	216,000	259,200	311,040	373,248	447,898



The company’s market share in an evolving industry has risen with CSS now firmly dominant in the Domestic and Commercial Irrigation arenas. This reflects their successful efforts to improve customer service and strengthen the market position of the company in response to the prospect of increased competition. If the company is to meet its growth projections, it must aggressively attack the other markets of Golf, Fire and Industrial. In order to increase market share and maintain a dominant position CSS has created joint initiatives to strengthen relationships with major customers and international suppliers.

Due to virtual saturation of the marketplace the company’s most prudent method of expansion is the introduction of additional and complementary product lines. Significant progress has been made

in a number of key areas, including alternative sources of supply, product quality and new product development. It is imperative in terms of Controlled Sprinkler Supplies' progression and expansion that new ranges of product are continually being introduced to compliment existing lines.

5.3.4 Organisational Structure

To facilitate national expansion of the business a management committee was established which reports via the CEO directly to the Board of Directors. This committee comprises Hal Collins (founder and Executive Chairman), Peter Boyle (CEO), the National Sales Manager and the National Warehouse and Supply Manager assisted by both National Product Managers. A new addition to the committee is the inauguration of a General Manager – Finance and Administration. The role of the management committee is to provide direction and guidance within each of the given areas of business within CSS and to ensure the smooth and correct implementation of any initiatives. It is critical that as the corporate management committee, they provide clear and distinct supervision to their staff members in the execution of their duties.

CSS is very much a centralised organisation with satellite branches. The Melbourne contingent houses the central warehouse and principal data repository. The major change in general administration was the division of Victoria into its own region with a Head Office operation and the states as cost centres. With this introduction CSS can analyse and monitor the true performances of each state. The onus is placed on each state manager to generate profits within his or her own given territory. Each branch is primarily a sales and marketing office with warehousing facilities were applicable.

5.4 The CSS Project

5.4.1 Impetus for Change

Prior to the inauguration of the new CEO in April 1997, CSS had been using a legacy system called Distrib to manage its inventory, order entry processes, and debtor and creditor accounts. However, the system was ‘fairly antiquated in its look, in its feel, in its processes’ (Mr. Peter Boyle) and subsequently, no longer fulfilled the organisations objectives, which included:

- Streamlining order processing;
- Improving customer responsiveness;
- Managing financial statements;
- Providing accurate, up-to-date, readily available information to customers, staff and management;
- and,
- Managing inventory levels and improving efficiency in stock replenishment.

With a plethora of IT systems on the market, searching for the ‘best-fit’ application can be an overwhelming task. ‘I had the best overall knowledge of the technology that we needed,’ so with his expertise, and profound knowledge of IT, Mr. Boyle was ‘volunteered into the job’ (Mr. Peter Boyle) of finding the most suitable application for the Controlled Sprinkler Supplies. As part of the search, Mr. Boyle looked at 31 different packages. His fundamental criterion for a new system was quite simply it had to have a ‘standard world wide accepted database so that in future if we wanted to change the application, the data was in a readily accessible format’ (Mr. Peter Boyle). After spending six months reviewing, attending seminars and product presentations, and carrying out some crash test processes, Navision Software was chosen as the new Enterprise Business Management Solution to be implemented at CSS. From a cost perspective, it was comparative with other systems, but what was outstanding was its reportability, ease of use, user-friendliness and flexibility. It was decided that ‘for our people that would be perfect’ (Mr. Peter Boyle). The results obtained from the questionnaires based on staff opinions accentuate this. It was apparent that Navision Software met people’s expectations, improved their productivity, provided information at their fingertips and above all it was user friendly.

‘When I started two years ago, I had a different vision as to the way things would be run and I think Navision dovetailed into that as well,’ said Mr. Boyle when asked about changes in business processes. There were some obvious inefficiencies in the way things were being conducted using the original system. With Navision Software, CSS have molded their business to suit. ‘The basis of our entire business is Navision.’ CSS are confident in the system and what it is capable of enabling them to achieve. ‘What we have done is tip every part of our business into this because we want to be sure that everything we are doing is an accurate, up-to-date reflection of our business.’

With technology at a standard as that of Navision, ‘it puts them at an advantage over their competitors who don’t have a sophisticated system in place,’ explained Angela. Peter said ‘if you understand the power and what you can get out of it then you can put it to your best benefit.’ The entire organisation needs to be aware of this, and according to the survey results, there seems to be some doubts as to whether Navision Software has enabled CSS to gain that competitive advantage or to achieve its goals and objectives.

A change initiative within an organisation is generally the result of strategic implications. In other words, a decision to change is more often than not one made by top management and proliferated down the chain of command. At Controlled Sprinkler Supplies, Mr. Boyle stated ‘I think that it was important...it was such an important part of our strategic progress’ to review all the relevant products on the market. Angela Johnson likened it to a ‘pyramid as you move down towards the bottom, the executive sponsor and other members of the management team can see all of the business objectives and reasons why a system needs to be changed.’ At the lower level, employees only see as much as their job responsibilities dictate usually. If management and staff cohesively envisage the same future for the company there is a greater chance of aligning business goals with individual goals, and hence a greater chance of success.

Change, although it happens tumultuously, can come accompanied with mixed reactions. Sometimes people can be excited while others can be threatened. As Mr. Boyle reflected ‘unfortunately people see change sometimes as a threat rather than a challenge. It is not designed to be a threat.’ According to the survey results, most staff members said it was about time and were excited by the change, others were unsure of the implications associated with a change of this nature. When asked what their first impressions were of the forthcoming change to Navision, people’s comments revealed a diversity of views. Those who viewed the change positively described their impressions as:

- Anticipation
- Greatly needed step
- Terrific – I waited anxiously
- With forecasted company growth, a new system was necessary
- Excitement
- Make us more efficient
- About time!
- Overdue

On the other hand, responses by those who were not as positive about the change stated their impressions as:

- Reservation
- Concerned
- Why?
- Apprehensive
- Slightly Scared
- Hard to learn

Observations made by the researcher during the training, and especially in the first few weeks after the cutover from Distrib to Navision Software revealed that those people who were not so positive were usually female of all age groups and males probably greater than 51 years of age. Mr. Boyle agreed that only ‘about 85-90% accepted it.’ In an attempt to reduce resistance, he offered all members of his organisation the opportunity to attend Microsoft training courses. ‘Probably about 70% took us up on that...the people who bothered to do the courses just embraced Navision very quickly, learnt it and have not been threatened by it. The ones who didn’t bother doing it, or didn’t bother spending the time.....it has been a culture shock.’ The staff survey results confirmed that there was very little fear at the prospect of a new system, although there was a small contingent that slightly agreed that they were apprehensive about the change. Once again, this could be a consequence of age or gender, or the mere fact that people did not want to take up the company’s offer to attend the Microsoft training courses. The idea behind the Microsoft training was to ease people into a new generation of technology with which they were about to be confronted. Peter Boyle is of the same opinion. ‘Maybe people of that era (old-style) say well I am not going to be around for much longer, why should I even

bother? Unfortunately a lot of people within this operation are not as computer literate as they need to be.'

Nevertheless, the CEO of Controlled Sprinkler Supplies firmly believed that as a basic principle of business these days, people must keep up with technology. In dealing with staff members who felt frustrated with the change, Peter expressed that 'we have to persevere with them and explain the reason why things are done. We have tried to instill initiative into people. We have told our people that if there is a problem, ring me and I will walk down and we will solve it on the spot. That is how we are addressing resistance to change. People need to appreciate that there is a learning process involved.' The CEO's hand-on approach is indicative of his commitment to the change and ultimately the success of the project. The project manager describes the CEO as 'exceedingly IT literate, solely responsible for the production of all the financial reports, as well as being the network administrator and being able to pull data from old systems.' This could explain his frustration with people sometimes not being able to comprehend concepts as quickly as he may. Peter conceded that 'I pick up things pretty quickly...and we expect people to pick it up at the same pace.' Both the CEO and the IT manager, the two CSS representatives on the project team, often mention to their people that they can be obtuse, instigating negative consequences such as low morale and self confidence, especially in terms of their ability to utilise the technology effectively.

5.4.2 HLB Mann Judd – The Organisation

The origins of HLB Mann Judd extend back to 1926. As members of HLB International, HLB Mann Judd firms are part of a worldwide network of respected accounting firms with more than 300 offices in over 90 countries. Through this international network, the company can obtain the benefit of HLB's global experience and provide its clients with access to accounting expertise through out the world. HLB Mann Judd firms provide their clients with a comprehensive range of business and financial services in addition to the audit, accounting and taxation services that are central to its practices. The principle aim is to provide profit generating solutions to its clients' business problems and give them the assistance and support they need to be successful.

5.4.2.1 HLB Consulting

HLB Consulting – Information Systems is the consulting arm of HLB Mann Judd. The division was established in 1994 with the primary aim of assisting its clients with their IT requirements, and aligning technology with their business needs. This service has shown the fastest rate of growth of all the firm’s services, typically reflecting the high rate of change, innovation and development in the information technology industry.

The division’s team of consultants has been involved in a wide range of services including [HREF3]:

Table 6: HLB Consulting – Information Systems’ Services

Project Management & Consulting Services	• Strategic Planning for information technology • Project Management of IT projects • Business Process Design and Review • Needs Analysis • Computer systems reviews • Computer equipment recommendations • Application software and development • Systems analysis • Computer training
Enterprise Business Management Systems	• Sales, implementation, development, training and support of Navision Software
Network Support & Implementation, including:	• Specialist Network Support / Design / Installation • Network Administration • Microsoft Certified Professionals (MCP's) • Certified Novell Engineers (CNE's)
Accredited Resellers	• Compaq & IBM • Network & PC Software

In December 1997, HLB Consulting made a strategic decision that would impact its future direction. An alliance with Navision Software Australasia (the Australian office of Navision Software a/s) was formed, which meant that a commitment was made to become a Navision Solution Centre (NSC), a value-added reseller of Navision Software. All solution centres are assigned their own target markets thus avoiding the possibility of other solution centres competing against each other. Certified Navision Solution Centres have the professional competence necessary to:

- Support and train on an on-going basis;
- Implement Navision solutions quickly and efficiently; and,
- Analyse client needs, specific industries and markets, and local business requirements [HREF4].

In other words, they are considered to be the ‘local support with expert knowledge.’ Hence, HLB Consulting – Information Systems revised its vision to read:

HLB Consulting – Information Systems will be the biggest Navision Solution Centre in Australia.

Comprising a young, dynamic team of 13 people, HLB Consulting – Information Systems, their mission statement reads:

We will win by recognising our clients as people and using the dynamic culture of our team to provide professional services in a timely and efficient manner.

Due to their professionalism, high ethical standards and excellent customer service, HLB Consulting – Information Systems, were recruited to administer the new IT project at CSS. Having engaged in business dealings with HLB in the past, Mr. Boyle felt assured dealing with them again because ‘you know it is a stable organisation and what they do, they do professionally’ (Mr. Peter Boyle).

5.4.3 Navision Software

Founded in Vedbaek, Denmark in 1984, Navision Software is a leading global provider of innovative enterprise business management solutions for mid-size companies. Approximately 80% of Navision’s solutions are sold internationally [HREF5]. Together, the alliance between Navision Software a/s, Navision Software Australasia P/L, and the Navision Solution Centres ‘forms an extremely productive and effective organisation that delivers basically the same product throughout the whole world’ [HREF6]. ‘Navision provides solutions for the SME sector (small to medium-sized

enterprises) – businesses with a turnover of between \$20 million and \$150 million’ [HREF7]. According to Mark Goddard, PricewaterhouseCoopers global risk management solutions partner, ‘small and medium-sized organisations are looking for a global business solution representing world’s best practice but without the complexity of some of the large-end ERP solutions.’ This reiterated Mr. Peter Boyle’s excerpt regarding his search for a world standard product; an essential purchasing criterion for CSS.

Garth Laird, Managing Director of Navision Software Australasia, believes that the software players in Australia have a definite advantage over the top players in this industry. He states that ‘if you look at the majority of businesses in the Asia-Pacific, we don’t necessarily find that they require a supply-chain product. What they require is a product that is designed for an organisation that fits into a supply chain. In other words, a product that is designed for the people who supply the nuts and bolts that make the supply chain entirety’ (Plakalo 1999, p. 60).

An enterprise business solution, as defined by Hans Pedersen, Director of Product Management at Navision Software a/s, is ‘a unified system architecture for solving problems of an entire business organization’ [HREF8]. It encompasses all facets of the business in one central repository. In other words, it is an integration of an organisation’s business processes such as customer service and sales automation into one homogenous system that is accessible by the entire corporation. That is the underlying benefit of an enterprise solution. And it is highlighted in the figures which, according to a study conducted by AMR Research Inc, the enterprise market is expected to grow 37% to reach \$52 billion by 2002 [HREF8].

In light of this, Mr. Boyle acknowledged that ‘one of the things we did with Navision was say what is the system capable of and how does that affect the processes as we do things today. A whole range of processes such as warranties, booking product in and out, how we handle sample accounts, how we handle customers were reviewed. We looked very closely at our self-performance, and said rather than doing it this way and modifying the system, why don’t we reverse the position and look at what we’re doing and how we do it and we have had to modify our processes to fit in with the system.’ Navision Software enabled CSS to re-engineer their business processes, and improve efficiency within the organisation by centralising all aspects of the business in one system.

5.4.4 The HLB Way

‘A major benefit of working with HLB Mann Judd was that its people brought together text book expertise as well as practical industry knowledge, a combination that is very effective but one that is rarely seen’ (Mr. Peter Boyle). The Information Systems division of HLB Consulting adopts a structured approach in the management of IT projects undertaken. After reviewing several alternative ‘best practice’ project management methodologies related to IT specifically, they decided that the Rob Thomsett methodology, called Third Wave Project Management, was the preferred method. It ‘had the appeal of being the one that came with a number of tools that were immediately useable, and was being used by a number of large organisations implementing IT anyway. It was very, very relevant’ conceded Angela Johnson, project manager at HLB Consulting. While the methodology deals with the procedural aspects of project management, it concentrates on issues such as ‘managing the personalities involved, making sure you had an executive sponsor, techniques to work through as facilitator to get a group of people to agree on scope and objectives’ (Ms. Angela Johnson).

Angela Johnson defined project management as ‘a juggling act...more to do with communication skills, and organisational ability.....the ability to understand what a client wants. And to be a politician and a diplomat and all of those things are more important than technical skills in a specific area.’ When asked if she believed that IT deployment is best managed using project management methodologies, she emphasised that ‘I don’t think you can manage it any other way. I think using good project management methodologies is the only way to do it.’

When CSS engaged HLB Consulting – Information Systems to implement Navision Software, the project had officially begun. To mark the start of the project, the following events transpired:

1. A project team was formed, encompassing members of CSS and HLB;
2. The executive sponsor was elected, in this case Peter Boyle, CEO of Controlled Sprinkler Supplies;
3. A Rapid Activity Planning (RAP) session was conducted whereby objectives, risks, stakeholders, and timeframes were established;
4. The strategic project management plan was formulated; and,

A needs analysis was conducted to obtain as much information about the company, its processes, and its inefficiencies. It also served to provide the consultants with information pertaining to the

business to aid in the application of the Navision solution to the businesses needs so as to provide a “best-fit” solution and ultimately to achieve the organisation’s objectives.

The initial phase of a project is the Rapid Activity Planning session which as the name suggests is a process of thrashing out issues such as the formation of the project team, outlining the scope and objectives of the project, establishing timelines, determining communication strategies and risk strategies. The end result is a project plan. ‘We can’t solve all the problems but we try to make sure we have highlighted exactly what it is – the project, who is going to do what, what the potential problems are and come up with some strategies to deal with the problems before they arise’ (Angela Johnson).

Peter Boyle stated, ‘everything is one in the planning, not one after the event.’ Although CSS had not budgeted to spend that much time and money on the planning, in hindsight it was fundamental to the project’s success. ‘A lot of time was spent listening to what we wanted and addressing the problems,’ Peter revealed. This method adopted by HLB Consulting was a direct contrast to the way the Distrib vendors implemented the legacy system. ‘It was appalling. It was implemented backwards.’ With HLB Consulting – Information Systems, ‘we got what we wanted virtually at the start of the system rather than at the end. There was genuine interest in what we wanted.’

The project at CSS was an atypical project, Angela suggested. Her reasoning was simply ‘because of the hands-on involvement of the CEO. A key factor in the success of the Controlled Sprinkler project is having an executive sponsor who is fully conversant with all aspects of the project, knew exactly what we were trying to achieve, had the authority to sign off for extra funds or resources, and pushed the project as a priority with his team, and acted as a liaison where it might have conflicted with other priorities the team had.’ Due to his reigning control over the project, Mr. Boyle did not require representatives from each department of CSS. The project team comprised the CEO and IT manager from CSS, the project manager, the business system’s consultant and technical specialist from HLB Consulting – Information Systems.

Angela Johnson, on one hand, was adamant about the necessity of involving users in a project suggesting that ‘it is an absolutely critical part from day one from the project planning session to have involvement from key users from the client organisation.’ However, she confirmed that while ‘it was a very unusual project, it worked well’ and key users were invited to contribute to team meetings at various stages during the project. When asked why he chose not to involve a representative from each

department, Mr. Boyle responded ‘because I had 12-18 months of listening to all their problems, so I knew precisely what they were. A system is never going to fit everyone’s expectations perfectly.’ Having said that, he conveyed that ‘I think we actually addressed 100% of their problems.’

As the planning stage is predominantly a process of establishing scope, goals, objectives, methods of communication, and timelines then ‘it is just a matter of managing the project through to its conclusion making sure that as requirements change along the way, that it is managed. They are projects that are managed by exception,’ Angela declared. Further to this, the staff at CSS, according to the survey results, tended to agree that the project was managed appropriately by the team at HLB Consulting – Information Systems.

5.4.5 Invaluable Training

Further training would have improved the change management process. Both Peter Boyle and the respondents agreed with this theory. Without doubt, training is fundamental to the success of a system’s implementation, yet due to its expensive nature, it is often sacrificed. By neglecting the training requirements of the end user, an organisation can potentially increase the risk of resistance as well as increase the dependence on the consultants during the transition period, thus absorbing more of the budget than is initially anticipated. At CSS, preliminary training was provided as an introduction to the Navision system. However, due to the substantial differences between Distrib and Navision, trainees struggled with the changes. Some training sessions were not delivered in their entirety due to limited time, and as an executive decision was handed down, rather than completing it, a refresher course was preferred. This involved the consultant scheduling time slots for one-on-one training. It was more specific to each employee’s job requirements, as opposed to the general overview. According to the survey results, when asked for suggestions on how to improve the change process, one CSS staff member stated ‘improve the training – you must understand the business and the people you are training.’ This was a common suggestion among staff survey results. More hands on training, and follow-up training was definitely recommended. As Peter Boyle mentions, the training was expensive. In hindsight; however, he would have liked to have spent more time on training.

According to Angela, the ‘training roadshow’ performed by HLB Consulting – Information Systems played a dual role in the implementation of Navision. It involved the consultant travelling interstate to each of the branches and introducing Navision to them by conducting some introductory

training sessions. Secondly, it illustrated to the interstate offices what new business processes were to be adopted. Respondents, when asked to comment on the effectiveness of the training, agreed that it had been valuable, but would have preferred that it be designed to cater for their specific needs.

5.5 Project Success

‘A successful project is one that works,’ according to Mr. Boyle. Furthermore, Angela Johnson stated that ‘a project needs to be done to be called successful.’ Traditionally, a project is measured on its ability to come in on time and on budget. Both the CEO of Controlled Sprinkler Supplies and the Project Manager of the CSS project disagreed. Peter stated ‘you can’t switch the tap off if you have exceeded the budget....I would much rather have a system that works and provides us the information we need and is an asset to our operation than one that is cheaper.’ Angela stated ‘it is possible to have a project that goes over time and budget where if you had satisfactorily met the expectations of the client that they would consider it to be a successful project.’ Survey results indicate while 34.6% agreed that the project undertaken at CSS was a success, about the same number of people took an impartial stance, inferring perhaps a lack of understanding of goals and objectives.

Overall, Mr. Boyle asserted:

‘I think it has been successful. I think the greatest part of it is that the system meets your expectations. I think in this instance it has. I think it is exactly what we want: the technology, the advancements, the developments that Navision are doing. It’s all those things but getting it right in the first place. You can have the best people, but if the product is not right it is never going to be a success.’

CHAPTER 6 – DISCUSSION & CONCLUSION

6.1 Introduction

Using Controlled Sprinkler Supplies as the case study, this research endeavour was undertaken to determine the factors that contribute to the success of information technology projects. A thorough analysis of the relevant literature raised some interesting issues that were subsequently examined both via a survey instrument administered to the employees of CSS and interviews conducted with the project manager and the CEO respectively. Moreover, observations were made by the researcher, which was made possible due to the researcher's relationship with the organisation. The information gathered was in both a quantitative and qualitative form. This final chapter will serve to summarise the findings that transpired as a result of the research.

6.2 Summary of Findings

6.2.1 Research Question Examined

What factors determine the success of an IT project?

Organisations that engage in IT projects do so because they have usually revised their business strategies and decided that in order to achieve their goals and objectives, they need to leverage from information technology. Hence, technology becomes a key component in their strategy formulation. If they embark on a journey to implement new technology that from the outset does not meet their needs and expectations, then ultimately the project is headed for failure. Results indicated that for CSS, Navision Software was 'perfect for our people' (Mr. Peter Boyle). It met staff's expectations in that it improved their productivity, provided information at people's fingertips enabling them to be more responsive to customers, and it was user-friendly. Clearly, the technology must meet people's expectations because, as Mr. Boyle stated, 'you can have the best people, but if the product is not right it is never going to be a success.' Traditionally, project success was measured on the basis that it was completed on time and within budget; however, if it is completed on time and within budget but fails to accomplish all of the intended objectives then chances are the project will be challenged or impaired. Therefore, the organisation's expectations need to be managed appropriately throughout the project's lifecycle to ensure ultimate success.

6.2.1.1 Vision, Communication and Culture

As the literature conveys, 'no element is more important like a sensible vision' (Kotter 1996, p. 7) as it helps to direct, align and inspire the actions of the people within the organisation. Once the vision is formed, the process of changing the 'unwritten rules of the game' (Scott-Morgan 1994, cited in Clarke & Meldrum 1999, p. 77) begins. The CEO who was described as 'exceedingly IT literate' by Ms. Angela Johnson, had a vision of the way things would be run and 'Navision dovetailed into that' (Mr. Peter Boyle). Due to its reportability, ease-of-use, user-friendliness and flexibility, Navision Software enabled Controlled Sprinkler Supplies to achieve its goals and objectives. These were fundamentally the streamlining of order processing, improving customer responsiveness, managing financial statements, providing accurate, up-to-date, readily available information to customers, staff and management, managing inventory levels and improving efficiency in stock replenishment. CSS can confidently declare that 'the basis of our entire business is Navision,' indicating that all problems had been addressed and that the goals and objectives had been achieved.

The 'notoriously poor success rate of IT projects usually has more to do with failed communications than lack of technical expertise' (Crawford 1999, cited in Mace 1999, p. 85). Upon examination of the survey results at CSS, it was apparent that the vision was clearly communicated to the entire organisation. Their vision was to be ahead of competitors in technology and to be a leading company for the importation and wholesale distribution of irrigation and other products. Evidently, there was a clear understanding of the company's mission, vision, goals and objectives in general. However, there was some confusion as to whether staff thought the goals and objectives of the Navision implementation were realised.

In response to the statements that 'Navision Software has helped CSS achieve its goals and objectives' and 'Navision Software has helped CSS to gain a competitive advantage over its competitors,' most respondents were neither in agreement or disagreement. This could indicate a lack of understanding of the strategic benefits to be attained from the technology as the survey results bring to light the fact that the project plan, the document prepared at the outset to outline the project goals, objectives, deadlines, deliverables, communication strategies, risk strategies, and stakeholders, was not made readily available as a form of communication on proposed changes. Had it have been made available, it would have been more likely that staff would have had a better understanding of management's intentions.

6.2.1.2 Top Management Support

Management, especially the CEO, was extremely committed to the IT project undertaken at CSS. The project manager stated that ‘a key factor in the success of the Controlled Sprinkler project is having an executive sponsor who is fully conversant with all aspects of the project, knew exactly what we were trying to achieve, had the authority to sign off for extra funds or resources, and pushed the project as a priority with his team, and acted as a liaison where it might have conflicted with other priorities the team had.’ According to Mutsaers *et al* (1997), as ‘IT has an ever increasing role to play in the realisation of success in most organisations, then this implies that IT needs the appropriate (increasing) attention of top management’ (p. 117). This was further substantiated in the survey results, which highlighted no disagreement by staff with regard to the commitment by top management to the success of the change. It was the CEO’s pivotal focus and hands-on involvement that contributed to the success of the journey. He was truly a role model to his staff.

6.2.1.3 Participation and Ownership

Due to his reigning control over the project, Mr. Boyle did not require representatives from each department of CSS. He stated that ‘because I had 12-18 months of listening to all their problems, I knew precisely what they were.’ The results of the study clearly indicate that participation was a rare occurrence. The majority of staff did not see a demonstration of Navision Software before the implementation commenced. Furthermore, there was little agreement amongst respondents in terms of being kept informed after each team meeting and contributing to the implementation of the project. It is highly probable that this is the reason why some people were impartial to the idea of the project’s success as well as uncertain about the achievement of the goals and objectives.

According to Adizes (1996), it may take longer to make a judgement with a group of people, but generally the decisions can be implemented more quickly and easily when people feel some ownership of the problem (cited in Hudson 1999). Admittedly, the implementation of Navision Software was an accelerated process and therefore was completed as scheduled because the CEO knew exactly what he needed to achieve with virtually no involvement from staff members. Only where necessary were key employees, such as the sales team, invited to contribute to project team discussions.

6.2.1.4 Project Management

IT projects need to be managed in such a way that they focus on enabling business change rather than successful deployment of a new technology (Iggulden 1999). Hence, project management is the process in which change is managed by means of a structured methodology with the principal aim to ensure successful deployment of new technology and ultimately deliver business value. HLB Consulting – Information Systems adopted the Rob Thomsett ‘Third Wave Project Management’ methodology because it ‘had the appeal of being the one that came with a number of tools that were immediately useable, and was being used by a number of large organisations implementing IT anyway. It was very, very relevant’ (Ms. Angela Johnson). While the methodology deals with the procedural aspects of project management, it concentrates on issues such as ‘managing the personalities involved, making sure you had an executive sponsor, techniques to work through as facilitator to get a group of people to agree on scope and objectives’ (Ms. Angela Johnson). ‘A lot of time was spent listening to what we wanted and addressing the problems’ (Mr. Peter Boyle). This was fundamental to the success of the project because ‘we got what we wanted virtually at the start of the system rather than at the end’ (Mr. Peter Boyle). There was a general consensus by respondents about the appropriateness of the management process adopted by HLB Consulting – Information Systems.

6.2.1.5 Training

As training is a fundamentally vital aspect of a change initiative, its importance should not be underestimated. While the survey results indicated that training at CSS was considered generally effective, most people recommended that additional, more specific, training was required so as to improve the change management process. ‘Improve the training – you must understand the business and the people you are training,’ claimed one respondent. Further to this, Mr. Boyle would have liked to spend more time on training. Understandably, training is an expensive exercise and can setback a project’s budget, but it must not be relinquished. Costs associated with training can ‘equal or even exceed the budgets set aside for new information systems’ (Bashein *et al* 1994, cited in Lloyd-Walker & Cheung 1999, p. 36). But a ‘lack of training in computer skills can be a major problem for firms’ (Zeffane 1994, p. 11). This often results in laying blame on the technology’s inability to meet expectations. At Controlled Sprinkler Supplies, staff had been provided a general overview of the new system and with more than half the respondents claiming that their computer literacy was ‘good,’ they

found Navision Software easy to learn. Nonetheless, more hands on training, and follow-up training, were definitely recommended.

6.2.1.6 Resistance to Change

Resistance to technology can fundamentally ‘make or break’ the successful implementation of a new system. Organisations will encounter resistance when organisation members are uncertain about the causes and effects of organisational change; where they are unwilling to give up existing benefits; or, they are aware of weaknesses in the changes proposed (Stoner *et al* 1985). The deployment of Navision Software at Controlled Sprinkler Supplies experienced very little resistance. According to the results, there was strong disagreement amongst respondents with regard to experiencing fear in relation to the new system. Most people supported the decision to change as they felt it was ‘long overdue’ and ‘a much needed step.’ Any apprehension that was observed by the researcher during the training and especially in the first few weeks after the cutover from Distrib to Navision Software revealed that those people who were not so positive about the change were usually female of all age groups and males probably greater than 51 years of age. Mr. Boyle agreed that only ‘about 85-90% accepted it.’ The change was not designed to threaten or frighten anyone, it was a challenge for all involved as they had not experienced an IT-related change initiative of this nature in the past. Having attended Microsoft training courses offered by the management, most employees embraced the change. ‘Probably about 70% took us up on that...the people who bothered to do the courses just embraced Navision very quickly, learnt it and have not been threatened by it. The ones who didn’t bother doing it, or didn’t bother spending the time.....it has been a culture shock’ (Mr. Peter Boyle).

6.3 Conclusion

In relation to the IT project at Controlled Sprinkler Supplies, the CEO admitted, 'I think it has been successful. I think the greatest part of it is that the system meets your expectations. I think in this instance it has. I think it is exactly what we want: the technology, the advancements, the developments that Navision are doing. It's all those things but getting it right in the first place. You can have the best people, but if the product is not right it is never going to be a success.' The project manager conceded that despite the fact that it would be considered an atypical project due to the CEO's hands on involvement, 'it worked well.' While time and budget constraints should not be disregarded, alone they are not the only measures of a project's success.

Overall, the project at Controlled Sprinkler Supplies met the organisation's expectations, top management were committed to the change, the goals and objectives were achieved and unlike the literature, there was very little resistance accompanied with the introduction of the new technology. There would have been greater consensus by respondents in terms of the project's success if there was more involvement during the implementation process to enable buy-in and ownership. Furthermore, if access to the project plan was accessible as a form of communication the staff would have better envisioned the goals and objectives as well as the strategic benefits. In addition, the benefit of providing training should not be overlooked as it can further enhance the potential for IT success.

6.4 Further Research

In undertaking this study, other research problems arose which could prove to be interesting for further research. These include:

- How to ensure success of global IT Projects considering communication, planning and user involvement across boundaries;
- How leveraging from IT can aid strategy realisation considering the rate at which it is developing;
- The impact training has on the deployment of IT; and,
- How to measure the success of IT deployment.

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APPENDICES

Appendix 1: Letter of Introduction & Questionnaire

6th September 1999

CSS EMPLOYEE SURVEY:
FACTORS DETERMINING THE SUCCESS OF INFORMATION
TECHNOLOGY PROJECTS

Since November 1998, Controlled Sprinkler Supplies has been engaged in the implementation of a new computer system with HLB Consulting, the consulting arm of HLB Mann Judd; a large firm of chartered accountants and business advisers. The IT project involved the changeover from Distrib to Navision Software after it had become apparent that the current system could no longer fulfil the organisation's requirements. The old system had reached its use by date. After many months of meeting with the project team, extensive planning and re-engineering of existing business processes, the new system went 'live' on 17th March 1999.

As a final year student of the Master of Business program at Victoria University of Technology, an integral component of the assessment is to complete a research thesis. With Peter Boyle's consent, I am conducting some research on the factors that determine the success of IT projects, in particular the project undertaken at CSS.

As an end-user of Navision Software, and an indispensable participant in this project, I am seeking your opinions and feedback on certain issues. The information you provide will help me to better understand the implications of a project of this size, and illustrate how improvements can be made for future projects. Please respond to the questions frankly and honestly. Your response will be kept *strictly confidential*.

Thank you very much for your time and cooperation. I greatly appreciate your help in furthering this research endeavour. If you have any queries please don't hesitate to contact me on 9258-6761.

Yours sincerely

Therese Chakour
HLB Mann Judd (Vic) Pty Ltd

DEMOGRAPHIC INFORMATION	INFORMATION TECHNOLOGY	CHANGE MANAGEMENT	PROJECT MANAGEMENT
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Firstly, in order to enable us to categorise the results of this questionnaire, we need to establish a few demographic details.

1. Gender?

1	Male	
2	Female	

2. Age?

1	Less than 21	
2	Between 21 and 31	
3	Between 32 and 41	
4	Between 42 and 51	
5	Greater than 51	

3. How long have you worked for CSS?

1	Less than 1 year	
2	1-5 years	
3	5-10 years	
4	More than 10	

4. What is your role at CSS?

1	Management	
2	Sales	
3	Warehouse	
4	Accounts	
5	Purchasing	
6	Other	

5. In which CSS office are you employed?

1	Victoria	
2	Queensland	
3	South Australia	
4	Western Australia	

6. How would you describe your computer literacy?

1	Basic	
2	Average	
3	Good	
4	Excellent	

7. Have you had any formal computer training?

1	Yes	
2	No	

8. How much of your workday do you spend using your computer?

1	2-4 hours	
2	4-6 hours	
3	6-8 hours	
4	>8 hours	
5	Nil	

DEMOGRAPHIC INFORMATION	INFORMATION TECHNOLOGY	CHANGE MANAGEMENT	PROJECT MANAGEMENT
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Please *circle* the most appropriate response that you believe closely represents your opinion. If you find that a question is not applicable or is difficult to understand, allowance has been made at the end of the questionnaire to allow you to elaborate on topics discussed during the survey.

1	2	3	4	5	6	7	8
Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree	Not Applicable

9. I was a long-time user of Distrib.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

10. I liked Distrib.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

11. I am a regular user of Navision Software.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

12. The training I received in Navision Software was effective.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

13. Navision Software meets my needs more than Distrib did.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

14. Navision software can easily be modified to meet my needs.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

15. Navision provides the information I need.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

16. I am satisfied with the system's accuracy.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

17. Navision Software is user friendly.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

1	2	3	4	5	6	7	8
Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree	Not Applicable

18. Navision Software was easy to learn.

1 2 3 4 5 6 7 8

19. Navision Software provides information that is up-to-the-minute.

1 2 3 4 5 6 7 8

20. Navision Software has improved my productivity.

1 2 3 4 5 6 7 8

21. There is support available if I am in trouble.

1 2 3 4 5 6 7 8

22. The system is reliable.

1 2 3 4 5 6 7 8

23. The system has met my expectations.

1 2 3 4 5 6 7 8

24. The new system has enabled CSS to be more responsive to its customers.

1 2 3 4 5 6 7 8

25. Navision Software has helped CSS to gain a competitive advantage over its competitors.

1 2 3 4 5 6 7 8

26. Navision Software has helped CSS achieve its goals and objectives.

1 2 3 4 5 6 7 8

DEMOGRAPHIC INFORMATION		INFORMATION TECHNOLOGY		CHANGE MANAGEMENT		PROJECT MANAGEMENT	
1	2	3	4	5	6	7	8
Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree	Not Applicable

27. The CEO at CSS has been a good role model in the change over.

1 2 3 4 5 6 7 8

28. The CSS vision was clearly communicated to the entire organisation.

1 2 3 4 5 6 7 8

29. Top management was committed to the success of the change.

1 2 3 4 5 6 7 8

30. Training provided for the transition to the new system was effective.

1 2 3 4 5 6 7 8

31. The new system has changed my role significantly.

1 2 3 4 5 6 7 8

32. The old system caused inefficiencies in business processes.

1 2 3 4 5 6 7 8

33. Navision Software has enabled changes to the existing business processes for the betterment of CSS.

1 2 3 4 5 6 7 8

34. I supported the decision to change.

1 2 3 4 5 6 7 8

35. I saw a demonstration of Navision Software prior to attending the training course.

1 2 3 4 5 6 7 8

36. I felt fearful at the prospect of a new system.

1 2 3 4 5 6 7 8

37. I need additional training in Navision Software now that I have been using the system for a while.

1 2 3 4 5 6 7 8

DEMOGRAPHIC INFORMATION		INFORMATION TECHNOLOGY		CHANGE MANAGEMENT		PROJECT MANAGEMENT	
1	2	3	4	5	6	7	8
Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree	Not Applicable

38. The IT project at CSS was a success.

1 2 3 4 5 6 7 8

39. The project team kept me informed after each meeting.

1 2 3 4 5 6 7 8

40. My opinions were sought from the team at every opportunity.

1 2 3 4 5 6 7 8

41. I contributed to the implementation of the project.

1 2 3 4 5 6 7 8

42. I was involved in some team meetings.

1 2 3 4 5 6 7 8

43. Access to the project plan was provided to communicate the proposed changes.

1 2 3 4 5 6 7 8

44. Communication between the project team and the rest of the organisation was effective.

1 2 3 4 5 6 7 8

45. I would consider the implementation of Navision Software at CSS to be a change management project.

1 2 3 4 5 6 7 8

46. The IT project at CSS was managed appropriately by HLB Consulting.

1 2 3 4 5 6 7 8

ADDITIONAL QUESTIONS

47. What do you believe are the mission, goals and objectives of CSS?

48. What were your first impressions when informed of the change to Navision?

49. Could you provide any suggestions on how to improve the change process?

Any further comments on any of the subjects raised in this questionnaire would be greatly appreciated.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

Thank you for taking the time to fill in this questionnaire.

Please return the completed questionnaire to:

Therese Chakour
HLB Mann Judd
Level 32, Nauru House
80 Collins Street
Melbourne VIC 3000

Appendix 2: Sample of CEO’s Interview Transcript

Interviewer: And they will give you that edge over the competition, or do you think you have already achieved that?

Interviewee: Well I think if you see what our competition are running, we have come up with a modern approach to I suppose an accounting package. It is just not an accounting package. It is a lot more. We are getting to the stage now where we rely on it daily, in fact I think we rely on it too much. But it does the work of umpteen hundred people if you had to produce invoices. Most importantly I think what we have done is create a technology that is above and beyond a lot of our competitors. A lot of our competitors are running a lot of old products. We work in a very unsophisticated sort of market. For example, when I say unsophisticated, our three major opposition in Australia is Torro, Irritrol, they are running a SAP system that they can't get to work. It was implemented about 14 – 15 months ago and it is a disaster, and HR Products, our other opposition, we don't know what they are running. In saying that, it is not terribly sophisticated. I think that is the one thing with Navision you can get a lot of sophistication out of it when you start adding a lot of modules onto it. What they've done is set themselves up with a technology that will go so far, to actually expand into new things such as e-commerce is going to cost them a fortune. Not only that they will have a product that is not necessarily compatible or within sort of their own sort of software. That is one of things I like about Navision. You get a total package and you add things on as you need it and it works pretty well. In saying that, one of the things we have been complimented on is our aggressive approach to updating our technology. It means that we are able to provide quality reports back to our customers, we are able to assist them, in terms of telling them how they are going with us. No one has ever bothered, we work in an unsophisticated market, we have 1500 odd customers, and seriously only 300 – 350 have got e-mail and actually use computer systems, and I'd say another 500 use faxes. The rest are at out the back of utes with their dogs and blue singlets and off they go. And they have got a mobile phone and that is what they call technology. So in saying that what we have got to try to do and one of the things we are using it for with our contact management and all that side of things is for the marketing side of our business. We want the ability for them to have a look at their accounts and all that side of things which the e-commerce will bring that into play. And we are sort of looking at the management of our sales team with reporting and the management of our warehouses. It's all in one, which makes it very easy. What happened with Distrib of course is we never quite got it to the stage of one system working, so we were virtually running two systems in parallel. And it is competitive ease, it's just the way it works, with Microsoft query and all those sort of things. But in saying that we are writing all our reports in Navision now. So we are now implementing more of the stuff we were doing in Query back into Navision. When I find 15 minutes a day to do it.

Interviewer: Having said all that, would you consider then that a project is a change management process?

Interviewee: Depending on the project, yes. I think in our instance, yes it was because what had happened with Distrib was that quite simply we kept modifying the system, one of the excuses Uniware always had was that we had modified the system so much, what people were doing was simply saying I want it to work like this, so you would have one person saying I want it to do this and another saying I want to do it like this, and you would have 6-8 different mixes all going into the system. And one of the things we did with Navision was quite simply say, look, what is the system capable of and how does that affect the processes as we do things today. The perfect example of that was the way that we would print, well first of all create an order, print the order out, walk the order to the warehouse, we would then have the warehouse tell us what was available and what wasn't, after the picking slip was done, it would be walked back here and the invoice would be generated out of here. And that was the process all around the country-side. So what we did was, well hang on a sec, firstly we need to be able to print the order in the warehouse. And it would be much simpler if we had someone sitting in the warehouse processing the invoice, because they can also put the invoice with goods, and confirm the picking slip, do the filing what have you. Which effectively means that your salesperson or sales office could focus on selling rather than processing paper work, which was really a very important thing for what we were doing. In saying that we also looked at how we handled warranties, how we booked product in and out, how we handle sample accounts, how we handle customers. There was a whole range of processes we actually reviewed and said well we do it this way, why? And I suppose the question I asked for two years was WHY do we do it this way? And 9 times out of 10 was well that's the way we have always done it. It does not necessarily mean it was right or wrong. But, it was an opportunity to look at the system and say ok, how does it generate invoices, how does it handle warranties, how does it handle the accounting side of our business, who needs to be doing what. Let's

define who is doing what, if we need to introduce more people, let's do it. So it has been I suppose a situation where we have looked very closely at our own self-performance, and said rather than doing it this way and modifying the system, why don't we reverse that position and look at what we're doing and how we do it and we have had to modify our processes to fit in with the system. Now there is a lot of reasons for doing it but most importantly, you don't have to modify the system which means that in the future everyone understands that as you add things on you don't have to worry about the implementation of additional things, whether it be assets, or whatever it is. The process is there and it is standard so therefore the system that you have got adapts to any new modules that you may want to introduce rather than saying oh well hang on we made this modification over here and what is the flow through affect of that modification through the whole system. And that is one of the problems with Distrib, once again, it should have been addressed at day 1 rather than year 4.

Interviewer: So you would have had a lot of confidence in the system if you were willing to change your business processes to suit?

Interviewee: I think we were very confident in the system and what it could do. We had to be, because it was a very large investment for the company. And when you go to our chairman who is 78 years of age and tell him we want to spend \$350000 - \$400000 on technology it is like you are going to do what? I think in the past computers have been best defined as expensive calculators to Hal. But in saying that we were off line about 4 weeks ago for 3-4 hours on a Monday morning and he was running around going well what's going on, we have got to have this thing up and running. If you understand the power and what you can get out of it then you can put it to your best benefit. One of the problems we did have with Distrib, because things weren't working, there was 3 or 4 different processes going on, there were 3 or 4 different ways of doing things. What I have said here is if we are going to run the system, let's put everything into it, so that therefore it is an up to date, accurate reflection of our business both financially and the processes, our stock, our inventory and everything we do. So don't start doing spreadsheets for sales and everything on the side, let's get the system to do it all. We are becoming reliant upon it but in saying that it is a very cost-effective way of doing it. All your information, all your sales history, you have got everything, it is all there. It is ready for anyone within the company to utilise. Rather than someone having a little black book with sales figures in it and someone else having a red book with sales figures in it and they never balance at the end of the month because someone adds up differently to other person. What we have done is tip every part of our business into this and that is why we are pushing for the cost package and everything else to be completed because we want to be sure that everything that we are doing is as I said an accurate up to date reflection of our business. And we want to know daily if not hourly where we are at.

Interviewer: How did your staff react to these changes in business processes?

Interviewee: As I said, I think most of them, about 85-90% accepted it. And they saw it.....unfortunately, people see change sometimes as a threat rather than a challenge. And I think that some of those people did see it as a threat, you know hang on, this is how I have been doing it, and they are very protective of their own position. But it is not designed to be a threat, it is designed to be a challenge. I think that a lot of people have accepted the challenge and I think it is probably one or two that still haven't, and they may never.

Appendix 3: Sample of Project Manager's Interview Transcript

Interviewer: And what about at CSS, did you think there were any major pitfalls, and if so, how were they overcome?

Interviewee: I don't think we had any huge pitfalls at CSS. I think CSS was a project that because of the very nature of the way things were done had a heavy requirement on resources from their perspective for thing like data transfer. Because of the knowledge they had in house they were pretty determined to do things themselves, and because there are only 24 hours in a day and there were only two people doing it that tended to push the timeline out a little bit. I don't think there were any major pitfalls in that project.

Interviewer: So you talk about the timeline having being pushed out, does that mean the project had now gone over budget and you required additional time?

Interviewee: Not so much that it went over budget I think pretty much that there was never a specific dollar value upper limit budget on the CSS project. We gave an indication of what the figure would be for implementation and training and pretty much came in within that figure. In terms of time frame, with projects there tends to be two immovables usually for a client, there is time and there is budget but you can't have both. So if the timeline can't be shifted, then the budget usually extends. If the budget is immovable then the timeline will move out. Now with CSS the things that made the project run over time were things that were outside the control of the PM team from HLB. They were to do with issues of data transfer and extracting information from the existing CSS system. I don't think in that particular case you could say that that meant that the project failed to meet its objectives because the objective is always to meet the client's expectations. And in that case the client was happy to negotiate his expectations to say ok let's be realistic, I can't do it by the date that we specified. There is too much work for the team at CSS, we'll move the date.

Interviewer: So I guess it was good that he was flexible enough to allow you to do that.

Interviewee: Yep.

Interviewer: Could you or do you think it is necessary to improve on a project of this size and nature, or do you think what was done was exactly by the book and was enough to ensure that the project was successful?

Interviewee: No I think you can always improve. I don't think there is any such thing as the perfect project. On time, on budget, even I don't think is a good enough measurement. A project needs to be done to be called successful. Sometimes on time and on budget doesn't necessarily mean it was a successful project. I think the single criteria for measuring if it was successful is the client happy and were their expectations met. Because the other things were all movable. In the case of CSS, yes certainly I think we could have improved it, you can always improve the way that something is done.

Interviewer: Ok, we talked about the executive sponsor's commitment, communication, the planning stage, user involvement, are there any other factors that you can think of that we may have excluded that are absolutely essential in ensuring a project's success?

Interviewee: We talked about expectations?

Interviewer: The client's expectations? So meeting the client's expectations?

Interviewee: Meeting client's expectations, but before you can meet the client's expectations you have got to have a very clear understanding of what they are. So it is very critical to ensure that our understanding of what they want is really what they want and meeting that specific expectation not what we think they really need. But I think apart from that area then the things that you said are the important things.

Appendix 4: Sample of Qualitative Data Matrix

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
• Navision	• Initially swayed away because of its proprietary database ⁷ • A number of features were very beneficial and were a lot different to what was being offered traditionally by the existing software suppliers ⁷ • It proved to have everything we wanted ⁷ • Its Microsoft compatibility meant it was robust, and a very versatile database ⁷ • For our people that would be perfect ¹¹ • I think that with Navision you can get a lot of sophistication out of it when you start adding new modules onto it ²¹ • I think we were very confident in the system and what it could do ²⁴ • We are becoming reliant on it but it is a very cost-effective way of doing it. What we have done is tip every part of our business into this because we want to be sure that everything we are doing is an accurate up-to-date reflection of our business ²⁴		• In talking to one of the sales guys, he made the comment that the new system was 'excellent.' You can do so much with it ⁸	• Very happy with Navision • Am still exploring its limits

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
	• The basis of our entire business is Navision ⁴¹ • All the reports we read on the Internet, in accounting magazines, the reviews, Navision was there with everyone ⁴¹ • We analysed that and said well why is that? Obviously because it is a very good product, an internationally accepted product, it had international recognition, people were recommending it, we had a lot of support ⁴¹ • Navision had a lot of power in the market place. It was a young, progressive company who were aggressive in their expansion and that is important ⁴¹			
• Change Process	• Technology block but when they get into it they have difficulties doing it ¹⁴ • Everyone was offered the opportunity to do Microsoft training, Excel and Word ¹⁴ • Probably 70% of the people took us up on that ¹⁵			• Impressions of the change process: • Anticipation • A product that will provide flexibility and information • Open minded • Greatly needed step • Terrific – I waited anxiously • Reservation on how complicated it would be • Concerned for the time span to implement

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
Resistance/Acceptance	- Those that bothered to do the courses just embraced Navision very quickly, learnt it, and have not been threatened by it ¹⁵ - The ones who didn't bother doing it, or didn't bother spending the time and just looking at the system and everything else I think has	- You will encounter pockets of negativity when selling change to users who have been using the same system for 15 years and their entire job has been to put data into the system not to get data out ²⁶ - It is very much the role of the ES of CEO to make	- Initially, CSS staff were very afraid of the prospect of a new system ¹ - Accounts Staff reluctant to use Navision ² - They often make comparisons to Distributions ³ - The CEO and IT manager tell the accounts staff to their face that they are	- Happy to hear we would have more information and history for sales and marketing evaluation - With forecast company growth, and new system was necessary - Concern for loss of information - Why? - Excitement - More efficient - No double entry - Accuracy in reporting - Could only be an improvement in Distributions - Apprehensive behaviour - Slightly scared - Big step - Harder to learn - About time - Improvement on Distributions - Good idea – Overdue - New changes were met with some scepticism - I was very willing to make the change

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
	been a culture shock ¹⁵ • Those members who did not want to do the courses offered basically they have had to learn on the run, which has been frustrating to them ¹⁷ • Reactions to change in business processes – 85-90% accepted it ²⁵ • Unfortunately people see change sometimes as a threat rather than a challenge. It is not designed to be a threat, it is designed to be a challenge. I think that a lot of people have accepted the challenge and I think it is probably one or two that still haven't and they may never ²⁵ • We have to persevere with them and explain the reason why things are done ²⁵ • We have tried to instil initiative into people and in the past in this company it has been a problem as it was driven out of them by the previous MD ²⁵ • We have told our people that if there is a problem ring me and I will walk down and we will solve it	everybody on the project team or everybody touched by the project aware of the importance to the organisation as a whole ²⁶ • In normal project teams where you have representatives from each different division of the business then they almost become like disciples of the change so that those project team members have to be so convinced that is a good thing for the business so they can go back and speak to their peers about it in such a way that it filters through that this change is good to overcome the negativity ²⁶	obtuse and they did not concentrate at the training ⁶ • Accounts staff are very rigid in their learning. They know what they have to know for their job and that is about it. They are not intuitive ⁹ • Once a comment was made by a member of the accounts department that the new system was going to lead her to her death ¹¹	

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
	on the spot. That is how we have been addressing resistance to change ²⁸ • People need to appreciate that there is a learning process involved ²⁸ • In hindsight, look at the people who that are pretty reliant on the system, and the ones who haven't understood it, they're the most computer illiterate people in the company ³⁵ • Maybe people of that era (old-style) say well I am not going to be around for much longer, why should I even bother ³⁵			
• PM Process – Project Team	• No representatives from each department, just the CEO and the IT Manager • Because I had 12-18 months of listening to all their problems, so I knew precisely what they were ³⁰ • A system is never going to fit everyone's expectations perfectly ³⁰ • I think we understood pretty well people's problems and concerns ³⁰ • We went round and spoke to people after we made the decision to buy Navision ³⁰	• Comprises an executive sponsor who is absolutely critical, is high enough in the client organisation and has sign off authority on things ⁶ • A project manager from HLB ⁶ • An internal project person from the client, so that it is someone who acts as a liaison point ⁶ • Project team members that we pull in from time to time ⁶ • The project then proceeds	• The project team did not include members of the user base ⁵ • Apparently at CSS team meetings, information obtained at the project team meetings were imparted and staff opinions were sought ¹²	

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
	• Asked them what they didn't like about Distrib and compared that to what Navision can offer ³⁰ • I think we actually addressed 100% of their problems, we haven't implemented 100% of their problems ³⁰ • I think the process was accelerated by the fact we knew what we were looking for ³⁰	• according to plan ⁶ • While we may not have had key users as part of the core project team we have pulled them in at different stages where we needed them, incl., meeting with members of the national sales team, stock control guy ¹¹ • It was very unusual but I think it worked well ¹¹		
• Project Success Factors	• A successful project is one that works ³⁸ • You can't switch the tap off if you have exceeded the budget either. I would much rather have a system that works and provides us the information we need and is an asset to our operation than one that is cheaper ³⁸ • I think it has been successful ³⁸ • I think the greatest part of it is that the system, meets your expectations. I think in this instance it has ³⁹ • I think it is exactly what we want. The technology, the advancements, the development that Navision are doing ⁴⁰	• A key factor in the success of the Controlled Sprinkler project is having an executive sponsor who is fully conversant with all aspects of the project, knew exactly what we were trying to achieve, had the authority to sign off for extra funds or resources, and pushed the project as a priority with his team, and acted as a liaison where it might have conflicted with other priorities that the team had ¹³ • Not having an executive sponsor can trip you up, or you may have someone listed as an ES but they don't really qualify because		

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
	• It's all those things but getting it right in the first place ⁴² • You can have the best people, but if the product is not right it is never going to be a success ⁴²	they don't have the ability to sign off on cheques, or to troubleshoot on behalf of the project ¹⁹ • This is the single biggest pitfall ¹⁹ • On time, on budget, even I don't think is a good measurement of a project's success ²¹ • A project needs to be done to be called successful ²¹ • I think the single criteria for measuring if it was successful is whether the client is happy and were their expectations met ²¹ • Before meeting the clients expectations you have got to have a clear understanding of what they are. So it is very critical to ensure that our understanding of what they want is really what they want and meeting that specific expectation not what we think they really need ²¹ • It is possible to have a project that goes over time and budget where if you had satisfactorily met the expectations of the client that they would consider it		

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
		to be a successful project ²⁷ It is equally true to say that you can have a project that comes in on time and on budget where if the expectation and the perception of the end users and the client are that the system does not live up to the expectations, then you have failed utterly ²⁷		
Training	- In hindsight I would have liked to spend more time on training ³⁵ - It is also very expensive ³⁵ - A week after the training, people spent a week doing it and it was all fantastic, then week 2 we don't understand this and that, week 3 people were pulling their hair out, week 4 we sat down and addressed their problems ³⁵ - On further training – I don't think it will enhance their ability all that much. They're all there for a specific job and don't necessarily think it would be of much benefit ³⁶		Training in Melbourne for the sales team was not completed due to lack of time. When continuation of the training was scheduled the CEO made the decision that perhaps a refresher was a better idea ¹³	- Follow up training is definitely required - More hands on training - Perhaps a brief/summarised edition of the training - Training should have been on a system which is the same as the CSS database - Follow up training - More extensive training sessions - Improve the training – you must understand the business and the people you are training - More training
Change Management Project?	- In our instance it was a change management process ²² - One of the things we did	- I think it is definitely a change management process ²² - Whilst acknowledging that		

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
	with Navision was say what is the system capable of and how does that affect the processes as we do things today. The perfect example was the way we would create an order, print the order, walk it out to the warehouse, the warehouse would then tell us what was available and what wasn't, after the picking slip was done, it would be walked back and the invoice generated out of the office 22 • It would be much simpler to enable the order to be printed in the warehouse, someone sitting in the warehouse processing the invoice, they can also put the invoice with goods, and confirm the picking slip, do the filing 22 • A whole range of processes such as warranties, booking product in and out, how we handle sample accounts, how we handle customers were reviewed 22 • We looked very closely at our self-performance, and said rather than doing it this way and modifying the	change management is an integral part of a project, it is very rarely specified as a separately articulated part of the project plan 22 • Change management comes up under risk and communication strategies, where the project team and ES identify that the change in work practices, change in environment and systems actually pose some sort of a risk that needs to be managed and in that respect it would show in the project plan 22		

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
	system, why don't we reverse that position and look at what we're doing and how we do it and we have had to modify our processes to fit in with the system ²³			
• Top Management Commitment	• On CEO's commitment -- Oh I am just a clog in this wheel⁴² • It comes back to everyone's involvement⁴² • You can't just say it lies on one person⁴²	• The exec sponsor (the CEO) is exceedingly IT literate, solely responsible for the production of financial reports, as well as being the network administrator. In that respect CSS was an atypical project,¹¹ • A key factor in the success of the Controlled Sprinkler project is having an executive sponsor who is fully conversant with all aspects of the project, knew exactly what we were trying to achieve, had the authority to sign off for extra funds or resources, and pushed the project as a priority with his team, and acted as a liaison where it might have conflicted with other priorities that the team had¹³ • It was an unusual project because of the hands on involvement of the CEO¹⁷	• The CEO was committed to the project 100%⁴ • The CEO has become very proficient in writing his own reports⁷	

	C.E.O.	P.M.	OBSERVATIONS	STAFF RESULTS
		The ES would normally be the champion of the change in the organisation ²³		

**Appendix 5: Sample of Frequency Distributions, Mean and
Standard Deviations**

	N Valid Statistic	Mean Statistic	Median Statistic	Mode Statistic	Std. Deviation Statistic	Variance Statistic
Navision Software meets my needs more than Distrib did	26	5.54	6.00	6	1.84	3.38
I was a long time user of Distrib	26	4.69	5.50	6	2.40	5.74
I am a regular user of Navision Software	26	5.12	5.50	7	2.32	5.39
Navision Software has helped CSS achieve its goals and objectives	26	4.81	4.50	4	1.52	2.32
Navision Software has helped CSS to gain a competitive advantage over its competitors	26	4.19	4.00	4	1.41	2.00
The new system has enabled CSS to be more responsive to its customers	26	4.73	5.00	4	1.66	2.76
The system has met my expectations	26	4.50	5.00	6	1.90	3.62
Navision Software has improved my productivity	26	4.77	5.00	4a	1.95	3.78
Navision Software was easy to learn	26	4.96	5.00	6	1.54	2.36
The training I received in Navision Software was effective	26	4.62	5.00	4a	1.68	2.81
I felt fearful at the prospect of a new system	26	2.65	2.00	1	1.79	3.20
I supported the decision to change	26	6.19	6.00	7	1.23	1.52
Top management was committed to the success of the change	26	6.19	6.00	6	0.85	0.72
The CSS vision was clearly communicated to the entire organisation	26	5.42	6.00	6	1.24	1.53
The IT project at CSS was managed appropriately by HLB Consulting	26	5.50	5.50	4	1.50	2.26
I would consider the implementation of Navision Software at CSS to be a change management project	26	5.69	6.00	6	1.29	1.66
Access to the project plan was provided to communicate the proposed changes	26	4.62	4.00	4	2.37	5.61
I was involved in some team meetings	26	4.73	4.50	1a	2.63	6.92
I contributed to the implementation of the project	26	4.35	4.00	1a	2.73	7.44

	N Valid Statistic	Mean Statistic	Median Statistic	Mode Statistic	Std. Deviation Statistic	Variance Statistic
The project team kept me informed after each team meeting	26	4.31	4.00	1a	2.56	6.54
The IT project at CSS was a success	26	5.04	5.00	4a	1.25	1.56

Gender?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	18	69.2	69.2	69.2
Female	8	30.8	30.8	100.0
Total	26	100.0	100.0	
Total	26	100.0		

Age?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 21	1	3.8	3.8	3.8
Between 21 and 31	8	30.8	30.8	34.6
Between 32 and 41	8	30.8	30.8	65.4
Between 42 and 51	6	23.1	23.1	88.5
Greater than 51	3	11.5	11.5	100.0
Total	26	100.0	100.0	
Total	26	100.0		

How long have you worked for CSS?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 1 Year	2	7.7	7.7	7.7
1-5 Years	9	34.6	34.6	42.3
5-10 Years	9	34.6	34.6	76.9
More than 10	6	23.1	23.1	100.0
Total	26	100.0	100.0	
Total	26	100.0		

What is your role at CSS?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Management	6	23.1	23.1	23.1
Sales	7	26.9	26.9	50.0
Warehouse	5	19.2	19.2	69.2
Accounts	4	15.4	15.4	84.6
Purchasing	1	3.8	3.8	88.5
Other	3	11.5	11.5	100.0
Total	26	100.0	100.0	
Total	26	100.0		

In which CSS office are you employed?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Victoria	12	46.2	46.2	46.2
Queensland	5	19.2	19.2	65.4
South Australia	5	19.2	19.2	84.6
Western Australia	4	15.4	15.4	100.0
Total	26	100.0	100.0	
Total	26	100.0		

How would you describe your computer literacy?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Basic	4	15.4	15.4	15.4
Average	7	26.9	26.9	42.3
Good	14	53.8	53.8	96.2
Excellent	1	3.8	3.8	100.0
Total	26	100.0	100.0	
Total	26	100.0		

Have you had any formal computer training?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	17	65.4	65.4	65.4
No	9	34.6	34.6	100.0
Total	26	100.0	100.0	
Total	26	100.0		

How much of your workday do you spend using your computer?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 2-4 hours	11	42.3	42.3	42.3
4-6 hours	3	11.5	11.5	53.8
6-8 hours	7	26.9	26.9	80.8
>8 hours	2	7.7	7.7	88.5
nil	3	11.5	11.5	100.0
Total	26	100.0	100.0	
Total	26	100.0		

Appendix 6: Pearsons Correlations

Question	6	12	13	15	16	17	20	23	24	25	26	27	28	29	30	32	33	38	39	40	41	42	43	44	45	
6	How would you describe your computer literacy?	1.000	0.548	0.551	0.387	0.426	0.657	0.501	0.492	0.392	0.303	0.398	0.509	0.276	0.214	0.315	0.205	0.059	0.021	0.276	0.325	0.377	0.285	0.367	0.109	0.332
12	The training I received in Navision Software was effective	0.548	1.000	0.577	0.463	0.29	0.595	0.499	0.615	0.45	0.421	0.362	0.213	0.429	0.251	0.632	0.161	0.49	0.065	0.468	0.527	0.468	0.466	0.425	0.428	0.406
13	Navision Software meets my needs more than Distrib did	0.551	0.577	1.000	0.452	0.36	0.572	0.719	0.618	0.534	0.482	0.424	0.443	0.37	0.264	0.357	0.389	0.405	0.27	0.465	0.487	0.496	0.536	0.518	0.322	0.309
15	Navision provides the information I need	0.387	0.463	0.452	1.000	0.325	0.538	0.725	0.543	0.506	0.552	0.613	0.489	0.055	-0.134	0.114	0.008	-0.151	-0.022	0.156	0.049	0.246	0.178	0.17	0.111	0.018
16	I am satisfied with the system's accuracy	0.426	0.29	0.36	0.325	1.000	0.494	0.321	0.561	0.429	0.505	0.594	0.322	-0.027	-0.199	0.332	0.477	-0.102	0.244	0.34	0.17	0.232	0.243	0.267	0.222	0.336
17	Navision Software is user friendly	0.657	0.595	0.572	0.538	0.494	1.000	0.559	0.52	0.485	0.293	0.508	0.223	0.133	-0.03	0.328	0.171	-0.049	0.119	0.165	0.183	0.185	0.197	0.152	0.123	0.219
20	Navision Software has improved my productivity	0.501	0.499	0.719	0.725	0.321	0.559	1.000	0.659	0.759	0.685	0.646	0.706	0.192	0.149	0.123	0.455	0.307	0.284	0.32	0.226	0.37	0.394	0.362	0.293	0.417
23	The system has met my expectations	0.492	0.615	0.618	0.543	0.561	0.52	0.659	1.000	0.778	0.661	0.628	0.581	0.314	0.21	0.406	0.374	0.141	0.143	0.485	0.356	0.505	0.459	0.382	0.462	0.44
24	The new system has enabled CSS to be more responsive to its customers	0.392	0.45	0.534	0.506	0.429	0.485	0.759	0.778	1.000	0.822	0.689	0.613	0.096	0.151	0.168	0.495	0.295	0.333	0.444	0.307	0.454	0.385	0.369	0.379	0.52
25	Navision Software has helped CSS to gain a competitive advantage over its competitors	0.303	0.421	0.482	0.552	0.505	0.293	0.685	0.661	0.822	1.000	0.704	0.601	0.134	0.035	0.217	0.398	0.161	0.313	0.536	0.365	0.521	0.423	0.477	0.388	0.407
26	Navision Software has helped CSS achieve its goals and objectives	0.398	0.362	0.424	0.613	0.594	0.508	0.646	0.628	0.689	0.704	1.000	0.671	-0.104	-0.187	0.148	0.228	-0.131	0.13	0.283	0.105	0.209	0.106	0.278	0.148	0.152
27	The CEO at CSS has been a good role model in the change over	0.509	0.213	0.443	0.489	0.322	0.223	0.706	0.581	0.613	0.601	0.671	1.000	0.221	0.278	0.118	0.302	0.275	0.087	0.448	0.215	0.426	0.341	0.423	0.329	0.35
28	The CSS vision was clearly communicated to the entire organisation	0.276	0.429	0.37	0.055	-0.027	0.133	0.192	0.314	0.096	0.134	-0.104	0.221	1.000	0.68	0.422	0.108	0.34	0.17	0.576	0.621	0.571	0.515	0.467	0.624	0.436
29	Top management was committed to the success of the change	0.214	0.251	0.264	-0.134	-0.199	-0.03	0.149	0.21	0.151	0.035	-0.187	0.278	0.68	1.000	0.331	0.193	0.257	0.248	0.248	0.246	0.328	0.138	0.312	0.458	
30	Training provided for the transition to the new system was effective	0.315	0.632	0.357	0.114	0.332	0.328	0.123	0.406	0.168	0.217	0.148	0.118	0.422	0.331	1.000	0.222	0.235	0.313	0.38	0.319	0.305	0.28	0.222	0.277	0.503
32	The old system caused inefficiencies in business processes	0.205	0.161	0.389	0.008	0.477	0.171	0.455	0.374	0.495	0.398	0.228	0.302	0.108	0.193	0.222	1.000	0.639	0.573	0.258	0.132	0.161	0.259	0.174	0.158	0.569

Question		6	12	13	15	16	17	20	23	24	25	26	27	28	29	30	32	33	38	39	40	41	42	43	44	45	
33	Navision Software has enabled changes to the existing business processes for the betterment of CSS	0.059	0.49	0.405	-0.151	-0.102	-0.049	0.307	0.141	0.295	0.161	-0.131	0.275	0.34	0.567	0.235	0.639	1.000	0.494	0.494	0.27	0.251	0.241	0.294	0.166	0.147	0.385
38	The IT project at CSS was a success	0.021	0.065	0.27	-0.022	0.244	0.119	0.284	0.143	0.333	0.313	0.13	0.087	0.17	0.257	0.313	0.573	0.494	1.000	0.146	0.098	0.102	0.076	0.073	0.164	0.579	
39	The project team kept me informed after each team meeting	0.276	0.468	0.465	0.156	0.34	0.165	0.32	0.485	0.444	0.536	0.283	0.448	0.576	0.248	0.38	0.258	0.27	0.146	1.000	0.888	0.925	0.845	0.905	0.831	0.455	
40	My opinions were sought from the team at every opportunity	0.325	0.527	0.487	0.049	0.17	0.183	0.226	0.356	0.307	0.365	0.105	0.215	0.621	0.248	0.319	0.132	0.251	0.098	0.888	1.000	0.907	0.794	0.863	0.701	0.413	
41	I contributed to the implementation of the project	0.377	0.468	0.496	0.246	0.232	0.185	0.37	0.505	0.454	0.521	0.209	0.426	0.571	0.246	0.305	0.161	0.241	0.102	0.925	0.907	1.000	0.861	0.907	0.729	0.441	
42	I was involved in some team meetings	0.285	0.466	0.536	0.178	0.243	0.197	0.394	0.459	0.385	0.423	0.106	0.341	0.515	0.328	0.28	0.259	0.294	0.076	0.845	0.794	0.861	1.000	0.875	0.728	0.458	
43	Access to the project plan was provided to communicate the proposed changes	0.367	0.425	0.518	0.17	0.267	0.152	0.362	0.382	0.369	0.477	0.278	0.423	0.467	0.138	0.222	0.174	0.166	0.073	0.905	0.863	0.907	0.875	1.000	0.702	0.366	
44	Communication between the project team and the rest of the organisation was effective	0.109	0.428	0.322	0.111	0.222	0.123	0.293	0.462	0.379	0.388	0.148	0.329	0.624	0.312	0.277	0.158	0.147	0.164	0.831	0.701	0.729	0.728	0.702	1.000	0.506	
45	I would consider the implementation of Navision Software at CSS to be a change management project	0.332	0.406	0.309	0.018	0.336	0.219	0.417	0.44	0.52	0.407	0.152	0.35	0.436	0.458	0.503	0.569	0.385	0.579	0.455	0.413	0.441	0.458	0.366	0.506	1.000	