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SHARING THE POWER:
KNOWLEDGE MANAGEMENT, EMPOWERMENT,
EMPLOYEE SELF SERVICE AND THE NZDF.

A thesis presented in partial fulfilment
of the requirements for the degree of
Master of Information Systems
at Massey University

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Audere Est Facere

ABSTRACT

This thesis investigated employee views of the Defence Kiosk System (DKS) through a questionnaire, and compared the results with two empowerment methodologies. These methodologies were Spreitzer and Quinn's Five Disciplines For Empowerment, and Horibe's Employee Decision Making methodology.

The DKS is the Employee Self Service (ESS) system of the New Zealand Defence Force (NZDF). The DKS is a web-based system that employees can use to access their personal records, thereby empowering employees to access their own personnel information and removing the need for them to ask human resources related questions of their administration unit. This provides the NZDF with administrative savings and accurate up to date information that can be used for Knowledge Management (KM).

The research begins with a literature review. The literature review established links between Empowerment, KM and ESS. It found that for ESS systems to provide benefits employees must be willing to use them.

A questionnaire was developed and sent to a sample of 1000 NZDF employees who had access to the DKS. The response was 350 completed and returned questionnaires, which exceeded the 180 responses required to enable the results to be generalised for the entire NZDF population.

Analysis of the questionnaire responses showed that employees believe that the DKS, as an ESS system, meets their personnel information needs and that they were willing to use the DKS.

When the results of the survey were compared with the empowerment methodologies the research supported Spreitzer and Quinn's five disciplines model, particularly the fourth and fifth disciplines. The results raised questions about the suitability of using Horibe's employee decision making methodology in the field of personnel management, especially with the advent of employee self service systems.

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1 INTRODUCTION

1.1 BACKGROUND

Employee Self Service is a recent initiative that provides employees with the ability to access information that relates directly to them. The majority of these applications are Human Resources (HR) ESS systems, which enable employees to view and often control their own personnel information. Employees are provided with electronic access to their personnel information and are responsible for keeping their information up to date.

Employee self service provides employees with access to information that they use and information that is stored about them. Access to this information is important as the information is used to make decisions. Providing employees with access to information and the authority to make decisions are central tenets for both knowledge management and empowerment (McCoy, T.J. 1996; Drucker, P.F. 1999).

The New Zealand Defence Force has developed an ESS system called the Defence Kiosk System. The DKS provides employees with access to their personnel information and the ability to change certain personnel information.

It has been claimed that ESS can provide large benefits to employers and employees. Employer benefits have been identified in a previous study of the DKS, where the system was found to provide potential savings of \$1.5 million per annum to the NZDF on an initial investment of \$30,000 (Williams, R.J. 2001).

The DKS can therefore provide a benefit to the organisation through potential savings and a knowledge base of accurate up to date information; however, any benefits are reliant upon the willingness of employees to use and update the DKS. Without employee input the information on the DKS would not be up to date and therefore the system would not be used, providing minimal benefit to the organisation and to employees. This research has solicited

employee views of the DKS in an attempt to gain an understanding of user views of the DKS and ESS systems in general. Employees were asked whether the information is useful to them and whether the DKS meets their personnel information needs, in an attempt to find out whether they would use the system.

1.2 JUSTIFICATION OF RESEARCH

Empowerment and knowledge management are both initiatives that can provide benefits to employees and organisations (Amar, A.D. 2002; Sandbulte, A. 2001). This research investigates whether ESS systems are related to knowledge management and empowerment, and whether ESS systems contribute to empowerment and knowledge management within an organisation. Previous research has shown that the DKS can provide benefits to the NZDF (for example: up to date information for knowledge management, and reduced overheads) through the provision of employee-managed information.

For the system to be successful the information has to be up to date and useful to employees, thereby encouraging them to use the system. Employee participation is therefore essential for the success of the DKS and other ESS systems. This research has therefore used the DKS as a case study for ESS systems to ask employees whether ESS systems provide benefits to employees, and whether there is an incentive for employees to keep their personnel information up to date.

1.3 RESEARCH OBJECTIVES

The research is an investigation of user views of ESS systems and whether these applications can enable employee empowerment.

The first objective is to establish a link between Employee Self Service, Empowerment and Knowledge Management. As a part of this objective

empowerment methodologies needed to be identified to measure the findings of the research against.

The second objective is to gather employee views on employee self service using the DKS as an example of an ESS system. Employees were sent surveys in an attempt to find out whether the information held on the DKS is useful to them, whether the DKS meets their personnel information needs, and whether they would use the system. The responses were analysed to ascertain whether employees want access and control over their personnel information, and whether they think that ESS systems are a suitable method for gaining access and control over their personnel information.

Thirdly the results of the survey are compared with the empowerment methodologies to ascertain whether the research results confirm the assertions of the methodologies.

1.4 PROBLEMS AND LIMITATIONS OF THE STUDY

1.4.1 SCOPE OF THE RESEARCH

This research was to be a comparison of previous research, presenting and contrasting the benefits of employee self service to the organisation with the benefits to employees. The direction of the research was changed to narrow the focus to exclude the previous research and to delve deeper into employee responses, focussing on empowerment and whether employees felt empowered and would use the DKS. Knowledge management still plays an important part in ESS systems and is discussed, however the research is predominantly interested in employee views and employee empowerment. This change of direction occurred after the surveys had been sent, meaning that the fit could have been better had they been designed with the new focus in mind.

If the research were done again the survey would be more specifically focussed on a narrower scope, providing in-depth information. More time would have been spent defining the survey and analysis tools.

1.4.2 CONSTRAINTS

The NZDF has been extremely supportive of this research, with assistance offered by Personnel Branch, Corporate Applications, the Atlas Manager and the Defence Computer Services Bureau. This assistance has been invaluable, however there have been a few issues that have taken time to resolve, including:

- The web server crashed for several hours in the week the surveys were sent, limiting the number of responses received.
- The organisation and the research had different objectives for the analysis, causing additional analysis to be undertaken.
- The NZDF approval process for the thesis.

1.4.3 LIMITATIONS ON GENERALISATION OF RESULTS

The military environment is structured and highly regulated, which may limit the ability to generalise these results to other organisations. The civilian respondents are public servants who may also provide different results than their private sector counterparts.

The Management Information System (MIS) which tracks system usage, based on usage of the DKS and other systems, was used to select the user sample. The MIS system did not show all employees, only those who have access to NZDF networks. This is acceptable for this research within the NZDF, as to use the DKS employees need to have access to the NZDF networks. This may limit the ability to generalise the results for groups that are not computer literate.

1.5 RESEARCH QUESTIONS

If employees do not use the DKS then it will fail, and will not provide empowerment or facilitate knowledge management. To ascertain whether employees will use the system, the research asked the following questions:

- Is access to personnel information important to employees?
- Do employees want access and control over their personnel information?
- Would employees use a personal computer to access and change personnel information?
- Can ESS systems meet the personnel information needs of employees?
- What type of personnel information is important to employees?

Employees were asked these questions through a variety of survey questions that were grouped into hypotheses. The responses to these hypotheses and survey questions were then utilised to answer the research questions listed above.

1.6 ORGANISATION OF THESIS

The thesis is divided into five sections, these are:

- Literature Review.
- Survey Methodology.
- Survey Research.
- Analysis.
- Conclusions And Recommendations.

1.6.1 LITERATURE REVIEW

The literature review will explore the areas of knowledge management, empowerment and ESS systems to provide a background into each area and to establish links between them. The findings of the literature review will be used to build a case for conducting the research. Academic models were identified and presented for testing against the results of the analysis. An overview of the literature review is presented in Figure 1.1.

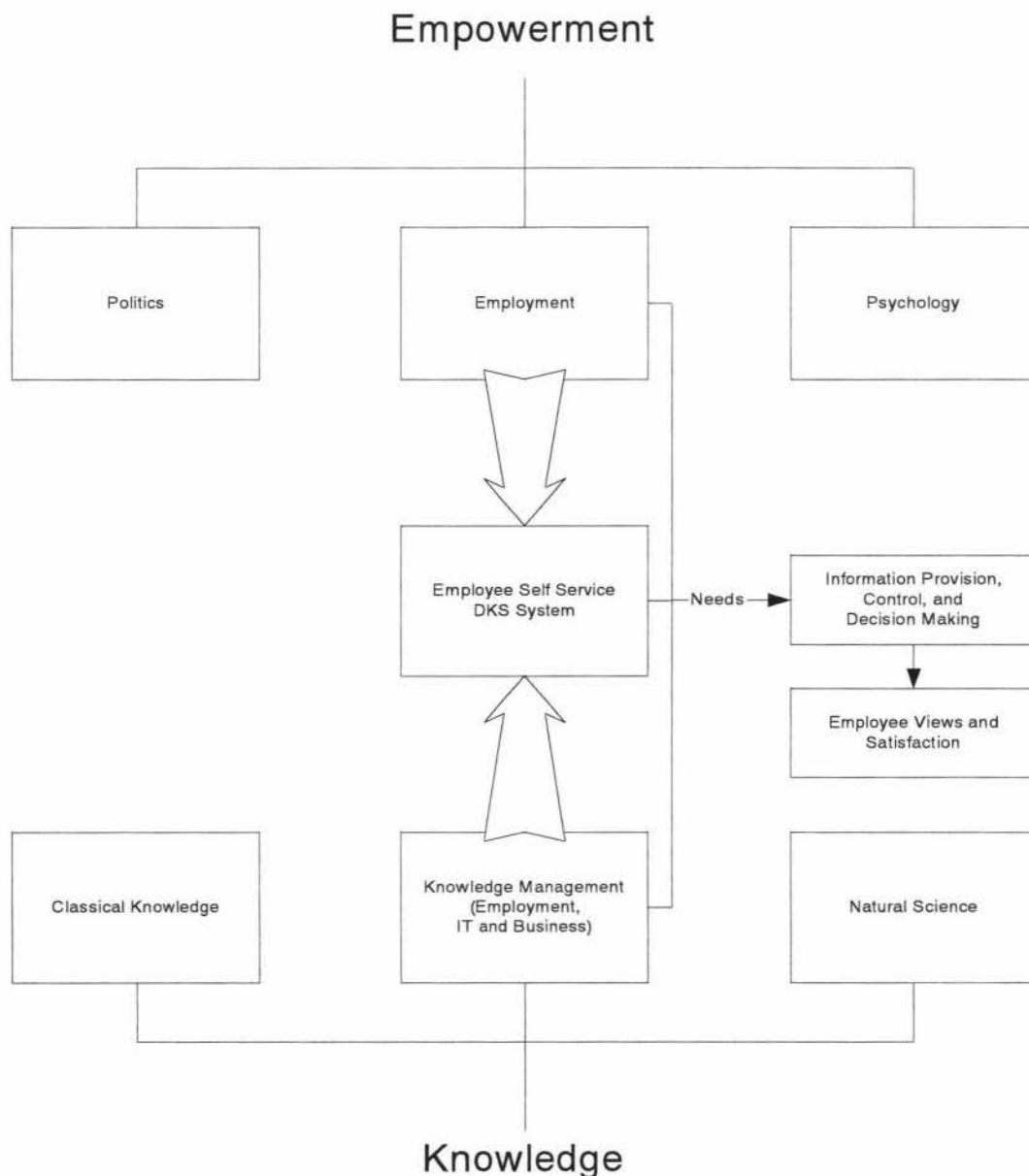


Figure 1.1 Literature Review

1.6.2 SURVEY METHODOLOGY

The survey methodology section states how the research was conducted outlining the research method and survey methodology. The research method component defines the analysis methods selected, states how the information gathering was conducted and what statistical analysis tools were utilised. The survey methodology component discusses the information

needs, outlines the questionnaire production and associated approval process.

1.6.3 SURVEY RESEARCH

The survey research section discusses the environment, introduces the questions and presents the framework that the results will be measured against. The NZDF operating environment is introduced, along with the groups who will be sent the survey. The survey questions are then presented to show what the responses will be based upon. Finally the hypotheses that the responses will be measured against are presented.

1.6.4 ANALYSIS

The analysis section presents the results of the analysis from the survey responses using the methods and statistical tests outlined in Section 1.6.2 above.

1.6.5 CONCLUSIONS AND RECOMMENDATIONS

The results of the analysis were collated and conclusions drawn from the findings. These conclusions are then compared with the empowerment methodologies and the findings presented. Recommendations and suggestions for further research follow the conclusions.

2 LITERATURE REVIEW

2.1 INTRODUCTION TO THE LITERATURE

The intention of this literature review is to find a path that links knowledge with employees and empowerment in a contemporary context. This link will develop the theory that users have a vital part to play in knowledge management, and management in turn has a vital role in ensuring that employees are empowered and provided with access to the knowledge resources they require for performing their work.

The review starts by introducing Employee Self Service and the Defence Kiosk System, which is an ESS system in the field of human resources. HR based ESS systems are systems that enable employees to manage aspects of their own personnel administration and management. These systems empower employees and provide them with access to knowledge, treating them as knowledge workers. The DKS provides up to date information about employees that can be used to make decisions about personnel matters, provide up to date statistics for decision making, and enable employees to take part in personnel based planning. As employees are performing personnel administration by answering their own personnel enquiries and updating their information, the organisation has the potential to make large savings through reduced administrative overheads. The potential for these savings is highlighted by previous research, which has shown that the DKS could potentially save the New Zealand Defence Force hundreds of thousands of dollars (Williams, R.J. 2001).

Empowerment is then introduced and explored as a tool to improve the performance and job satisfaction of employees. The review focuses on how empowerment can be used to encourage employees to work outside their immediate area of responsibility by increasing their authority to act in other areas. When employees are given access to other areas they must be provided with knowledge of these new areas. Knowledge management is one method of providing employees with the required knowledge, and can aid

them in performing their jobs in these new areas. Empowered employees can use this knowledge to make decisions that will improve the performance of the organisation (Byham, W.C. 1989).

Knowledge will be addressed in a contemporary context, discussing the impact of information technology upon knowledge and how the need for knowledge management has arisen. The review will then investigate the concept of knowledge management to understand the impact of knowledge upon organisations, especially upon employees who are expected to become knowledge workers in the new knowledge economy. Empowerment and knowledge management can work together to provide an organisation with satisfied employees that have the knowledge and authority required to make decisions that benefit the organisation (Potterfield, T.A. 1999).

The review will then have provided the reader with a background understanding of the issues surrounding this research, in particular employee self service, empowerment and knowledge management.

2.2 BACKGROUND OF EMPLOYEE SELF SERVICE

2.2.1 EMPLOYEE SELF SERVICE

Employee Self Service utilises the principles of knowledge management and empowerment into systems for the benefit of both organisations and employees.

Employees directly involved in a process know the best ways to improve it and the impact of improvements. Stevens (2000, cited in Olsson, J. 2001) suggests that the success of an organisation is dependant upon employee ownership of the process and their ability to make changes. Empowerment encourages employees to own the process and thereby feel responsible beyond their own job, since they feel the responsibility to make the whole organisation work better (Olsson, J. 2001). The reliance upon employee buy-

in requires that management value employee suggestions and manage their employees accordingly.

ESS systems are an information technology-enabled development that has provided knowledge and empowerment to users. ESS systems can utilise new technology like internet browsers to enable faster and more effective processing than was previously available in paper based systems. The most popular type of ESS system is in the area of human resources. The Hackett Group has estimated human resources functions to cost \$1,500 (US) annually per employee; many HR professionals spend much of their time on low value-added functions such as headcounts and administrative functions like answering employee queries (McKendrick, J. 1999). This problem is compounded by the fact that there is a shortage of specialised HR practitioners. One solution to these problems has been to provide self-serve HR, which reduces the administrative workload on HR practitioners, enabling them to focus on strategic-level concerns like recruitment and employee training (MacAvoy, B. 2001a).

Self service applications that allow workers to manage aspects of their own personnel information are increasing employee empowerment and the company's bottom line (Hunter Group. 2000). Employees feel that their input is meaningful and they are valued through increased empowerment and are therefore taking ownership of processes. This is in turn improving employee satisfaction (MacAvoy, B. 2001b). Areas that employees have been given authority over include benefits, payroll deductions, personnel and career data. Many companies are combining these services with web technology to provide access for employees through intranets or secured internet sites. Other methods include telephone, personal computer and designated kiosk systems (Hunter Group. 2000).

The Gartner Group (2000) has predicted by 2003 that 40% of traditional HR activities will be performed on ESS systems. The major benefits of ESS systems are timeliness, accuracy, productivity, value addition and cost

savings (Mae, F. 1999). The savings can be significant. Instead of sending paper copies through traditional internal mail methods to a human resources clerk who manually enters the information into the organisation's computer system, the employees can input and withdraw the information themselves. The Hard Rock Café has implemented a kiosk-based self service HR system and estimated that they have saved six tons of paper a year at a cost of 20 cents per sheet (Wells, S.J. 2001). Using ESS systems employees can enter their own data and remove time constraints, entry errors and cost of using the clerk to re-enter the information and HR clerical workers can focus on more strategic tasks and therefore become more proactive (MacAvoy, B. 2001a).

Employees can now look after their own personal information changes, apply for internal jobs, report the amount of time they have worked, and report vacation and sick time amongst other functions (MacAvoy, B. 2001b). Web-based ESS systems can provide greater organisational effectiveness in the delivery of HR information. Because the information is stored in one source and updated more frequently employees can gather all the information they require (and have access to) from the one location (Eudy, K. 2001). Web-based systems also overcome a major knowledge management difficulty, which is in measuring the impact of knowledge on an organisation. In essence, web-enabled self service applications connect front-end users with back office enterprise and stand-alone systems through a single point of contact. This technology solves one of the great challenges of self service by allowing both deep information content and transaction capabilities in one interface (Gunsaulley, C. 2001).

Many companies are adopting ESS systems and ensuring equal access for employees and management (Wells, S.J. 2001). The majority of these companies have implemented self-serve HR systems to remove administrative tasks from the HR department and have found that the data flow within their organisations has improved. Even though ESS systems are successfully empowering employees and providing these companies with savings, few of these companies have attempted to provide management HR services on a self-serve basis. The major reason for this is the complexity of

the real world systems that are used for the provision of these services, and reluctance by management to surrender their traditional power base (MacAvoy, B. 2001b).

Employee self service applications can provide an organisation with great savings and empower and inspire employees to perform to higher standards, however there have to be boundaries set to limit possible breaches of trust. Companies depend on and are ultimately responsible for the content stored on their systems, therefore employers need to have control over the content that enters through employee's machines. Access to the systems has therefore to be monitored and controlled regardless of where it is coming from (Gunsale, C. 2001). Developing and implementing a system access strategy can deal with these control issues. Each organisation is different and should investigate its own control issues on an as-required basis (Probst, G., Raub, S., & Romhardt, K. 2000).

Apart from control issues employee self service systems have been hailed as a success by many organisations and publications. Employee self service systems promote cleaner and more timely data by making knowledge more accessible to managers and employees, enabling them to perform to a higher standard (Eudy, K. 2001). Employee self service systems attempt to provide employees with the information and authority required to make administrative, and to a lesser extent managerial, decisions that involve them (Lokhandwala, S. 2001).

2.2.2 THE DEFENCE KIOSK SYSTEM

There is an NZDF application called Atlas, which holds all of the human resource information for military personnel. Since October 2002 Atlas has also held all civilian personnel information. Access to information about personnel held in Atlas has been placed on an interactive kiosk system. The kiosk system is a web based ESS system called the DKS, which was developed in-house by the NZDF. The kiosk system is being opened to personnel so that they can access their personal information from a personal

computer and make changes as they occur. The system also provides personnel information to management about employees. Providing access to an employee's personnel information will provide them with knowledge about, and enable them to make decisions about, their careers. The access to information also shifts the power from the administration units and improves organisational transparency. Employees will be empowered, as they will be able to change personal details and focus on future career development. They will also know that their pay is going to the right place, and access to information will also remove other minor administrative factors that can be demotivating.

2.3 BACKGROUND OF KNOWLEDGE

Knowledge is something that man has been searching for in different forms since the dawn of time (Winslow, C.D., & Bramer, W.L. 1994). For over 3000 years people have been trying to define knowledge. Some of the more notable sources for defining knowledge have been Parmenides, Socrates, Plato, Descartes, The Bible and Buddha. The Greek philosopher Parmenides stated that "the essence of knowledge will be knowledge of that reality itself, the essentially real" (Allen, R.E. 1966). Plato (427-347 BC) wrote the following rules for developing and understanding knowledge: Data must be certain and quantifiable, and data must represent that which is real as contrasted with that which is an appearance only (McKinlay, M., & Warren, D. 2001). These rules are as valid now for organisations and employees as they were for theoretical discussions in ancient Greece.

René Descartes (1637), the father of analytic geometry and modern philosophy, wrote his "Discourse on the Method of Rightly Conducting the Reason and Seeking for Truth in the Sciences". Descartes described knowledge acquisition in the following steps: First, identify by conceptual analysis the simple elements to which all more complex objects may be reduced. Second, synthesise an understanding of the whole by perceiving the

necessary relationships in which these elements must stand to one another (McKinlay, M., & Warren, D. 2001).

Computers have enabled the storage, analysis, processing and retrieval of information to increase exponentially over the past fifty years. The early use of computers was for automation of simple tasks and for data collection. In the 1970's computers became more powerful and since then organisations have increasingly relied on computers to provide information about their organisation and its environment (Harmon, R.L. 1996). Today, organisations are finding that they need to know the context surrounding their environment to better utilise the information (Amidon, D. M. 1997). The need to understand the information and its context has heralded a change from the information age to the knowledge age (Drucker, P.F. 2001a). Through improved storage, analysis, processing and retrieval methods computers have enabled the transition to the knowledge age. Technology has made processing of the information more accessible. IT professionals and software manufacturers are now providing knowledge management solutions they claim will meet future organisational knowledge needs (Harmon, R.L. 1996). This raises questions as to whether IT alone can actually provide the knowledge requirements of an organisation, thereby providing a competitive advantage. To answer these questions the researcher must gain a better understanding of knowledge, the role of employees and the transformation from the information age to the knowledge age. These areas are addressed in the following sections.

2.3.1 KNOWLEDGE: REVOLUTION, MANAGEMENT AND WORKERS

In the modern context, knowledge is being used in the world of business and information technology. Organisations are now trying to use knowledge to gain an advantage over their competitors. There are many different views of what knowledge is and how it should be defined. Practitioners like Karl Erik Sveiby believe that knowledge resides mainly in humans while Brynjolfsson and Hitt (1998) focus on the financial impact of IT through knowledge.

Molhotra (2001a), who believes that knowledge comes from humans and technology, with limitations upon both, expresses a more moderate view. In terms of a modern organisational context involving information technology utilising knowledge, the following definition of knowledge will be used:

“Knowledge refers to the critical issues of organisational adaptation, survival and competence in the face of increasingly discontinuous environmental change. Essentially, it embodies organisational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings” (Molhotra, Y. 2001b, p.1).

Knowledge combines information technology's processing ability with human innovation and creativity to gather, store, transform and retrieve advantageous knowledge thereby providing a competitive advantage to an organisation. Knowledge is the amassed data that is held within understanding (Tricker, R.I. 1999), so understanding is the key to knowledge.

There are two forms of knowledge, explicit knowledge and tacit knowledge. Explicit knowledge can be formulated and articulated enabling codification, documentation, transmission and sharing. Tacit knowledge is subconsciously understood and utilised, and based in human experience and action making it difficult to codify, record and share. Tacit knowledge is based in personal experience, beliefs, perspectives and values. (Barclay, R.O., & Murray, P.C. 2001; Zack, M.H. 2001).

Knowledge is becoming the only sustainable competitive advantage. Karlheinz Kaske the former CEO of Siemens AG stated “If Siemens knew, what Siemens knows, nobody could beat us” (Peters, G. 2000, p.35). To manage knowledge, organisations have to find out what the people in their organisation know, and what they need to know, to meet changes in their environment. Organisations need to predict these changes and to provide the right person, at the right time, with the right resources to steer the company through the change (Hildebrand, C. 1999). Any company that can figure out

how to give its people the organisational knowledge they need, when they need it, can compete more effectively and succeed much faster than their competition (UTexas. 2000). Organisations need a strategy to manage this knowledge. Knowledge management is a strategy that involves focusing on the processing capacity of information technologies and the creative and innovative capacity of human members to benefit the organisation (Molhotra, Y. 1999).

KPMG's Chief Knowledge Officer Michael J. Turillo stated that "knowledge management cannot be done without technology" (Cited in Hildebrand, C. 1999, p.1). In most knowledge management projects the primary focus has been on developing new information technology applications to support the digital capture, storage, retrieval and distribution of an organisation's explicitly documented knowledge (Zack, M. 1999). As vendors label their document management, database or groupware products "Knowledge Management Solutions" executives could be excused for mistaking the software for the solution; it is not (Hildebrand, C. 1999). It has been argued that computers can provide knowledge for decision making based on historical data. There is an element of truth to this assertion. Computerised systems can provide a form of knowledge that is known as explicit knowledge, which is based on strict criteria and is inflexible and unresponsive to change (Brynjolfsson, E., & Hitt, L. 1998).

Explicit knowledge is available in information units such as documents, database records and e-mail. IT cannot provide tacit knowledge, which is know-how residing in professionals' minds (Takeuchi, H. 1998). Computers can provide explicit knowledge; however, to access tacit knowledge user evaluation is required. Tacit knowledge is gained from people through their interpersonal interaction and social relationships (Zack, M. 1999). Tacit knowledge can adapt to situations and change to meet new challenges. This form of knowledge is difficult to capture on a computer (Nonaka, I., & Takeuchi, H. 1995). The difficulty in capturing tacit knowledge is highlighted in the case of the Ford Motor Company. When Ford tried to produce a car to follow up the success of the Taurus they found that the factors that caused

that success had been lost with the loss of the people that created it. Their knowledge was not stored in information technologies, it left when they left (Seely-Brown, J., & Duguid, P. 2000).

In today's dynamic world there are few environments that are stable and predictable (Hammer, M. 1996; Schal, T. 1996). The information requirements are changing with the environment. Businesses are forced to adapt to change, or face competitors that have a competitive advantage (Hammer, M., & Champy, J. 1994). To meet the challenges of changing environments organisations have to maximise their knowledge resources (Molhotra, Y. 2000). Proactive companies are attempting to use knowledge to predict change and gauge future opportunities to gain competitive advantage over the competition.

Gaining organisational knowledge involves accessing information that fits within the organisational structure and meets the needs of the organisation and the individual that will use the information. Knowledge management promotes the flow of knowledge to the people who need it, turning corporate data into knowledge that's in 'some place' (Garner, R. 1999). This means that the knowledge can be stored, added to and retrieved.

One of the aims of knowledge management is to manage information in the unique context of the enterprise. The context consists of the enterprise's business values, strategic direction and experiences, and in the insight and expertise of employees. By focusing on the interdependence of social networks (who knows whom), knowledge networks (who knows what) and information networks (what information is related to what other information) knowledge management can provide unique knowledge to an organisation to improve its performance and ability to meet changes successfully (Carey, K. M. 1999). This knowledge is hard to duplicate and can therefore be utilised to form a competitive advantage (Gartner Group. 2000).

Knowledge management involves focusing on the processing capacity of information technologies and the creative and innovative capacity of human

members (Hildebrand, C. 1999). Computers have progressed enormously in the past half-century. They now process massive amounts of data into explicit knowledge through analysis and retrieval of information based on historical data. Explicit knowledge is a valuable source of information that can be used to aid decision-making. Tacit knowledge is required to make the decisions that will enable the organisation to adapt to meet the changing environment they operate within. Currently tacit knowledge is only created through people. IT solutions are now attempting to record tacit knowledge, or provide access to tacit knowledge resources. IT can aid knowledge management; however, with the tacit knowledge requirements needed to meet the changing environment, no IT solution can independently provide a complete knowledge management solution (Brooking, A. 1996).

Technology alone cannot solve an organisation's knowledge management needs. Many organisations are realising that they require a paradigm to enable knowledge management within their organisation. This realisation is a critical component for sparking the change in organisational behaviour which, when combined with enabling technology, will provide the foundation for successful knowledge management implementation in the organisation (IBM. 2001).

Although IT cannot provide tacit knowledge it can provide access to tacit knowledge resources. In the knowledge age there are vast amounts of available information and people and organisations face the problem of accessing useful information. To produce knowledge the organisation can attempt to capture explicit knowledge through IT storage, analysis & retrieval. The organisation can attempt to capture tacit knowledge by mapping and recording the knowledge of the people who have the experience and have developed their knowledge resources about the relevant subjects (Takeuchi, H. 1998).

An organisation can use industry and organisation knowledge to gain a competitive advantage. IT cannot create tacit knowledge; tacit knowledge only resides in people's heads (Amidon, D. M. 1997). The following section

will explain the transition to the knowledge age, and therefore gain an insight into how the information requirements have changed. In particular, what sort of information or knowledge organisations need and how those needs have changed.

2.3.2 KNOWLEDGE AGE AND THE IMPORTANCE OF EMPLOYEES

With the advent of computers, particularly in the past 30 years, there has been an explosion of information available to organisations. There is now more information than can be processed and used (Applehams, W., Globe, A., & Laugero, G. 1998). Thomas Davenport said "If you spend all your time collecting data then you don't have any time left to think" (Davenport, T. 1998, p.1) reflecting his belief that organisations are collecting data and are not transforming it into knowledge. Many organisations collect data and find that the data is not being used, and in some cases is being discarded to save storage space. Organisations are searching for ways to turn this information into relevant accessible knowledge. Peter Drucker predicted the movement from information to knowledge in the 1960's. Drucker called the previous 100 years the information age, as information was the key to commercial success (Drucker, P.F. 1994). The information age used the controlling, scientifically based theories of Smith and Taylor to meet the needs of stable and predictable environments (Drucker, P.F. 1993). The transformation to the knowledge age has impacted the role of employees, managers and vicariously the entire organisation from workers to infrastructure, especially information technology. To understand the requirements of the knowledge age and therefore the current environment it is important to understand the transition to the knowledge age.

Changes to the workforce have influenced the move from the information age to the knowledge age. Before exploring the change from the information age to the knowledge age it is important to gain an understanding of the information age and where it came from. Before the information age was the agrarian (or farming based) age (Drucker, P.F. 1988).

From the beginning of time to the end of the Napoleonic wars most, if not all, of the world's population were agriculturally based. Prior to the First World War farmers were the largest single group of populations in all countries. Today in all developed nations farmers only make up around 5% of the population and work force, which is about a tenth of what they were eighty years ago (Drucker, P.F. 1994).

The second largest group of workers in the early 1900's was live-in servants. Today live-in servants hardly exist in the developed world. In 1900 they were considered an integral part of society, very much like farmers. Today in the developed world farmers are a minority group and servants are not even that.

The main catalyst for the social transformation to the information age was the rise of the blue-collar worker as a social class and a dominant force (Drucker, P.F. 1988). Karl Marx proposed the theory of the proletariat as a member of a class without social position, political, economic or purchasing power (Marx, K, 1844). The blue-collar workers who rose to prominence after the First World War began as the manifestation of the proletariat. Marx expected the proletariat masses to rise and force bloody revolution upon the upper classes. There has been a revolution; however, it was a silent one (Schlender, B. 2000). Historically there has never been a class to rise faster, or fall quicker, than the blue-collar worker.

In 1900 blue-collar workers were a small part of the workforce comprising between 10 to 20% of the population and were vastly outnumbered by domestic servants and farmers. Domestic servants and farmers had difficult lives for very little pay and difficult conditions. The majority of these blue-collar workers were skilled workers plying their craft in small craft shops with 20 to 30 other workers. The workers of 1900 had no real job security and limited benefits beyond payment for a day's work. As the craft shops were replaced by machinery and production lines blue collar workers found themselves in factories with large numbers of other workers (Drucker, P.F. 1994). The large numbers of workers were extremely visible, which afforded them the status of a new class. These large numbers of workers were

densely populated and therefore easy to organise for industrial action. Strikes began almost as soon as factories. In comparison domestic servants and farmers were dispersed and therefore unorganised. Industrial work was seen as an opportunity for farmers and domestic servants. It provided the first opportunity that servants and farmers were given to better themselves substantially without having to emigrate (Gabor, A. 2001).

By the 1950's blue-collar workers had become the largest group in all developed countries, and through unionisation they had gained considerable power. Workers had established themselves in the middle class, with some skilled workers earning salaries comparable to the upper middle class. Other employment benefits offered to workers included paid holidays and pensions. In addition to the employment benefits unions had gained a powerful political position. In the UK for example unions were seen as the kingmakers, deciding where the balance of power sat for governments (Drucker, P.F. 1994). Labour unions were therefore seen as the most powerful and best-organised political power in developed countries. Since the 1950's and especially in the past 30 years unions have seen their power bases eroded to the stage where workers and their unions are in retreat (Drucker, P.F. 1988). In the United States in the 1950's over 40% of workers were blue-collar workers and the majority of these were unionised. Blue-collar workers now make up less than 20% of workers in the United States, which is comparable to the figure in 1900 (Drucker, P.F. 1994). It has been said that blue-collar workers are about to be replaced by knowledge workers (Drucker, P. F. 2001a). This change will provide a challenge to blue-collar workers, as the majority of them do not have the skills, training or mindset to transform into knowledge workers.

Traditionally blue-collar workers have worked with their hands and have been able to perform their work with limited education and training. Knowledge workers may still work with their hands; however, they will require formal education and continual updating of their knowledge (Amar, A.D. 2002). For example, a brain surgeon has to have a formal education and strong theoretical knowledge to perform the work. A person can be discounted from

brain surgery as a career if they do not have the manual skills required to operate; however, if someone has the manual skills but not the access to the requisite education and knowledge they will never become a brain surgeon. The type of knowledge required by a brain surgeon and other types of knowledge worker will have to be provided by formal schooling, unlike blue-collar positions which can have an apprenticeship or on the job training (Gabor, A. 2001). Knowledge workers will be paid as well as or better than blue-collar workers are and will have more opportunities open to them. However they will require a wide pool of knowledge to draw from, the majority of which will have to be gained through their own personal experiences and reinforced through formal education. Knowledge workers must have a different approach to work and a different way of viewing workplace situations with a commitment to continuous learning (Drucker. P. F. 1999).

Employees provide competitive advantage in the knowledge age; therefore employers need to get the best return from their employees. As employees become knowledge workers, employers need to develop strategies to enable them to gain a greater return from their employees. Empowerment is a strategy that can provide increased employee ownership and greater returns to an organisation but the trade off is that employers need to trust their employees and share control with them.

2.4 EMPOWERMENT

Labour relations have historically been a tug of war between employers and employees, each trying to wrest control from the other. During the early 1900s, leadership was by fear and threats, forcing people to follow orders. This led to a policy of abuse, which produced undesirable results. It became apparent that worker abuse was self-destructive and cooperation led to increased efficiency. Leaders had to learn how to win subordinates' cooperation and overcome the belief that abuse is leadership (Webb, R.L. 2000). Empowerment is one method that advocates sharing of power between employers and employees. Employee empowerment is a type of

participative management in which employees share management responsibilities, including decision-making (Duncan, D. 2001), thereby unleashing the vital, under-utilised reserves of employee creativity and motivation to solve business problems.

Empowerment is predominantly used in the social, political and employment fields (Slater, P., & Bennis, W.G. 1964; Webb, R.L. 2000). Empowerment is a concept that can be applied to many fields and employee empowerment has evolved from these fields.

Employee empowerment can trace its roots to Karl Marx who prophesied that the proletariat class, or employees, would rise and revolt to gain power and cast down oppressive capitalists, or employers (Marx, K. 1844). On a political level Gramsci countered this argument using the Italian Fascist movement of the 1920's. In the vacuum caused by economic crisis it was the Fascists who were organised and educated that took control, as they were more capable of swiftly seizing power and crushing adversaries (Schlender, B. 2000).

Modern theorists have argued along similar lines: questioning whether empowerment should be a political movement to gain control, or whether employers should voluntarily share control with employees (Wall, S.J., & Wall, S.R. 1995). There are two dominant types of employee empowerment, which are workplace democracy and employer initiated empowerment. Workplace democracy is a belief that employees should have equal rights to employers in the workplace (Dubrin, A.J. 2000; Slater, P., & Bennis, W.G. 1964). Under workplace democracy employers should share all control with employees. Employer initiated empowerment involves the employer providing employees with increased control over certain areas of the workplace that relate to the employee (Spears, L.C., & Lawrence, M. 2002). Employers retain exclusive control over some areas rather than completely sharing control with employees. Employers share control to gain competitive advantage through delegating authority and providing information to employees (MacAvoy, B. 2001b).

2.4.1 WORKPLACE DEMOCRACY

Workplace democracy advocates employees entering politics to gain political power and thereby causing social and legislative change, which could lead to workplace democracy. Workplace democracy is an attempt to bring social change into the workplace, thereby making the workplace a democracy rather than adhering to the traditional management model (Bachrach, P., & Botwinick, A. 1992).

Bachrach and Botwinick (1992) propose that as workers gain experience in the democratic process, they acquire an appreciation of democracy in the context of their own lives. By taking part in the democratic process employees, like blacks and women before them, may also gain enough political ability to enable them to take part in local and national politics (Bennis, W., & Townsend, R. 1995).

2.4.2 EMPLOYER INITIATED EMPOWERMENT

Employees have a variety of needs to perform their functions, ranging from tools and infrastructure to personal needs. Management needs to identify these needs and facilitate the removal of barriers to employees meeting their objectives (Gandz, J. 1990). Employer initiated empowerment involves sharing power with employees in certain areas, with employers maintaining a degree of control over other employment related elements (Bennis, W., & Townsend, R. 1995). The goal of employer-initiated empowerment is achieving organisational goals and getting everyone involved in making a success of the business (Lashley, C. 2001).

Conventionally, management has been founded on planning, organising, controlling and co-ordinating human efforts (Hilmer, F.G., & Donaldson, L. 1996). Management control the work of other people. This system worked in the industrial age where competitive advantage was supplied by capital and machinery; however, in the service based knowledge age employees and

employers are finding that work is changing and the nature of work is changing (Purser, R., & Cabana, S. 2000).

New technology makes it possible to share greater amounts of information with the workforce. The traditional tasks of management – planning, organising, controlling and co-ordinating the work of others no longer makes sense. Management is now responsible for creating the conditions to enable employees to plan, control, organise and coordinate their own work (Senge, P., Ross, R., Smith, B., Roberts, C., & Kleiner, A. 1994). Employees need to have the knowledge, information and skill to make all decisions that concern them; access to information and feedback must be instantaneous and transparent (Purser, R., & Cabana, S. 2000).

Organisations are finding that employees have knowledge that can provide a competitive advantage, which used to be provided by machinery and assets in the information age. The move from the information age to the knowledge age has similar parallels to the move from the agrarian age to the information (or industrial) age, when machines took over manual work (Herzberg, F., Mausner, B., & Snyderman, B.B. 1959). For example 20 machines and 3 people produce half of the US carrot requirements (Tissen, R., Andriessen, D., & Deprez, F.L. 2000). In a manufacturing economy the old factors that caused competitive advantage and barriers to entry were based on expensive capital requirements for plant and machinery (Drucker, P.F. 2001b). Employees are becoming more important to gaining a competitive advantage as the world moves into a service based knowledge economy, with 75% of employment in service based industries rather than product based industries (Purser, R., & Cabana, S. 2000). Therefore employers must ensure that employees have the requisite skills and have the authority and access to resources required to perform their work. In the knowledge age employers should consider a holistic approach to employee and work-based benefits, services and products. This approach recognises the difficulties facing employees and helps them to balance their needs and perform better (Gunsaulley, C. 2001).

An empowered organisation enables self-management, which reduces the need for external supervision and costly bureaucratic overheads (Purser, R., & Cabana, S. 2000). Employees gain greater job satisfaction through the use of a wider range of skills and abilities together with an increased sense of worth, whilst employers gain a more committed, better informed and more focussed workforce (Lashley, C. 2001). Empowerment of employees can increase employees' motivation, job satisfaction, loyalty to their companies, and have an extremely beneficial impact on the bottom line (Sandbulte, A. 2001). Empowered employees can plan, control, organise and coordinate their own work and what affects their environment (Purser, R., & Cabana, S. 2000).

The NZDF operates in a highly regulated environment, and relies strongly upon a command chain for success in peacekeeping and wartime situations. Workplace democracy would not be a viable empowerment solution given the current environment; however, there may be benefits to the organisation from employer-initiated empowerment. The following section will therefore investigate the requirements of an empowering environment and attempt to find a suitable empowerment methodology for the research.

2.4.3 EMPOWERING ENVIRONMENT

Creating an environment that empowers employees requires time, patience, and perseverance; however, the benefits can be enormous (Lashley, C. 2001). More importantly, a participative work culture with empowered employees working to their potential gives an organisation a better chance of beating the competition (Sandbulte, A. 2001). Employee participation is also a vital factor for knowledge management and in particular the gathering and updating of knowledge.

There are two major obstacles to enabling employees to contribute to their full potential: employees not taking the initiative to take on challenges and thus avoid employment stagnation, and secondly, employers contributing to

employee stagnation by not removing barriers or encouraging employees to take on new challenges (Sandbulte, A. 2001).

Employees need to be given the opportunity to try things and even to fail. Once they are placed in an empowered situation they should respond positively and contribute, gaining a sense of ownership of their situation (Potterfield, T.A. 1999).

Organisational barriers can restrict employee empowerment. Employees have tasks to perform in the course of their employment, and if a barrier stops them from performing these tasks the result can be demoralising. Empowerment affords the employee the authority to overcome these barriers without having to wade through a bureaucratic paper trail to attain approval, which may be denied (Goldratt, E. 2001). An unempowered situation can cause a lot of stress when deadlines become due and the employee would still be waiting for authority to act in a vital area (Potterfield, T.A. 1999). When implementing empowerment it is often assumed that there is naturally a conflict of interest between parties in the organisation (Lashley, C. 2001).

Providing employees with access to areas beyond their normal sphere of expertise can be dangerous, so it is essential to define boundaries when implementing an empowerment strategy (Paulson, T.L. 2001). Organisations need to learn to provide employees with freedom within limits, and give people room to empower their best ideas within those boundaries. In the words of Ken Blanchard, an organisation should "Create autonomy by setting boundaries. A river without banks is just a large puddle. What permits a river to flow is its banks? In empowering people, the banks are the boundary areas or guidelines within which people can operate." (Cited in Paulson, T.L. 2001, p.1).

The employees are not the only ones who face changes to the way they operate. Managers are expected to change from the traditional controlling management style to a leadership and team leader based role. The terms "manager" and "employee" can be seen themselves as a barrier to open

communication and unreserved employee contribution. Under empowerment managers should be open, honest and willing to listen, and act on, employee ideas (Sandbulte, A. 2001).

Many managers have admitted a reluctance to share decision-making, problem solving, and other management activities with lower level people (Estes, P. 2001). Similarly, human resource departments are reluctant to release power to employees; however, they are now finding that it often makes sense to let employees handle elements of the administration of their personal information (Mae, F. 1999).

In an empowered organisation employees know what to do and do not need to constantly be reminded or informed. Management is seen as an enabler, with its major function being to support and stimulate employees, facilitate the removal of cross functional barriers, and work to eliminate confrontation and fear within their employees (Hand, M. 1994).

Employee empowerment is enabled through an organisation's strategy and technology by focusing not only on how to improve cost, speed, and efficiency through quality improvements (Olsson, J. 2001). Unfortunately organisations demand cost, efficiency and speed, sometimes to the detriment of effectiveness (or doing the best things for the organisation). Providing employees with the authority to change processes through empowerment will provide them with the ability to make their organisations more effective, and thereby to do the right things without being constrained by short-term views of efficiency, cost and speed (Purser, R.E., & Cabana, S. 2000). In effect enabling these effectiveness plans will facilitate long-term improvements being made in these areas. The resistance of employers to devolving power to subordinates has fuelled employee scepticism and distrust, providing a barrier for ESS systems. Employees who are seldom given a voice in their company's decision making are likely to be sceptical of management's intent when offering an empowerment program, so they may be unwilling or even hostile towards the new programme (Estes, P. 2001). This calls for a change in organisational culture to facilitate a more trusting and open environment.

Employers need to decide whether they are willing to share control with employees, and what benefits sharing control could provide.

2.4.4 SHARING CONTROL

Sharing control promotes self-discipline to replace imposed discipline rather than just granting power without replacing the traditional command and control method of management (Senge et al 1994).

Today many organisations are talking about empowering their employees; however, few organisations are actually introducing tools and methods that provide employees with access to the information required to make decisions that affect them (Senge et al 1994). Employee empowerment demands that employees are able to make informed decisions. And in order to make those decisions employees require access to information that is meaningful and timely (Johnson, R., & Redmond, D. 1998). Electronic self service tools are a method for enabling employees to become more active and better-informed participants in processes (Parisien, L. 2000).

Empowerment ensures employees have the knowledge, information & skills to make all decisions that concern them (Plunkett, L.C., & Fournier, R. 1991). To facilitate this, access to information and feedback should be instantaneous and transparent (Purser, R., & Cabana, S. 2000). The organisation should share information with everyone who needs it, as people without information cannot act responsibly (Blanchard, K., Carlos, J.P., & Randolph, A. 1996). If information is not shared then the benefit of empowerment will be minimal (Bowen, D.E., & Lawler, E.E. 1995).

When employees have autonomy, they need to be made aware of the boundaries of their decision-making discretion (Spreitzer, G.M., & Quinn, R.E. 2001). Boundaries need to be created to ensure that employees act properly and only make decisions that they are authorised to make (Ginnodo, B. 1997). Creating boundaries ensures that employees will not become overconfident and exceed their authority.

To summarise, sharing control with employees is vital for empowerment programmes to work. The employee / employer relationship requires sharing of control, which includes providing employees with the authority to make decisions and the resources they require to make informed decisions, especially access to relevant timely information (Hodgetts, R.M. 2002). Controls must be set in place to set boundaries of employee authority. The organisation must also make a paradigm shift to implement an organisational culture that embraces empowerment.

2.5 METHODOLOGIES

2.5.1 METHODOLOGY SELECTION

The factors defined above were considered when selecting a model to adopt for this research. After considering several empowerment models, the Five Disciplines For Empowerment model was chosen as the benchmark to measure empowerment against. The model is presented in Section 2.5.2: Spreitzer And Quinn's Five Disciplines For Empowerment Model.

Employee self service systems provide information to employees. Provision of timely, relevant information and control to employees enables empowerment. It is important to know what information and authority should be passed to employees. In his Employee Decision Making Methodology Horibe (1999) separates decision making into three different types: Technical decisions, Administrative decisions and Managerial decisions. Horibe proposed letting knowledge workers make technical decisions and have management retain administrative and managerial decision-making. Employee self service systems (like the DKS) attempt to provide employees with the information and authority required to make administrative and to a lesser extent managerial decisions that involve the employee. The research will ask employees what information and authority they want over their personnel information and thereby test Horibe's methodology.

2.5.2 SPREITZER AND QUINN'S FIVE DISCIPLINES FOR EMPOWERMENT

Spreitzer and Quinn (2001) proposed four dimensions of empowerment that motivate employees, these are:

- Self Determination - Having freedom and discretion.
- Meaning – Having a personal connection to work.
- Competence – Confidence about abilities.
- Impact – Making a difference.

Empowered individuals see themselves as having freedom and discretion (self determination), as having a personal connection to the organisation (meaning), as confident about their abilities (competence), and as able to make a difference in the system in which they are embedded (impact) (Spreitzer, G.M., & Quinn, R.E. 2001).

To achieve these four dimensions of empowerment Spreitzer and Quinn presented the Five Disciplines For Empowerment model. They proposed that the following five disciplines could be used to facilitate a more empowering environment:

1. Empower the person that matters most.
2. Continuous vision and challenge.
3. Continuous support and security.
4. Continuous openness and trust.
5. Continuous control and guidance.

2.5.2.1 THE FIVE DISCIPLINES FOR EMPOWERMENT MODEL

The Five Disciplines For Empowerment model is summarised in the following paragraphs. This summary is derived from the model presented in A Company of Leaders (Spreitzer, G.M., & Quinn, R.E. 2001).

The First Discipline: Empower The Person That Matters Most.

Leaders need to assess their own empowerment. Empowerment needs to flow through an organisation. Spreitzer and Quinn believe that leaders are

the most important person to empower, stating that leaders need to empower themselves first before other employees can be empowered.

The Second Discipline: Continuous Vision And Challenge

The second discipline involves creating a clear vision and challenge to align employees with the organisation and its mission. Employees need access to this strategic information and to know that there is top-level buy-in and commitment for the empowerment programme. The entire organisation working in the same direction provides synergy and a team atmosphere.

The Third Discipline: Continuous Support And Security

Employees need to feel secure and supported when taking responsibility for the risk involved when making decisions. Employees should be encouraged to take risks and use initiative rather than fear retribution or punishment. Support should come from all levels of the organisation, including management, peers and subordinates.

The Fourth Discipline: Continuous Openness And Trust

Creating an environment that promotes openness and trust means loosening controls and providing employees with access to the information, resources and authority that they require to perform their work. Fundamental to empowerment is the free flow of real-time critical information, including sensitive information that can be jealously guarded in an organisation. Continuous openness and trust requires that the organisation:

- Set the tone.
- Share information freely.
- Treat employees as business partners.
- Build trust.

The Fifth Discipline: Continuous Guidance And Control

Empowerment gives employees the authority and access to information and resources they need to make decisions that impact them in an environment that encourages decision making, risk taking and user intuition. The final

requirement is placing the boundaries for employees and ensuring they have guidance when making decisions. This lets employees know where they have authority to act and provides resources to aid decision making whilst removing ambiguity and uncertainty.

Application Of Methodology

This research is investigating employee self service and whether ESS systems can provide empowerment to employees. The five disciplines model shows that an empowerment programme involves organisational change, not only in processes but also in organisational strategy and culture. Organisational strategy and cultural change are outside the scope of this research, so disciplines one to three will be considered; however, they will not form the basis of the research methodology. Disciplines four and five discuss the availability of information and sharing of control, which is the predominant focus of the research.

The DKS provides information and explicit knowledge to employees. To be properly considered as empowerment the organisation would have to put in place cultural and organisational changes. As this study is focusing on the DKS it will be predominantly concerned with the fourth discipline, which is organisational openness and trust. The fourth discipline is concerned with employees being delegated control from management and given access to the requisite information. To balance this control the fifth discipline involves guidance and retained control by management. The research will therefore investigate the DKS to see whether it can be used to facilitate empowerment for the organisation, through meeting disciplines four and five of Spreitzer and Quinn's Five Disciplines For Empowerment in terms of employee access to and control over personnel information.

2.5.3 HORIBE'S EMPLOYEE DECISION MAKING METHODOLOGY

Empowerment involves power sharing, as is highlighted in disciplines four and five of Spreitzer and Quinn's Five Disciplines For Empowerment model. It is important to set boundaries for power sharing so that all members of the

organisation know what functions they have the authority to perform, and what functions they don't.

Horibe separates decision making into three different types – Technical decisions, Administrative decisions and Managerial decisions. Horibe proposes letting knowledge workers make technical decisions and have management retain administrative and managerial decision-making (Horibe, F. 1999). Employee self service systems attempt to provide employees with the information and authority required to make administrative, and to a lesser extent managerial, decisions that involve the employee (Lokhandwala, S. 2001). This information is not traditionally supplied online to employees, especially the ability to change this information.

As ESS systems are attempting to provide employees with information and authority that they have not traditionally been offered, it is important to find out whether they actually want this new information and authority. The DKS provides NZDF personnel with administrative and managerial information about their personnel information. NZDF employees will therefore be asked whether they want access to this information and also whether they want the ability to control and change this information.

2.5.4 CONCLUSION

The research will gather and analyse respondents' views on the DKS and ESS systems, in particular to ascertain whether access and control of their personnel information is important and whether they would use an ESS system to gain this access and control. The results of the analysis of responses will then be compared with the theories proposed by Horibe and by Spreitzer & Quinn to measure whether the findings of the research match the assertions of the two methodologies. The conclusions from this comparison will then be presented in Section 6 Conclusions and Recommendations.

3 SURVEY METHODOLOGY

3.1 RESEARCH METHOD

3.1.1 METHOD SELECTION

The over-arching hypothesis that will be addressed in this study is “Do employees want control over their personnel information?” The research methods that were assessed for answering this question were: surveys (including interviews and questionnaires), observational techniques, action research, reviews, experiments and case studies.

A survey questionnaire was chosen as the most suitable form of analysis due to the large population and wide geographic spread of NZDF employees across New Zealand. Questionnaires are useful when short concise answers are required, and the questions are straightforward and do not need clarification (Yin, R.K. 1994). Using an email and web page based survey questionnaire provided a cost effective and convenient way to elicit timely responses from a large number of NZDF employees from geographically varied locations. Using a web page to host the survey meant that all responses were anonymous. This anonymity ensures confidentiality for respondents, removing the ability to hold and use information about an individual without their approval (Jolliffe, F.R. 1986).

As a rule questionnaires are less expensive than interviews, especially when large groups of respondents are required, and there is the added benefit of not having to train interviewers (Backstrom, C.H., & Hursch-Cesar, G. 1981). The respondents all respond to the same set of questions enabling standardisation of responses. The respondents can answer when they want and are comfortable to say what they want. Geographically questionnaires can be sent to more respondents in more locations. Replicability is aided, as the interviewer is not present and cannot therefore affect the responses of the respondent, and human recording errors by interpretation are reduced (Jolliffe, F.R. 1986).

Problems associated with surveys include low response rates and possible bias due to the likelihood that not all respondents will reply (Barnett, V. 1991). This has been addressed by sending survey requests to a sample of 1000 employees, only requiring an 18% return for statistical validity. Questionnaire responses are concise and inflexible, and responses are final as no further questioning or clarification can take place, thereby leading to possible misinterpretation (Yin, R.K. 1994). With the large number of surveys expected it would be impractical, for the purposes of this research, to attempt follow up questioning or clarification for respondents. In the case of a web-based survey computer literacy is an issue, however the respondent must be computer literate to use the DKS.

The ease of asking so many people in disparate locations and gathering responses quickly and for little or no cost makes a questionnaire a suitable method of information gathering for this research. To remove problems with possible bias and ensure statistical validity 1000 surveys were sent to randomly selected personnel based on their DKS usage. Questionnaires are also suitable for this study as the analysis will be based on the DKS which is an isolated system performing a specialist role. The questionnaires can be sent directly to those people who use the system through the NZDF network.

The body of knowledge about ESS systems is limited, especially for systems of this scale (with potentially 12,000 employees who could use the system). This study is intended to step into a relatively new area of information technology research so a questionnaire is a suitable method. As this study is only concerned with the NZDF rather than ESS applications in general, the perceived inability to generalise the results for the outside world is not seen as a problem. The issues of the replicability, reliability and validity will be addressed through use of a research design methodology. The research design methodology will outline research objectives, data collection and rationale for case selection (Burns, R.B. 1996).

3.1.2 SELECTION OF STATISTICAL ANALYSIS METHOD

The research will concentrate on the opinions of employees who have access to the DKS, with the sample representing all NZDF employees.

The data gathered for analysis of the DKS was modified to conform to the ratio scale so it is of metric nature and therefore a parametric statistical test was selected (Malhotra, N. 1999). As there is only one sample group univariate techniques will be employed for the analysis of user opinion.

According to Triola the following tests could be deemed suitable: t-test or Z-test. (Triola, M.F. 1997). Selection of the individual test was dependant upon the sample size (Molhotra, Y. 1999). Trochim's Sampling Methodology was utilised to define the sample definition (Trochim, W. 2001a). Determining the sample size required was conducted using the method proposed by Berenson and Levine (1996).

The sample size for the survey is 1,000 employees from a possible group of 12,924 employees. The analysis found that a sample of 180 was required to make accurate generalizations about the population. If the sample is increased then the accuracy increases (Cangelosi, V.E., Taylor, P., & Rice, P. 1976). For this reason the survey sought to increase the sample size. Approval was therefore gained to send one thousand surveys to NZDF employees. A response rate of 18% was therefore required; however, it was expected that the response would be larger. The actual response was 350 returned surveys.

The central limit theorem states that if a large sample is obtained ($n > 30$), then the distribution of sample means can be approximated by the normal distribution (Mumford, E. 1985). The t-test is suitable for small samples, which are less than 30, meaning that the normal distribution cannot accurately be utilised for statistical analysis. The Z-test is suitable for large samples. As the sample size for all of the pages are above 30 then the Z-test can safely be used to analyse a single sample with ratio scale data (Pfanzagl, J. 1994).

Tests For Different Populations And Amounts

Employees were sent a questionnaire to solicit employee opinions about personnel information and the DKS, in an attempt to test the hypotheses of the research. The responses were analysed to ascertain respondents' views and the results of this analysis were used to draw conclusions about the entire user population. To ensure the responses could be measured on a ratio scale the questionnaire answers were allocated numerical values.

The survey responses for the population sample were tested against two acceptance levels; these were 50% and 70% acceptance, using the Z-test statistical test. These acceptance levels display differing levels of acceptance by respondents. If the response passes the 50% acceptance level it will be deemed that respondents agree weakly with the hypothesis. A result exceeding the 70% acceptance level means that respondents agree strongly with the proposed hypothesis.

The Z-test was used twice to ascertain the suitability of each response. The first test was used to measure whether (according to the sample) the results will exceed the acceptance level it is measured against. The second test was a one sided Z-test with a 75% confidence level, to see if the page was close enough to the mean to possibly exceed the required acceptance level. The rationale for the two tests is straightforward. The first test showed whether the mean of the sample was above the mean required to succeed (50% or 70%). The tests that had results that met or exceeded the required means will be deemed to be statistically acceptable and were therefore accepted.

As the tests are being based on a sample, it is possible that some responses may have means that actually exceed the required mean, however that is not reflected in the results. This is known as a Type I error, which rejects the response incorrectly (Siegel, S., & Castellan, I. 1988). The second test was conducted to minimise Type I errors by ensuring the inclusion of responses that had a mean that was above the requirements for acceptance but was not

accurately reflected in the sample (Freund, J.E., & Simon, G.A. 1997). The second test measured the result against a one-sided 75% confidence interval; meaning means that it can be stated with 75% confidence that the sample does include the population mean (Berenson, M.L., & Levine, D.M. 1996). The second test tested the population of responses to a Z-test score of -0.674, which enabled 75% confidence that the response could have been the same as the mean required to pass the first test. The responses that were not accepted, yet were in the 75% confidence interval were termed “fail to reject”. Those underneath the 75% confidence interval were deemed to not be within the range required for attaining a mean to pass the first test, therefore these responses were rejected.

3.1.3 EMPLOYEE OPINION DATA GATHERING

Employee opinion data gathering was conducted by sending 1000 survey requests to NZDF employees. The sample were selected by extracting all DKS users from the Management Information System, which tracks system usage, based on usage of the DKS and other systems. Employees were then selected randomly based on a proportion of usage rates. The selection method is outlined in Section 4.2.2 Employee Survey Recipients. The employees from the selected sample were sent a request to complete the survey and a hyperlink to access the web page that the survey was stored on. Respondents then filled in the survey and submitted the survey. Once the surveys were received they were gathered and transferred into a Microsoft Access database. After the responses had been received the data was extracted from the database and the relevant usage information was copied into Microsoft Excel so that it could be analysed.

Data gathering and analysis involved familiarisation with Perseus software, customisation of the survey for the NZDF intranet, analysis through databases and data extraction to Microsoft Excel.

3.1.4 ANALYSIS OF USAGE DATA

Hypothesis Testing

Before starting analysis a methodology for conducting hypothesis testing was identified, this was the Hypothesis Testing Methodology presented by Triola (1997, p.360). Each hypothesis will be tested against the employee responses using the same tests to measure employee acceptance.

The statistical tests were conducted upon the survey responses from employees. This is reflected in the following hypothesis testing layouts. Each population was tested against two means, one corresponding to a value of 0.7 (70%) acceptance based on employee responses and the other corresponding to a value of 0.5 (50%) acceptance based on employee responses. This means a total of four tests for each response, these tests are:

Tests Based On Employee Response To Questions

Test One: Test to ascertain whether the mean equals or exceeds the mean required to achieve a value of 0.7 (70%) acceptance based on employee responses.

Test Two: To ascertain whether the sample mean is within a one sided 75% confidence interval of the mean of 0.7 (70%) acceptance based on employee responses.

Test Three: Test to ascertain whether the mean equals or exceeds the mean required to achieve a value of 0.5 (50%) acceptance based on employee responses.

Test Four: To ascertain whether the sample mean is within a one sided 75% confidence interval of the mean of 0.5 (50%) acceptance based on employee responses.

Tests Based On Employee Responses

Test One: Test to ascertain whether the mean equals or exceeds the mean required to achieve a 0.7 (70%) acceptance by employees.

No	Stage	Outcome
1	Identify the hypothesis to be tested in symbolic form.	The mean is equal to or greater than 0.7 (70%) acceptance based on employee responses.
2	Give the symbolic form that must be true when the original claim is false.	The mean is less than 0.7 (70%) acceptance based on employee responses.
3	State which is the null hypothesis (generally the one that contains the condition of equality) and state H_1 .	H_0 : Mean is equal to or greater than 0.7 (70%). H_1 : Mean is less than 0.7 (70%).
4	Select the significance level.	$\alpha = 0.5$.
5	Identify the statistic that is relevant to this test and determine its sampling distribution.	\bar{X} is equal to or greater than 0.7 (70%). The sampling distribution is the normal distribution as the sample is above 30.
6	Determine the test statistic, the critical values and the critical range.	σ = Different for each page (See analysis). Critical value $Z=0$ and above. Critical range $Z<0$.
7	Reject H_0 /Accept H_0 (depends on test).	See analysis.
8	State the finding in simple non-technical terms.	See analysis.

Table 3.1 Z-Test One

Test Two: To ascertain whether the sample mean is within a one sided 75% confidence interval to achieve a 0.7 (70%) acceptance by employees.

No	Stage	Outcome
1	Identify the hypothesis to be tested in symbolic form.	The mean is equal to or greater than 0.7 (70%) acceptance based on employee responses.
2	Give the symbolic form that must be true when the original claim is false.	The mean is less than 0.7 (70%) acceptance based on employee responses.
3	State which is the null hypothesis (generally the one that contains the condition of equality) and state H_1 .	H_0 : Mean is equal to or greater than 0.7 (70%). H_1 : Mean is less than 0.7 (70%).
4	Select the significance level.	$\alpha = 0.25$.
5	Identify the statistic that is relevant to this test and determine its sampling distribution.	\bar{X} is equal to or greater than -1.645 (Z-test). The sampling distribution is the normal distribution as the sample is above 30.
6	Determine the test statistic, the critical values and the critical range.	σ = Different for each page (See analysis). Critical value $Z=-0.674$ and above. Critical range $Z<-0.674$.
7	Reject H_0 /Accept H_0 (depends on test).	See analysis.
8	State the finding in simple non-technical terms.	See analysis.

Table 3.2 Z-Test Two

Test Three: Test to ascertain whether the mean equals or exceeds the mean required to achieve a 0.5 (50%) acceptance by employees.

No	Stage	Outcome
1	Identify the hypothesis to be tested in symbolic form.	The mean is equal to or greater than 0.5 (50%) acceptance based on employee responses.
2	Give the symbolic form that must be true when the original claim is false.	The mean is less than 0.5 (50%) acceptance based on employee responses.
3	State which is the null hypothesis (generally the one that contains the condition of equality) and state H_1 .	H_0 : Mean is equal to or greater than 0.5 (50%) acceptance based on employee responses. H_1 : Mean is less than 0.5 (50%) acceptance based on employee responses.
4	Select the significance level.	$\alpha = 0.5$.
5	Identify the statistic that is relevant to this test and determine its sampling distribution.	\bar{X} is equal to or greater than 0.5 (50%) acceptance based on employee responses.
6	Determine the test statistic, the critical values and the critical range.	σ = Different for each page (See analysis). Critical value $Z=0$ and above. Critical range $Z<0$.
7	Reject H_0 /Accept H_0 (depends on test).	See analysis.
8	State the finding in simple non-technical terms.	See analysis.

Table 3.3 Z-Test Three

Test Four: To ascertain whether the sample mean is within a one sided 75% confidence interval to achieve a 0.5 (50%) acceptance by employees.

No	Stage	Outcome
1	Identify the hypothesis to be tested in symbolic form.	The mean is equal to or greater than 0.5 (50%) acceptance based on employee responses.
2	Give the symbolic form that must be true when the original claim is false.	The mean is less than 0.5 (50%) acceptance based on employee responses.
3	State which is the null hypothesis (generally the one that contains the condition of equality) and state H_1 .	H_0 : Mean is equal to or greater than 0.5 (50%) acceptance based on employee responses. H_1 : Mean is less than 0.5 (50%) acceptance based on employee responses.
4	Select the significance level.	$\alpha = 0.25$.
5	Identify the statistic that is relevant to this test and determine its sampling distribution.	\bar{X} is equal to or greater than -1.96 (Z-test). The sampling distribution is the normal distribution as the sample is above 30.
6	Determine the test statistic, the critical values and the critical range.	Σ = Different for each page (See analysis). Critical value $Z=-0.674$ and above. Critical range $Z<-0.674$.
7	Reject H_0 /Accept H_0 (depends on test).	See analysis.
8	State the finding in simple non-technical terms.	See analysis.

Table 3.4 Z-Test Four

These tests were conducted upon the research hypotheses to ascertain employee acceptance.

3.1.5 APPLYING STATISTICAL ANALYSIS METHOD TO THE DATA

The statistical testing has been conducted using a four-stage process, which is reflected in the layout of the statistical analysis pages for each hypothesis. These stages are:

Stage One: Identification Of Hypothesis And Questions.

Stage Two: Statistical Test Requirements.

Stage Three: Statistical Z-Test Analysis.

Stage Four: Returns Based On Statistical Analysis.

Explanation Of Sections

Stage One: Identification Of Hypothesis And Questions.

The hypothesis is stated and the questions used to answer the hypothesis are identified. Responses have weightings attributed to them to aid analysis.

Stage Two: Statistical Test Requirements.

The statistical test requirements section shows the transformations required to get the data into a usable format for the test.

Stage Three: Statistical Z-Test Analysis.

The statistical Z-test section shows the results of the hypothesis and related questions when subjected to the four statistical tests using the Z-test.

Stage Four: Returns Based On Statistical Analysis.

The returns based on statistical analysis transform the Z-test findings into employee acceptance ratios to represent employee responses and opinions.

3.1.6 FINALISED ANALYSIS

The results of the survey responses have been compiled and prepared for analysis. There were several spreadsheets that were used to calculate this information, which are available upon request. The results were analysed and the interpretation of this analysis is contained in Section 5 Analysis.

3.2 SURVEY METHODOLOGY

The Steps In Developing A Questionnaire methodology (Department Of Statistics, 1992, p.37) was selected for the development of the survey questionnaire. This methodology proposes the following plan for questionnaire development:

1. Define information needs.
2. List who will use the questionnaire.
3. Gain approval of questions.
4. Consult with users to gain reasonable confidence that the questions will work.
5. Questionnaire produced and approved by everyone who has to approve it.
6. Evaluation by users to ensure that the questionnaire will work.

3.2.1 DEFINE THE INFORMATION NEEDS

The purpose of the research was to evaluate whether employees wanted empowerment and whether it was beneficial to the organisation to provide empowerment through ESS systems. The scope of the research changed to become more focussed upon whether the DKS provides empowerment. It was intended to measure employee satisfaction against a previous study of financial benefits the DKS provides to the organisation. Due to the high response to the questionnaire, the scope was subsequently changed to focus on whether employees wanted control over their personnel information. This change of focus provided more scope to conduct an in-depth analysis.

3.2.2 LIST WHO WILL USE THE QUESTIONNAIRE

The target audience of the questionnaire were NZDF employees, as the intended users of the DKS. There are 12,924 employees in the NZDF. As it would be impractical to send surveys to every single NZDF employee it was decided to send surveys to a sample of employees. As the sample required for statistical validity was calculated and rounded to 180, it was decided to send 1000 surveys by email to prospective respondents. This would require a response rate of 18%.

The NZDF has an application called the MIS that stores usage information about NZDF developed applications. The MIS records and stores the usage of DKS by individual users. The MIS system showed usage of the DKS; however, it could not show whether employees that had not used the DKS actually had access to a personal computer. With 12,924 employees and only 6,900 personal computers at the NZDF it was likely that a number of randomly selected users would not have access to a personal computer and therefore not respond. A low response rate would limit the statistical validity and compromise the value of the research. It was suggested that the scope of the research could be those employees who had used the DKS to ensure that all recipients would receive the survey and have the chance to respond. Discussions with the Atlas Manager showed that the NZDF would prefer to have a cross section of respondents based on system usage, including those employees who had never used the DKS. The MIS is a tool that monitors usage of applications by employees who have a registered logon. The MIS showed that there were 9,504 employees that have computer logon access, which would be used as the population to draw the sample from. Research showed that stratified sampling (Jolliffe, F.R. 1986) based on usage would provide a viable method of user selection. The sample was selected using stratified random sampling based on prior system usage. These users were divided into groups based upon their previous usage of the DKS. They were then randomly selected from those groups based on the proportion of the entire population that that group represented. This was done to ensure that

the survey received responses from users with different levels of familiarity with the DKS, thus representing the user population.

Personnel Branch, the Atlas Systems Manager and Manager Corporate Applications are responsible for ATLAS and the DKS. They were all consulted about the questionnaire, and provided their approval of the sample selection method. They also provided representatives who participated in the pilot study.

3.2.3 GAIN APPROVAL OF QUESTIONS

The questions for the questionnaire were developed in conjunction with Personnel Branch. Approval to perform the study, and approval of the questions was sought from Personnel Branch. The Atlas Manager and Manager Corporate Applications were also asked to approve the questions. Approval was gained from all three parties.

3.2.4 CONSULT WITH USERS ABOUT QUESTIONS

The questions were supplied to a DKS user from each service (Army, Air, Navy and Civilian) to gain their initial impressions of the questions. This was done to ensure that users understood the questions, to test the suitability of the questions and to remove any ambiguity. The response from users provided constructive feedback, which was used to fine-tune the questions. Some questions were modified based on this feedback to ensure they were suitable, understood and not ambiguous. The major obstacle was making the questions match organisational culture and jargon. The civilian user was concerned that the DKS did not currently hold all civilian information. This concern was later addressed as Atlas, and therefore the DKS, was updated to hold all civilian information before the population sample survey was conducted. Each user agreed to be part of a pilot study to test the finalised questionnaire.

3.2.5 QUESTIONNAIRE PRODUCED AND APPROVED

Initially the survey was designed using Microsoft Visual Studio.Net. Using Visual Studio.Net would have required substantial development, delivery, collection strategies and programming to be undertaken. Investigations showed that Personnel Branch had previously used a survey package called Perseus to conduct web based surveys. Perseus could be used to develop the survey and with slight modifications could be used to distribute and collect the questionnaires. Once the responses were collected Perseus would collate them in a database. Perseus also had a database analysis function, although there were problems using the database for analysis, which necessitated the use of Microsoft Excel. The questionnaire was developed using Perseus and approval for the questionnaire was sought and gained from Personnel Branch, the Atlas Manager and Manager Corporate Applications.

The questionnaire was divided into the following sections:

- Usage Of The System.
- Basic Impressions Of The System Layout.
- Importance Of Access To Personnel Information/Information Needs.
- Does The DKS Help You To Meet Your Needs?
- Rating Each Page And Comments On The Page.
- Suggested Improvements To The DKS.
- Demographics – About The Employee.

The questionnaire responses were used to provide information to answer the hypotheses presented in Section 4.4 Hypotheses.

3.2.6 EVALUATION

A pilot study was conducted with a sample of 18 personnel to iron out any problems with the survey and associated technology. The group consisted of a cross section of employees employed by the Defence Computer Services Bureau. They were selected based a combination of factors including gender,

whether they were military or civilian, their rank and age. This was done to ensure the representation of as many of the groups in the NZDF as possible. The major limitation with the sample was that they work with computers and are all computer literate, which was overcome in the actual survey by selecting a sample that represented the entire population. The response was generally positive with an average time taken to complete the survey of 15 minutes. The technology worked, however there were some problems with the servers.

4 SURVEY RESEARCH

4.1 NZDF OPERATING ENVIRONMENT

The New Zealand Defence Force (NZDF) employs 12,924 people making it one of the largest organisations in New Zealand. This figure is made up of 8695 Regular force, 2444 Non-regular force and 1785 Civilians (NZDF. 2001).

The level of autonomy offered to employees of the NZDF is limited due to the nature of the operating environment. The predominant focus of the NZDF is the defence of NZ or peacekeeping and war fighting in dangerous overseas locations. Operating in dangerous and stressful situations increases the need for discipline, strict controls and procedures. Failure to adhere to these principles can lead to death. The operating environment of the NZDF would limit the ability or intent to implement workplace democracy. The government sets guidelines and objectives for the NZDF and allocates funding, limiting the scope for democratic decision-making about the organisation's strategic direction, which is highly regulated. That said, there are areas where the organisation could benefit from empowerment, increased information flows and empowered decision-making. These areas include information about the employee's dependants, pay and entitlements. These increased information flows are important, as a bad decision could result in serious injury or death, for example using the wrong blood type on a wounded soldier.

In 1993 The Privacy Act was passed. Under The Privacy Act companies were required by law to provide any information stored about an employee, if the employee requested that information. Employees at the NZDF have traditionally been required to contact their administration centre or manager to access personnel information stored about them.

The NZDF stores all of its military personnel information on ATLAS, which is an in-house human resource application. In 2001 the NZDF decided to take a more proactive approach towards providing employees with their personnel information by placing it on a kiosk system. This measure was also designed

to save administrative overheads (time and money). The NZDF established the DKS to provide personnel with their personnel information online. The kiosk system is accessible from any desktop computer on the Defence Network. The civilian personnel information was transferred to Atlas in 2002 and is now also available on the DKS.

It is believed that the DKS provides useful personnel information about themselves to employees, and that the DKS can aid empowerment and decision making by placing control of their personnel information in the hands of the NZDF employees.

4.2 DESCRIPTION OF SURVEY GROUPS

The survey was sent to two groups, firstly a pilot study to test the survey and secondly the main survey was sent to a randomly selected sample of 1000 employees based on usage rates.

4.2.1 PILOT STUDY

The pilot study population was made up of IT professionals from Defence Computer Services Bureau (DCSB). The pilot study was conducted to:

- Test that the software and method of web delivery of the survey worked.
- Gain a sample response for the survey.
- Solicit any suggestions for improvement.
- Identify problems.
- See how long the survey would take to complete.

The addressees for the pilot study were selected to get a cross section of NZDF employees. The sample chosen was as follows:

- Army 3 personnel.
- Air 2 personnel.
- Navy 2 personnel.
- Civilian 11 personnel.

4.2.2 POPULATION SAMPLE SURVEY RECIPIENTS

When conducting statistical analysis it is important to attempt the reduction of systematic error, or bias wherever possible (Sheskin, D.J. 1997). Random selection is the process of drawing the sample from the population in a way that will not bias or skew your results (Sprent, P. 1981). Random selection aids external validity or the ability to generalise the results to a wider population (Trochim, W. 2001b).

The survey recipients were selected based on their usage of the DKS. This usage information was supplied by the MIS, which tracks system usage by employees. The DKS users were split into five groups based on DKS usage, and a random sample was taken from each group based on the group's proportion of the total number of users. These groups were: employees that had used the DKS over 50 times, employees with 20 to 49 uses, those with 10 to 19 uses, employees with less than 10 uses and those with Zero Usage. Each group had a separate sample randomly selected that would be sent questionnaires. By randomly selecting the samples the validity and the ability to generalise the results are increased (Trochim, W. 2001c). The samples were selected by the allocation of a random number to each employee. Once employees had been mixed using this system they were sorted and selected by these random numbers. One thousand surveys were sent to the selected NZDF employees by email. Responses were treated confidentially as they were sent by employees from the web page and were therefore unidentifiable. The employees sent the survey were randomly selected as a proportion of the population based on usage as shown in the table below:

	Number	Percentage	Surveys to send
Over 50 Uses	1166	12.27	123
20 to 49 Uses	2174	22.87	229
10 to 19 Uses	1807	19.01	190
Less Than 10 Uses	3585	37.72	377
Zero Usage	772	8.12	81
	9504	100	1000

Table 4.1 Sample Selection

The reason that there were only 9504 employees selected was that the MIS only records employees who have registered NZDF logon accounts. The majority of territorial employees and certain other employee groups do not have logon accounts as they do not have access to the NZDF Networks. This is a limitation to the research, however it is viewed as acceptable as the target group of DKS users need to have computer access to access the DKS.

4.3 SURVEY QUESTIONS

The survey questions were developed in conjunction with the NZDF Personnel Branch. A copy of the survey is attached as Appendix A.

4.4 HYPOTHESES

Control is a fundamental issue in empowerment. This research attempts to find out whether employees want control over their personnel information, which leads to the first hypothesis:

Hypothesis One

Employees Want Control Over Their Personnel Information.

Control over information includes Access to information and Authority to change information (McCoy, T.J. 1996). According to Horibe (1999) work based information can be broken into technical, administrative and managerial information. The traditional approach is to provide employees access to technical information needed to perform work and retain control over administrative and managerial information. This research investigated whether employees want control over administrative and managerial personnel information. The first question that comes from this is therefore whether employees want control over their administrative personnel information, which is presented as hypothesis two.

Hypothesis Two

Employees Want Control Over Their Administrative Personnel Information.

In addition to control over administrative personnel information, employees were also asked whether they want access to their managerial personnel information, which is presented in hypothesis three.

Hypothesis Three

Employees Want Access To Their Managerial Personnel Information.

The DKS and most ESS systems are computer-based systems. If the DKS is proposed as a solution for providing employees with their administrative and managerial personnel information then employees need to be willing to access their personnel information using a personal computer. This issue is raised as hypothesis four.

Hypothesis Four

Employees Are Prepared To Use Computers To Access Their Personnel Information.

Finally employees were asked whether the DKS actually meets their personnel information needs by providing them with the information that they need to access. This is presented as hypothesis five.

Hypothesis Five

The DKS, as a computerised HR ESS system, meets the personnel information needs of employees.

The following section shows what questions were used to answer these hypotheses.

4.5 HYPOTHESES AND RELATED QUESTIONS

4.5.1 HYPOTHESIS ONE

Employees Want Control Over Their Personnel Information.

(Including: Access to information, Authority to change information, Control over information).

A combination of the results of hypotheses two to five will provide the overall view of whether employees want control over their personnel information, and whether ESS systems (in particular the DKS) meet their personnel information needs.

4.5.2 HYPOTHESIS TWO

Employees Want Control Over Their Administrative Personnel Information.

This hypothesis will be answered based on the results of four questions, which have been divided into three distinct sections:

- Importance of access to administrative information.
- Ability to change administrative information.
- Control and access over administrative information.

4.5.2.1 IMPORTANCE OF ACCESS TO ADMINISTRATIVE INFORMATION

Employees were asked to rate the usefulness of the information on the administrative pages held on the DKS. The results of this question will show the importance employees place on the administrative personnel information held in the DKS and show whether employees want to access their administrative personnel information.

Question

34. Please rate the usefulness of information on the following DKS pages:

- Administration Details
- Casualty Notification

- Change Card Pin
- Child Care
- Contact Information
- Dependants
- Dining Statement
- Home Address
- Leave
- Next of Kin
- Personal Details
- Personal Documents
- Postal Address
- Ration Ashore
- Security
- Sport

The results from this question were weighted using the following grades:

	Grade
Very Useful	1
Useful	0.667
Not Very Useful	0.333
No Use	0
Not Applicable (Not counted)	

4.5.2.2 ABILITY TO CHANGE ADMINISTRATIVE INFORMATION

This section questions whether employees want to gain control over their administrative information by gaining the ability to change details of their administrative information.

Question

29. You can currently only change your phone numbers and "known as" name in the Contact Information page. What other information in your personnel records would you like to be able to change?

	Grade	Yes	No
Allotment Details		1	0
Bank Account Details		1	0
Child Care		1	0
Contact Details		1	0
Next of Kin		1	0
Other Addresses		1	0
Will Details		1	0
Other (please state)		Not counted	

The Other column was included in the survey to gain detailed responses rather than statistical data. Responses for Other were not counted, as they would not provide a statistically meaningful result.

4.5.2.3 CONTROL OVER ACCESS TO ADMINISTRATIVE INFORMATION

Employees are asked whether they want to access certain personnel information and what method they would prefer to use. Payslips and leave applications are two employment related processes in the NZDF that were previously paper based. Providing computerised records would enable employees to check their pay whenever they want to, and to be able to track leave applications and their approval.

Question

32. Paper payslips are expensive and could easily be replaced by online copies that can be printed out as required by employees. Would you prefer to have your payslips on paper, online or both online and paper copies?

	Grade
Online Copy	1
Paper Copy	0
Both Online and Paper Copies	0.5

Question

33. Paper based leave applications can be time consuming and difficult to track. Would you prefer to apply for leave and have leave approved online?

	Grade
No, Stay with paper copies	0
Only leave applications online	0.5
Leave application and approval online	1

These questions were given a weighting of 1 for online copy to show that employees wanted personal computer access and therefore increased access and control. To stay with the paper copy only was accorded 0, as the employee would not want computerised access and the associated benefits. To have both methods was accorded 0.5 as it was deemed to be a middle ground.

4.5.3 HYPOTHESIS THREE

Employees Want Access To Their Managerial Personnel Information.

As the managerial information on the DKS is relating to employees, their conditions of employment and their careers, it would not be prudent to offer them the ability to make managerial decisions as it may cause a conflict of interest e.g. employees should not be able to change the amount of their salary. There is no reason; however, that the employees shouldn't be privy to information about them that is used to make managerial decisions. This added transparency would empower employees through provision of knowledge, whilst retaining control for management. Employees could use the information to make decisions or preparations that affect them without management delegating authority and causing a possible conflict of interest. This hypothesis will be answered based on the results of four questions, which have been divided into two distinct sections:

- Access to managerial information for self management.
- Importance of access to managerial information.

4.5.3.1 MANAGERIAL INFORMATION FOR SELF MANAGEMENT

Career management is important to employees as it can lead to increased benefits including promotion and pay increases. The following question asks whether employees think that being able to see the personnel information stored about them will improve their ability to manage their careers.

Question

17. Does the ability to access your personnel record improve your ability to manage your career?

	Grade
Yes	1
No	0

Once employees responded whether they believed that personnel information was useful for career management, they were asked what personnel information they could use for their career.

Question

19. What career based purposes do you use, or could you foresee using, your online personnel information for?

	Grade	Yes	No
Checking entitlements		1	0
Promotion prospects		1	0
Training requirements		1	0
Pay reviews		1	0
Postings		1	0
Other (please state)		Not Counted	

The DKS is an ESS system that provides employees with access to their personnel information. This question asks whether it succeeds in providing access to the information that employees need to manage their personnel information.

Question

30. Does the DKS provide you with access to the information you need to manage your personnel information?

	Grade
Yes	1
No	0

4.5.3.2 IMPORTANCE OF ACCESS TO MANAGERIAL INFORMATION

Employees were asked to grade the usefulness of different types of managerial personnel information. The usefulness of the information would show whether the information was important to respondents and whether they would therefore want access to that information. The questions were given a weighting of 1 for really useful responses to show that employees thought the page was really useful and therefore important. Replies of useful were deemed to be slightly less important and were therefore weighted as 0.667. Pages that were not much use were less important and weighted as 0.333. Pages that were no use at all were weighted as 0. The not applicable responses were not counted as the study wanted to measure the importance of the information to the employees that would use it.

Question

34. Please rate the usefulness of information on the following DKS pages

- Branch Corps
- Career Progression
- Courses
- Engagement
- Health
- Honours and Awards
- Promotion Details
- Qualifications
- Service History
- Supernumerary Appointments

- Navy Sub Spec (Navy Only)
- Navy Task Book (Navy Only)

	Grade
Really useful	1
Useful	0.667
Not Much Use	0.333
No Use at All	0
Not Applicable (Not counted)	

4.5.3.3 ABILITY TO CHANGE MANAGERIAL INFORMATION

There is no ability for employees to change managerial personnel information in the NZDF and there are no foreseeable changes to this in the future.

4.5.4 HYPOTHESIS FOUR

Employees want control over personnel information and are willing to use personal computers as a tool to gain that control.

This hypothesis will determine whether access to personnel information is important to employees and whether employees would be willing to use a computer for accessing and changing their personnel information. To gather this information three questions needed to be answered:

- Is it important for employees to access their personnel information?
- Would employees use a computer to access their personnel information?
- Would employees use a computer to change their personnel information?

4.5.4.1 IS IT IMPORTANT TO ACCESS PERSONNEL INFORMATION?

Before the success of the DKS can be measured it is pertinent to ask whether access to personnel information is important to employees.

Question

15. Is it important to you to be able to access your personnel records?

	Grade
Yes	1
No	0

4.5.4.2 WOULD USE A COMPUTER TO ACCESS INFORMATION

The DKS is a computerised ESS system so it is important to gauge employee willingness to access personnel information by computerised means. If employees choose not to use a computer to access their personnel information then this will limit adoption of the DKS.

Question

20. Would you prefer to use a computer to access your personnel information rather than contact your administration centre?

	Grade
Yes	1
Depends on the information	0.5
No	0

4.5.4.3 WOULD USE COMPUTER TO CHANGE THEIR INFORMATION

Using a computer to change their own details would provide employees with increased control over their personnel information. Employees were therefore asked whether they would prefer to use a computer to change their personnel information.

Question

22. Would you prefer to use a computer to change details on your personnel information rather than have to pass the information to your administration centre?

	Grade
Yes	1
Depends on the information	0.5
No	0

4.5.5 HYPOTHESIS FIVE

The DKS, as a computerised HR ESS system, meets the personnel information needs of employees.

This hypothesis will determine whether the DKS meets employees’ personnel information needs. To gather this information three questions needed to be answered:

- Do employees think that the information stored on the DKS is useful?
- Does the DKS have all of the personnel information employees need?
- Can employees use the DKS to answer all of their personnel questions?

4.5.5.1 INITIAL IMPRESSIONS

Employees were asked what they thought of the DKS in an attempt to ascertain its usefulness.

Question

24. What are your general impressions of information on the DKS?

	Grade
Really useful	1
Useful	0.666
Not Much Use	0.333
No Use at All	0
Not Applicable (Not counted)	

4.5.5.2 DOES THE DKS HAVE THE INFORMATION EMPLOYEES NEED?

The main function of the DKS is to provide personnel information to employees. Employees were asked if the information provided by the DKS met their personnel information needs.

Question

25. Does the DKS provide access to all the information about your personnel records that you need?

	Grade
Yes	1
No	0

4.5.5.3 CAN EMPLOYEES ANSWER PERSONNEL QUESTIONS?

ESS systems are intended to empower employees by providing them with the information they require to make decisions and to be able to answer any questions that they may have.

Question

27. If you had a question about your personnel information do you think that you could get the information you require easily from the DKS?

	Grade
Yes	1
No	0

5 ANALYSIS

The result of hypothesis one is dependant upon hypotheses two to five. For the purposes of this analysis section the results of hypotheses two to five will be presented and then combined at the end of this section to form the basis of the analysis of hypothesis one.

5.1 HYPOTHESIS TWO

Employees Want Control Over Administrative Personnel Information

Respondents were asked various questions to ascertain their views for this hypothesis; these questions were grouped into the following three sub hypotheses for analysis:

- Importance of access to administrative personnel information.
- Ability to change administrative personnel information.
- Control and access to administrative personnel information.

For hypothesis two to be accepted all three of these sub-hypotheses must be accepted.

5.1.1 IMPORTANCE OF ACCESS TO ADMINISTRATIVE INFORMATION

Respondents were asked to rate the usefulness of administrative personnel information stored on the DKS. The usefulness of this information would show whether it was important to respondents and whether they would therefore want access to that information. The responses were measured against 70% and 50% acceptance points.

5.1.1.1 POPULATION SAMPLE INDIVIDUAL QUESTION RESPONSES

The results from the respondents of the population sample for each information type are shown in the following table:

Name	Accept	70% Accept	75% Confidence	50% Accept	75% Confidence	Response Rate
Administration Details	79.91%	Accept	Cannot Reject	Accept	Cannot Reject	97.01%
Casualty Notification	75.04%	Accept	Cannot Reject	Accept	Cannot Reject	95.85%
Change Card Pin	68.73%	Fail	Cannot Reject	Accept	Cannot Reject	85.19%
Child Care	48.38%	Fail	Cannot Reject	Fail	Cannot Reject	56.10%
Contact Information	72.72%	Accept	Cannot Reject	Accept	Cannot Reject	99.41%
Dependants	68.69%	Fail	Cannot Reject	Accept	Cannot Reject	83.93%
Dining Statement	64.56%	Fail	Cannot Reject	Accept	Cannot Reject	80.66%
Home Address	67.86%	Fail	Cannot Reject	Accept	Cannot Reject	99.71%
Leave	87.16%	Accept	Cannot Reject	Accept	Cannot Reject	95.22%
Next of Kin	74.47%	Accept	Cannot Reject	Accept	Cannot Reject	99.41%
Personal Details	76.22%	Accept	Cannot Reject	Accept	Cannot Reject	98.81%
Personal Documents	76.43%	Accept	Cannot Reject	Accept	Cannot Reject	97.31%
Postal Address	71.78%	Accept	Cannot Reject	Accept	Cannot Reject	98.82%
Ration Ashore	40.39%	Fail	Reject	Fail	Cannot Reject	42.41%
Security	73.61%	Accept	Cannot Reject	Accept	Cannot Reject	97.61%
Sport	58.61%	Fail	Cannot Reject	Accept	Cannot Reject	86.10%

Table 5.1 Individual Question Responses

Respondents were asked to assess sixteen types of administrative personnel information stored on the DKS. Of the responses for the pages only the response for the Child Care page (48%) and Ration Ashore page (40%) were below the 50% acceptance point. Ration Ashore was the only page that was statistically rejected at a 75% confidence level for the 70% threshold, however it is only used by Navy personnel and is therefore of lesser importance to the population as a whole. The response rate for Ration Ashore was 42% and the response rate for Child Care was 56%. As these pages are not of use to all respondents it is difficult to establish whether respondents would be members of the target users of the pages or whether they are answering in the negative to pages that have no relevance to them, which in turn biases the result.

All of the other pages had a response rate over 80%, which provides a degree of confidence for the validity of the results. The response for the Dependants page was twenty percent above the response for the Child Care page, so respondents want their dependant information known for employment matters i.e. eligibility for income support supplements, however the child care information is not viewed as having as much importance.

Although the Child Care page was rated lowly, the page could be very important to parents and therefore very useful to that group of respondents. The population sample had many people who do not have children, and would therefore never use the Child Care page, answering and thereby biasing the result.

The responses for nine of the pages exceeded the 70% acceptance point. The distribution of the responses was close to 70% with eleven of the pages within 7 percentage points of the 70% threshold. Two pages were above this seven percent spread; these were Leave (87.2%) and Administrative Details (79.9%), which were significantly higher than the 70% acceptance point. The remainder of the pages fell between the 50% and 70% acceptance points.

Fifteen of the sixteen pages exceeded the 50% acceptance point. Only Sport, Ration Ashore and Child Care were rated useful by less than 60% of respondents, with Ration Ashore and Child Care both below the 50% threshold. Ration Ashore and Child Care were the only pages that could not be accepted at the 50% acceptance point, however both of these pages could not be rejected at the 75% confidence level.

5.1.1.2 POPULATION SAMPLE CONSOLIDATED RESPONSES

When combining the responses for a weighted response the usefulness of information was graded at 70.95%, thereby surpassing the 70% acceptance point and the 50% acceptance point as shown in the following table:

Statistical Criteria	Z-Test Result	Result	75% Confidence
Acceptance at 70%	0.037722548	Accept	Cannot Reject
Acceptance at 50%	0.830470081	Accept	Cannot Reject

Table 5.2 Usefulness Of Information

As the response from the population sample exceeded the 70% acceptance level under Z-test analysis, the hypothesis that respondents want access to administrative personnel information is therefore accepted for the population sample.

5.1.1.3 ANALYSIS RESULTS

The averaged result of the population sample response for this sub hypothesis passed the 70% acceptance point under Z-test analysis. A high response rate contributes to the reliability, validity and the ability to generalise the results (Berenson, M.L., & Levine, D.M. 1996). The number of responses exceeded the required sample size, enabling the results to be generalised for the entire NZDF population. The sub-hypothesis that access to administrative personnel information is important to employees is therefore accepted for both the population sample and the entire NZDF population.

5.1.2 ABILITY TO CHANGE ADMINISTRATIVE INFORMATION

Respondents were asked whether it was important to be able to change any of eight types of administrative personnel information. Each of these information types is supported by a page on the DKS.

5.1.2.1 POPULATION SAMPLE INDIVIDUAL QUESTION RESPONSES

The results from the population sample respondents' questionnaire for each information type are shown in the following table:

Name	Accept	70% Accept	75% Confidence	50% Accept	75% Confidence	Response Rate
Allotment Details	54.57%	Fail	Cannot Reject	Accept	Cannot Reject	100.00%
Bank Account Details	66.86%	Fail	Cannot Reject	Accept	Cannot Reject	100.00%
Child Care	36.00%	Fail	Reject	Fail	Cannot Reject	100.00%
Contact Details	91.43%	Accept	Cannot Reject	Accept	Cannot Reject	100.00%
Next of Kin	88.86%	Accept	Cannot Reject	Accept	Cannot Reject	100.00%
Other Addresses	79.14%	Accept	Cannot Reject	Accept	Cannot Reject	100.00%
Will Details	61.71%	Fail	Cannot Reject	Accept	Cannot Reject	100.00%
View Entitlements	80.57%	Accept	Cannot Reject	Accept	Cannot Reject	100.00%

Table 5.3 Ability To Change Administrative Information

Population sample respondents were asked whether it was important to be able to change any of eight types of administrative personnel information. There was a marked split in the responses to this question. Four of the types

of information were nine percentage points or greater above the 70% acceptance point. These pages were around 80% or higher, with contact details rated especially highly. Respondents also stated a strong preference for the ability to change their Next of Kin (89%), Other Addresses (79%) and View Entitlements (81%). The Bank Account Details page was close to the 70% acceptance point at 66.9%. The remaining three pages were more than 8% below the 70% acceptance point. A low 36% wanted the ability to change Child Care information, with Allotment Details (55%) and Will Details (62%) failing to pass the 70% threshold. Child Care was the only page that could be rejected at a 75% confidence level for the 70% acceptance point. Will details passed the 50% acceptance point, which is be a reflection of the dangerous nature of the military and the need to locate will documents in case of an accident. This is confirmed in the following table which shows that 70.82% of military respondents from the population sample thought that the ability to change will details was important, compared to only 36.56% of civilian respondents.

Respondents	Responses	Affirmative	Percentage
Civilian	93	34	0.365591
Non Civilian	257	182	0.708171
Total	350	216	0.617143

Table 5.4 Administrative Information By Respondent

Seven of the eight pages exceeded the 50% acceptance point. Child Care (36%) was the only page that did not exceed the 50% acceptance point, however it was not rejected at a 75% confidence level for the 50% acceptance point. The Allotment Details page (54.57%)was the only page that was close to the 50% acceptance point, with the responses for all of the other pages in excess of 60%.

5.1.2.2 POPULATION SAMPLE CONSOLIDATED RESPONSES

When the population sample results were combined, on average 69.89% of respondents wanted the ability to change their administrative personnel information. Although the results of the Z-test failed to accept the response at 70%, the results are close enough to be deemed acceptable at the 70%

acceptance point. The average exceeded the 50% acceptance level and could not be rejected at 75% confidence as shown in the table below:

Statistical Criteria	Z-Test Result	Result	75% Confidence
Acceptance at 70%	-0.002529185	Fail	Cannot Reject
Acceptance at 50%	0.469585365	Accept	Cannot Reject

Table 5.5 Ability To Change Administrative Information Consolidated

5.1.2.3 ANALYSIS RESULTS

The averaged result of the population sample response for the second sub hypothesis was 69.89%, which was close enough to 70% to be deemed acceptable. The number of responses exceeded the required sample size enabling the results to be generalised for the entire NZDF population. The sub-hypothesis that the ability to change personnel information is important to employees is therefore accepted for the population sample and the entire NZDF population.

5.1.3 CONTROL OVER AND ACCESS TO ADMINISTRATIVE INFORMATION

The third part of the hypothesis is an attempt to ascertain whether employees want control over, and access to administrative personnel information. Two pages were selected as they provide all employees with benefits and had scope for increased employee control; these were payslips and leave management.

5.1.3.1 POPULATION SAMPLE INDIVIDUAL QUESTION RESPONSES

Respondents from the population sample stated a preference to gain access and control over their Payslips (74.11%) and Leave Applications (69.94%). The response for payslips exceeded the 70% acceptance point and could not be rejected at the 75% confidence level. Subsequently the Z-test narrowly failed to accept the result for leave at 70% however it could not be rejected at 75% confidence for the 70% acceptance point. Both pages were accepted at the 50% acceptance point and could not be rejected at the 75% confidence level for the 50% acceptance point, as shown in the table below:

Name	Accept	70% Accept	75% Confidence	50% Accept	75% Confidence	Response Rate
Payslips	74.11%	Accept	Cannot Reject	Accept	Cannot Reject	96.00%
Leave Applications	69.94%	Fail	Cannot Reject	Accept	Cannot Reject	96.00%

Table 5.6 Control Over Administrative Information

Although the response for leave applications was failed by the Z-test, it was close enough to 70% to be accepted.

5.1.3.2 POPULATION SAMPLE CONSOLIDATED RESPONSES

Combining the results of the responses provided an average of 72.02%, which exceeded the 70% acceptance point and could not be rejected at the 75% confidence level. The combined results also exceeded the 50% acceptance point and could not be rejected at the 75% confidence level. The results of the Z-test for combined results are shown in the following table:

Statistical Criteria	Z-Test Result	Result	75% Confidence
Acceptance at 70%	0.054517772	Accept	Cannot Reject
Acceptance at 50%	0.593281635	Accept	Cannot Reject

Table 5.7 Control Over Administrative Information Consolidated

5.1.3.3 ANALYSIS RESULTS

The averaged result of the population sample response for hypothesis two was 72.02%, which passed the 70% acceptance point under Z-test analysis. The number of responses exceeded the required sample size enabling the results to be generalised for the entire NZDF population. The sub-hypothesis that control over and access to administrative personnel information is important to employees is therefore accepted for both the population sample and the entire NZDF population.

5.1.4 RESULTS FOR HYPOTHESIS TWO

The analysis of respondents’ views of administrative personnel information provided a positive result for hypothesis two. Respondents from the population sample stated that Access to information (70.95%), Ability to

change information (69.89%), and Control and Access (72.02%) over payslips and leave, were all close enough to be accepted at the 70% acceptance point. They also exceeded the 50% acceptance point. It can therefore be stated that respondents have stated a preference to have control over administrative personnel information. The number of responses exceeded the required sample size, enabling the results to be generalised for the entire NZDF population. The hypothesis is therefore accepted, and it can be stated from the analysis that based on the responses that employees want control over administrative personnel information.

5.2 HYPOTHESIS THREE

Employees Want Access To Managerial Information

For this hypothesis respondents were asked questions to ascertain their views about access to managerial personnel information. These questions were grouped into the following two types for analysis:

- Importance of access to managerial personnel information.
- Access and usefulness of managerial personnel information.

5.2.1 ACCESS TO MANAGERIAL PERSONNEL INFORMATION

The respondents were asked seven questions to assess the importance of access to managerial personnel information for the management of their careers and their personnel information.

5.2.1.1 POPULATION SAMPLE INDIVIDUAL QUESTION RESPONSES

The results of the seven questions provided by the respondents of the population sample were spread across a range between 51% and 91%. All of the responses exceeded the 50% acceptance point and subsequently the 75% confidence for the 50% acceptance point. The Postings (51.43%), and Promotion Prospects (54.86%) responses were close to the 50% threshold and therefore were failed at the 70% acceptance point by the Z-test, as was

the Improve Career Self Management (62.20%) and Training Requirements (66.57%) responses. The remaining three responses were all more than 8 percentage points higher than the 70% acceptance point. The responses to the Pay Reviews (78.29%) and Checking Entitlements (80.57%) questions received a high affirmative response, with most respondents (90.94%) believing the DKS would Improve Personnel Information Self Management. It is interesting to note that whilst 90.94% of respondents felt that employee self service through the DKS could improve personnel information self-management, only 62.20% of respondents felt that the system could help them to manage their careers. The results are shown in the following table:

Name	Accept	70% Accept	75% Confidence	50% Accept	75% Confidence	Relevance
Checking entitlements	80.57%	Accept	Cannot Reject	Accept	Cannot Reject	100.00%
Pay reviews	78.29%	Accept	Cannot Reject	Accept	Cannot Reject	100.00%
Postings	51.43%	Fail To Accept	Cannot Reject	Accept	Cannot Reject	100.00%
Promotion Prospects	54.86%	Fail To Accept	Cannot Reject	Accept	Cannot Reject	100.00%
Training requirements	66.57%	Fail To Accept	Cannot Reject	Accept	Cannot Reject	100.00%
Improve Career Self Management	62.20%	Fail To Accept	Cannot Reject	Accept	Cannot Reject	96.00%
Improve Pers Info Self Management	90.94%	Accept	Cannot Reject	Accept	Cannot Reject	91.43%

Table 5.8 Access To Managerial Information

The responses to the postings and promotion prospects questions were lower than the improve career self-management response. Analysis of the population sample responses has shown that there is a large difference between civilian and military respondents. Postings information was predominantly viewed as important by military staff (73.44%), however only 4% of civilians responded positively. This response shows that the postings information is only of interest to the military personnel, and civilian responses bias the results. Military personnel (62%) respondents are also more likely to use the system promotion prospects information than civilian personnel (33%) respondents. The response to whether the system would assist employees to improve their career self management had a more even spread with 47% of civilian respondents and 67% of military respondents stating that it was important. These results are presented in the following table:

Respondent Type	Respondent Total	Postings	Promotion Prospects	Improve Career Self Management
Civilian	93	4.11%	33.33%	47.06%
Military	257	73.44%	62.65%	67.20%
Total	350	51.43%	54.86%	62.09%

Table 5.9 Managerial Information Respondent Type

The potential for career self management appears to be more likely for military personnel, which is symptomatic of the level of career management and opportunities in the NZDF for military as compared to civilian employees. There are entire departments that plan military careers, whereas civilian career management is limited.

5.2.1.2 POPULATION SAMPLE CONSOLIDATED RESPONSES

When respondents were asked whether access to managerial personnel information was important 69.04% responded that it was. Although the result was failed by the Z-test analysis, for analysis purposes the result is close enough to be deemed acceptable at 70% acceptance. The result also passes the 50% acceptance point and 75% confidence test for both acceptance points as shown in the table below:

Statistical Criteria	Z-Test Result	Result	75% Confidence
Acceptance at 70%	-0.019330513	Fail	Cannot Reject
Acceptance at 50%	0.381610983	Accept	Cannot Reject

Table 5.10 Managerial Information Consolidated

5.2.1.3 ANALYSIS RESULTS

The consolidated results of the population sample failed to pass the Z-test analysis at 70% acceptance. Although the result failed at 70% acceptance the result of 69% was close enough to be deemed acceptable of the purposes of the research. With a response that exceeds the sample size for statistical validity for the NZDF, the sub-hypothesis that access to managerial personnel information is accepted by respondents and can be generalised to enable acceptance for the entire NZDF population.

5.2.2 ACCESS & USEFULNESS: MANAGERIAL INFORMATION

Respondents were asked to rate the usefulness of managerial personnel information stored on twelve pages in the DKS. The usefulness of the information would show whether the information was important to respondents and whether they would therefore want access to that information. The responses were measured against 70% and 50% acceptance points.

5.2.2.1 POPULATION SAMPLE INDIVIDUAL QUESTION RESPONSES

The responses for seven of the twelve pages passed the 70% acceptance point. These pages were Career Progression (73.61%), Courses (79.69%), Engagement (71.16%), Health (71.81%), Promotion Details (76.14%), Qualifications (78%) and Service History (77.72%). The percentage of respondents who replied to these questions exceeded 80% of the sample population, providing an accurate view of the sample population's views.

The responses for the remaining five pages failed to pass the 70% acceptance point, these were: Supernumerary Appointments (65.3%), Honours and Awards (66.45%), Branch Corps (57.05%), Navy Sub Spec (31.78%) and Navy Task Book (28.16%). Only the two Navy pages failed to pass the 50% acceptance point, however their relevance (the percentage of the population who responded) were both below 35%. This low relevance score combined with the low result means that the page is only of use to a limited group from the sample. These results are shown in the following table:

Name	Accept	70% Accept	75% Confidence	50% Accept	75% Confidence	Relevance
Branch Corps	57.05%	Fail	Cannot Reject	Accept	Cannot Reject	71.83%
Career Progression	73.61%	Accept	Cannot Reject	Accept	Cannot Reject	93.05%
Courses	79.69%	Accept	Cannot Reject	Accept	Cannot Reject	97.62%
Engagement	71.16%	Accept	Cannot Reject	Accept	Cannot Reject	91.13%
Health	71.81%	Accept	Cannot Reject	Accept	Cannot Reject	94.26%
Honours and Awards	66.45%	Fail	Cannot Reject	Accept	Cannot Reject	86.97%
Promotion Details	76.14%	Accept	Cannot Reject	Accept	Cannot Reject	90.99%
Qualifications	78.00%	Accept	Cannot Reject	Accept	Cannot Reject	96.69%
Service History	77.72%	Accept	Cannot Reject	Accept	Cannot Reject	94.86%
Supernumerary	65.30%	Fail	Cannot Reject	Accept	Cannot Reject	81.35%

Appointments						
Navy Sub Spec	31.78%	Fail	Cannot Reject	Fail	Cannot Reject	34.08%
Navy Task Book	28.16%	Fail	Cannot Reject	Fail	Cannot Reject	32.91%

Table 5.11 Access & Usefulness Of Managerial Information

The pages whose responses were failed at 70% had low response rates, which could be due to those pages not being of interest to all groups of respondents. The nature of some of these pages makes them of more use to military personnel. In the case of the Navy pages the user group are restricted to naval personnel. To test this premise further analysis has been conducted. The results of the analysis are presented in the following sections.

Navy Pages

This section will further analyse the responses to the Navy Sub Spec and Navy Task Book pages.

Navy Sub Spec Page

The Navy Sub Spec page was accepted by 51% of naval personnel who responded. The response rate from naval personnel was 75%, which shows that the page was of interest to them. In comparison only 25% of non-naval personnel responded to the question and of those respondents, under one fifth thought the page was useful, which is shown in the table below:

Navy Sub Spec	Sample Size	Weighted Response	Average	Response
Navy	57	22.34	51.94%	75.44%
Non Navy	257	11.67	18.23%	24.90%
Total	314	34.00	31.78%	34.08%

Table 5.12 Navy Sub Spec Grouping One

Taking this analysis a step further the naval personnel were divided into military and civilian personnel and further analysed. The response rate for military naval personnel was a high 88%, whereas only 40% of non-military naval personnel responded. Of those who responded, only about a quarter of the non-military naval personnel thought that the page was useful, whereas 56% of military personnel thought the page was useful. This analysis shows

that the page is predominantly of use to military naval personnel, causing the responses from other groups to bias the response and therefore results for the page. This is shown in the following table:

Navy Sub Spec	Sample Size	Weighted Response	Average	Response
Navy Military	42	20.67	55.86%	88.10%
Navy Non Mil	15	1.67	27.78%	40.00%
Total	57	22.34	51.94%	75.44%

Table 5.13 Navy Sub Spec Grouping Two

If the Z-test analysis was conducted on the naval military personnel group it would pass at 50% acceptance however it would still fail at 70% acceptance.

Navy Task Book Page

The Navy Task Book results were analysed using the same method as the Navy Sub Spec results. Almost three quarters of naval personnel responded to the question, whereas only a quarter of non-naval personnel from the sample responded. Of these responses only 15% of non-naval respondents thought the page was useful, compared to 47% from the naval respondents. This result shows that the page is of some interest to naval personnel from the sample, however there is little perceived use for the page by the sample non-naval respondents which leads to bias. These results are shown in the following table:

Navy Task Book	Sample Size	Weighted Response	Average	Response
Navy	57	19.67	46.83%	73.68%
Non Navy	256	9.33	15.30%	23.83%
Total	313	29.00	28.16%	32.91%

Table 5.14 Navy Task Book Grouping One

The analysis showed that the page was of more use to naval personnel than other groups. The next step was to find out whether the page was of more use to groups within naval personnel. Naval personnel were therefore split into military and non-military groupings and their responses analysed. Almost half of the non-military personnel in the sample responded, with only 19% of these rating the page as useful on average. Of the military personnel in the sample 83% responded and of those responses over half rated the page as useful. Although the naval military personnel's responses would still fail to

attain 70% acceptance they would reach the 50% acceptance point. The responses for all of the other groups analysed would fail to attain both the 50% and 70% acceptance points. Groups external to the naval military personnel therefore have biased the Navy Task Book results, as shown in the following table:

Navy Task Book	Sample Size	Weighted Response	Average	Response
Navy Military	42	18.34	52.39%	83.33%
Navy Non Military	15	1.33	19.04%	46.67%
Total	57	19.67	46.83%	73.68%

Table 5.15 Navy Task Book Grouping Two

Naval military personnel therefore appear to be the target users of the Navy Task Book and Navy Sub Spec pages. Responses from user groups not interested in the pages have biased the results of the analysis.

Other Pages

This section will further analyse the responses to the Branch Corps, Honours and Awards and Supernumerary Appointments pages.

Branch Corps Page

The results of the Branch Corps page exceeded the 50% acceptance point, however it failed to pass 70% acceptance. The page received a response rate above 70%, which improved the validity of the result. The Branch Corps page shows information about which branches or corps (similar to departments) an employee has belonged to within the NZDF. The nature of the information would make it more useful to military personnel than to civilian personnel. The responses to the Branch Corps page from these groups were therefore analysed, with the results presented in the following table:

Branch Corps	Sample Size	Weighted Response	Average	Response
Military	248	122.03	58.95%	83.47%
Non Military	75	10.33	41.34%	33.33%
Total	323	132.36	57.05%	71.83%

Table 5.16 Branch Corps

Only a third of civilians actually responded to this question, with 41% of those that responded stating that the page was useful. This 41% was well below the 57% average result. The military personnel had a response rate of 83%, which provides a representative view of the military respondents and is more valid than the civilian response. Although there was a large response from military personnel the average result was only 59%, or 2% better than the average result for military and civilian combined. The Branch Corps page was therefore deemed useful by military respondents and passed the 50% acceptance point however it still failed to attain 70% acceptance.

Honours And Awards

The Honours and Awards page had 66% of respondents state that the page was useful. The response rate was 87%, which provided validity to the results for the page. The Honours and Awards page is more useful to military personnel than to civilians as the majority of honours and awards are awarded to the military. These groups were therefore analysed separately with the results presented in the following table:

Honours And Awards	Sample Size	Weighted Response	Average	Response
Military	252	164.71	67.78%	96.43%
Non Military	78	26.00	59.10%	56.41%
Total	330	190.71	66.45%	86.97%

Table 5.17 Honours And Awards

When the groups were analysed separately there was a distinct difference between military and civilian respondents. Almost all military personnel replied compared with only slightly over one half of civilian personnel. The response rate shows a tendency for military personnel to have stronger feelings about the page and probably find the page more useful than their civilian counterparts. The results of the response do not conclusively prove this difference as 68% of military respondents found the page useful, and civilian respondents were not far behind on 56%. One reason for this could be ex-military personnel who are reemployed as civilians wanting to check their medal entitlements. The military group alone would be close to the 70% acceptance point, with the high response rate supporting the validity of this

assertion. Civilian personnel would pass the 50% acceptance rate, however the lower response rate would limit the validity of this result.

Supernumerary Appointments

The response for the Supernumerary Appointments page was 65%, which put it above the 50% acceptance point. The response for the page was 81%, which provides validity to the results, as it is representative of the majority of respondents. The Supernumerary Appointments page is more useful to military personnel than to civilians as military personnel hold the majority of these appointments. The groups were analysed separately with the results presented in the following table:

Supernumerary Appointments	Sample Size	Weighted Response	Average	Response
Military	253	154.37	67.12%	90.91%
Non Military	74	19.34	53.71%	48.65%
Total	327	173.71	65.30%	81.35%

Table 5.18 Supernumerary Appointments

Analysing these groups separately revealed that the military and civilian respondents were significantly different. The vast majority of military personnel in the population sample replied, compared with less than half of civilian personnel. The response rate for the entire sample population was 81%. As the military personnel response rate is much higher than the civilian response rate it can be deduced that for the sample population military personnel have more interest in the page.

The results from the responses show that military personnel find the page more useful than the average, whereas civilian personnel are less likely to use the page. This difference is greater than the result shows as the response rate for civilians is low. Individually the military group would be close to passing the 70% acceptance point, with the high response rate supporting this assertion's validity. Civilian personnel would pass the 50% acceptance rate, however their low response rate would limit the validity of this result.

Analysis Results

The three pages assessed were all rated as useful and although none of the pages exceeded the 70% acceptance, they all passed at 50% acceptance. The Honours and Awards and Supernumerary Appointments pages were both close to the 70% acceptance point. The Branch Corps page failed to pass the 70% acceptance point however it did pass the 50% acceptance point. As all of the pages analysed above are better suited to military personnel they have been biased by civilian employee responses. To remove this bias further research could be conducted using only the responses of the military personnel.

5.2.2.2 POPULATION SAMPLE CONSOLIDATED RESPONSES

The results for the average Access and Usefulness of Management Personnel Information was 69.49%. This means that the Z-test would accept the result at 50% but not at 70% acceptance. The results of the Z-test analysis are shown in the following table:

Statistical Criteria	Z-Test Result	Result	75% Confidence
Acceptance at 70%	-0.020265242	Fail	Cannot Reject
Acceptance at 50%	1.802288046	Accept	Cannot Reject

Table 5.19 Access & Usefulness Of Managerial Information Consolidated

Even though the Z-test failed to accept the result of the hypothesis it was close enough to be deemed to have passed the 70% acceptance point. This assertion is strengthened by the possibility that the five pages that failed to pass the 70% acceptance point have adversely biased the result. As the analysis has shown, these pages were not suited to all of the groups in the sample population. Low responses and results from groups that had no use for the pages have biased the results for these pages, in particular lowering the average access and usefulness result.

5.2.2.3 ANALYSIS RESULTS

The sub hypothesis that managerial personnel information is useful for employees can be accepted, as the population sample result is close enough

to accept at the 70% acceptance point. The number of responses exceeded the required sample size enabling the results to be generalised for the entire NZDF population. It can therefore be stated that employees think that managerial personnel information is useful, meaning the sub hypothesis is therefore accepted for the population sample and the entire NZDF population.

5.2.3 RESULTS FOR HYPOTHESIS THREE

The hypothesis consisted of the following two sub hypotheses:

- Managerial personnel information access is important to employees.
- Managerial personnel information is useful for employees.

The results for these hypotheses are displayed in the following table:

Sub Hypothesis	Population Sample
Access to managerial personnel information	69.04%
Managerial personnel information is useful	69.49%

Table 5.20 Managerial Information Results

The results from the population sample were higher than the results of the pilot study with both sub-hypotheses attaining an average of 69%. These results were possibly biased by pages having negative responses by groups who had no interest in the page. Considering these factors and the closeness of the results to 70% the sub hypotheses were both deemed close enough to pass the 70% acceptance point. As both sub-hypotheses were considered to have passed the 70% acceptance point, hypothesis three, which states that employees want access to managerial personnel information, is accepted for the population sample. This acceptance is strengthened by the response rate being higher than the 180 responses required for generalising the result for the entire NZDF population. The high response rate makes the result statistically valid, more reliable, and able to be generalised for all NZDF employees. The pages that had lower response rates detract from the result, however this can be countered by the high response rates for groups with an interest in these pages. Hypothesis three is therefore accepted for the entire NZDF population.

5.3 HYPOTHESIS FOUR

Employees want control over personnel information and are willing to use personal computers as a tool to gain that control.

Hypothesis four is intended to find out whether personnel information is important to respondents and whether they would use a computer to access and change their personnel information. To ascertain this information hypothesis four asked the following questions:

- Is it important for employees to access their personnel information?
- Would employees use a computer to access their personnel information?
- Would employees use a computer to change their personnel information?

If personnel information is unimportant to employees then an application that employees would use to access that information is redundant, as employees would not use it. Similarly if employees did not feel comfortable using computers to access their personnel information, even if the information was important to them, then the a computerised employee self service system would not be fully utilised. The final question asks whether employees would use a computer to change their personnel information. This is important for two reasons. Firstly by taking on the responsibility of changing their own personnel information employees gain more control, responsibility and empowerment. Secondly if employees perform their own administration there are large savings to the organisation through reduced administrative overheads.

5.3.1 SUB HYPOTHESIS ONE

Importance of access to personnel information.

This sub hypothesis asks whether access to personnel information is important to users. If the information is not seen as important it may cause users to not use the DKS.

5.3.1.1 POPULATION SAMPLE RESPONSES

Almost all respondents stated that access to their personnel information was important to them. The Z-test analysis passed the result at 50% and 70% acceptance, which is shown in the table below:

Name	Result	70% Acceptance	75% Confidence	50% Acceptance	75% Confidence
Importance of Access to Personnel Information	94.22%	Accept	Cannot Reject	Accept	Cannot Reject

Table 5.21 Importance Of Access To Personnel Information

5.3.1.2 ANALYSIS RESULTS

The results had strong validity as almost the entire population sample responded to the question. The response enables the result to be generalised for acceptance of this sub hypothesis for all NZDF employees.

5.3.2 SUB HYPOTHESIS TWO

If employees did not feel comfortable using computers to access their personnel information, even if the information was important to them, then a computerised employee self service system for personnel information would not be utilised. This sub-hypothesis asks whether employees would use a personal computer to access personnel information.

5.3.2.1 POPULATION SAMPLE INDIVIDUAL QUESTION RESPONSES

When the population sample was asked 96% of the sample responded, providing an accurate picture of the viewpoints of the entire sample. From these responses around three quarters of respondents stated that they were willing to use a personal computer to access their personnel information. This result meant that the responses passed both the 70% and 50% acceptance points and associated confidence levels as shown in the table below:

Name	Result	70% Acceptance	75% Confidence	50% Acceptance	75% Confidence
Willingness To Use A PC To Access Personnel Information	74.57%	Accept	Cannot Reject	Accept	Cannot Reject

Table 5.22 Willingness To Use A Personal Computer

5.3.2.2 ANALYSIS RESULTS

The result and high response rate meant the hypothesis was accepted for the population sample. The number of responses exceeded the required sample size enabling the results to be generalised for the entire NZDF population. The sub hypothesis stating that employees are willing to use a personal computer to access personnel information is therefore accepted for the population sample and entire NZDF population.

5.3.3 SUB HYPOTHESIS THREE

This sub hypothesis asks whether employees would use a computer to change their personnel information.

5.3.3.1 POPULATION SAMPLE INDIVIDUAL QUESTION RESPONSES

When the population sample were asked whether they were willing to use a personal computer to change their personnel information 72.11% responded that they were. This is a similar number of respondents to those who would be willing to use a personal computer to change personnel information. The response rate of 99% provides the result with increased validity as practically the entire sample responded. The number of responses exceeded the required sample size enabling the results to be generalised for the entire NZDF population. The result of 72.11% was accepted at the 50% and 70% acceptance points and 75% confidence intervals for both tests as shown in the following table:

Name	Result	70% Acceptance	75% Confidence	50% Acceptance	75% Confidence
Willingness To Use A PC To Change Personnel Information	72.11%	Accept	Cannot Reject	Accept	Cannot Reject

Table 5.23 Use Of A Personal Computer To Change Information

5.3.3.2 ANALYSIS RESULTS

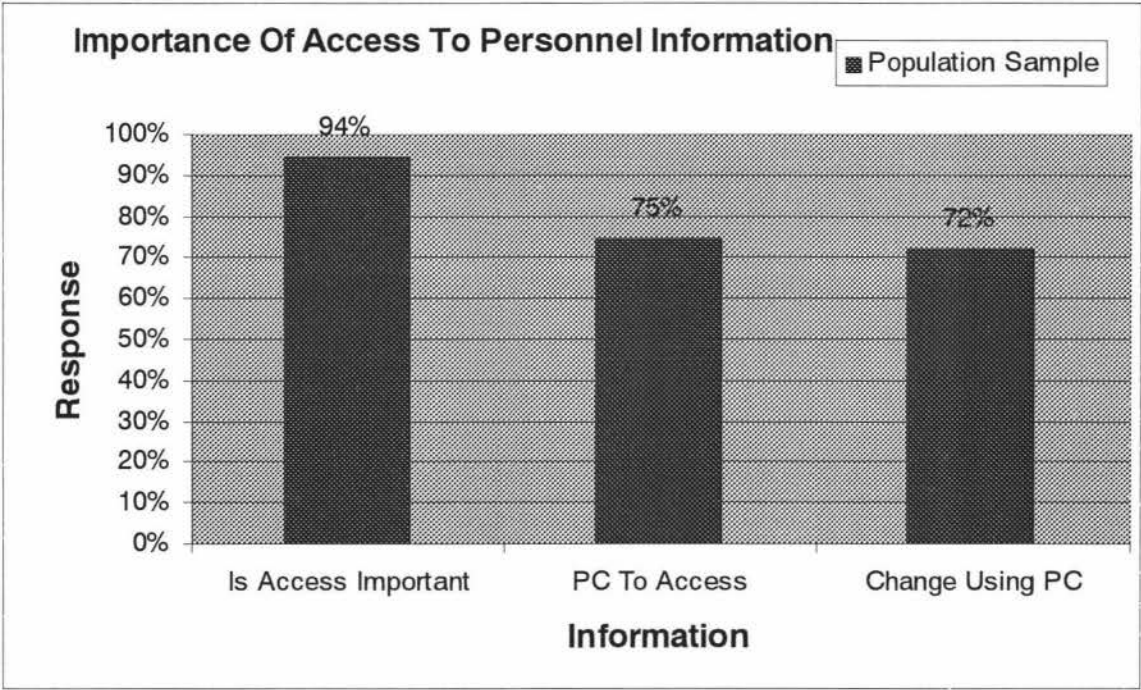
The results showed a willingness by respondents to use a personal computer to change their personnel information. A high response rate and responses passing the 70% acceptance point enable the sub hypothesis to be accepted for the population sample and for the entire NZDF population.

5.3.4 RESULTS FOR HYPOTHESIS FOUR

The hypothesis asked whether respondents want control over personnel information and are willing to use personal computers as a tool to gain that control. This hypothesis consists of three sub hypotheses:

- Is access to personnel information important to respondents?
- Would respondents use a personal computer to access personnel information?
- Would respondents use a personal computer to change their personnel information?

For hypothesis four to be accepted respondents must state that personnel information is important to them and that they would use a computer to access and change their personnel information. The results of the responses from the population sample respondents to these questions are presented in the following graph:



Graph 5.1 Importance Of Access To Personnel Information

The results for the sub hypotheses are all above 70% and therefore acceptable. The results and response rate for the population sample are presented in the table below:

Name	Acceptance Percentage	70% Acceptance	75% Confidence	50% Acceptance	75% Confidence	Relevance
Is Access Important	94.22%	Accept	Cannot Reject	Accept	Cannot Reject	98.90%
PC to Access	74.57%	Accept	Cannot Reject	Accept	Cannot Reject	96.00%
Change using PC	72.11%	Accept	Cannot Reject	Accept	Cannot Reject	98.57%

Table 5.24 Access To Personnel Information

As all of the results passed 70% and had over 180 responses, they have been accepted. This acceptance means that hypothesis four can be accepted for the sample and the entire NZDF population.

A possible limitation for generalisation of these results is that not all employees have access to a personal computer to reply to the survey, so those who replied will be more likely to use a personal computer to access and control this information. This limitation can be countered by the fact that

the DKS is a computerised system so users would need access to a personal computer to use the system.

5.3.5 HYPOTHESIS COMPARISON

There is a direct connection between hypothesis four and hypotheses two and three, so this section will compare the results of these hypotheses. Hypothesis four provides the foundation for hypotheses two and three, as if employees are unwilling to use a computer to access and change their personnel information, or if accessing their personnel information is unimportant to them, then access to different types of personnel information will also be unimportant.

A comparison of the population sample results for hypotheses two to four is shown in the following table:

Name	Hypothesis 2 Administrative	Hypothesis 3 Managerial	Hypothesis 4 Personnel Information
Access	70.95%	69.04%	74.57%
Change or control	69.89%	69.49%	72.11%

Table 5.25 Hypothesis Comparison Types Of Information

The results are all comparable, sharing a consistency of responses from the respondents. There is no marked difference between the different types of information, or with the type of information as a whole. The results are all around the 70% mark showing a consistency of views on these issues by respondents.

5.4 HYPOTHESIS FIVE

Does The DKS Meet Employee Personnel Information Needs

Hypothesis five asks whether the DKS, as an ESS system, meets employees' personnel information needs. To ascertain this employees were asked questions that formed three sub hypotheses:

- Do employees think that the information stored on the DKS is useful?

- Does the DKS Have all of the personnel information employees need?
- Can employees use the DKS to answer all of their personnel questions?

Hypothesis Five is dependent upon Hypothesis Four. Hypothesis Four asked whether employees were willing to use personal computers to access their personnel information. If employees are willing to use a personal computer to access their personnel information then they are more likely to use a computerised ESS system like the DKS. If they are not prepared to use a personal computer to access their personnel information then they will probably not use the system. As hypothesis four was accepted and employees are willing to use a personal computer to access their personnel information, then hypothesis five can be analysed to find whether the DKS meets their personnel information needs.

5.4.1 SUB HYPOTHESIS ONE

Sub hypothesis one asks whether employees think that the information stored on the DKS is useful. For the success of the DKS it is important that employees think that the information stored on the DKS is useful, otherwise they wouldn't have any use for the information and wouldn't use the system to access their personnel information.

5.4.1.1 POPULATION SAMPLE RESPONSES

The sample population respondents stated that they believe that the information stored on the DKS was useful. The results of the Z-test analysis are shown in the following table:

Statistical Criteria	Z-Test Result	Result	75% Confidence
Acceptance at 70%	0.133318831	Accept	Cannot Reject
Acceptance at 50%	1.29519192	Accept	Cannot Reject

Table 5.26 Usefulness Of Information

The validity and reliability of the result was strengthened by gaining responses from 95% of the sample enabling the result to be generalised for the entire NZDF population. The response rate provides statistical validity and as over

70% of respondents agreed with the sub hypothesis it can be accepted for the population sample and entire NZDF population. As the DKS is an example of an ESS system the result of the question could be used as a comparison for analysis of the DKS or other ESS systems.

5.4.1.2 ANALYSIS RESULTS

The results for the sub hypothesis based on the population sample responses were deemed acceptable at the 70% acceptance point. The average responses for the questions exceeded the required sample size for generalisation of the results for the entire population. The sub hypothesis stating that employees think the information on the DKS is useful is therefore accepted for the population sample and by generalisation for the entire NZDF population.

5.4.2 SUB HYPOTHESIS TWO

The second sub hypothesis asks whether the DKS has the personnel information employees need. This is important as the DKS was built to provide employees with access to their personnel information. If the information does not meet their needs then the DKS is not effectively providing the functionality it was built to provide.

5.4.2.1 POPULATION SAMPLE RESPONSES

There was a positive response with 94% of the population sample responding to the question, thereby making the results able to be generalised for the entire NZDF population. Of this response 80% of respondents stated that the DKS provided them with the access to the personnel information they need. This result exceeds both the 50% and 70% acceptance points under the Z-test analysis as shown in the following table:

Statistical Criteria	Z-Test Result	Result	75% Confidence
Acceptance at 70%	0.255063825	Accept	Cannot Reject
Acceptance at 50%	0.756027506	Accept	Cannot Reject

Table 5.27 Personnel Information Needs

The high response rate and result over 80% means that the sub hypothesis can be accepted for the population sample and for the entire NZDF population.

5.4.2.2 ISSUE: CIVILIAN PERSONNEL INFORMATION

Many pilot study respondents stated that the civilian information on the DKS was insufficient to meet their needs. This assertion was confirmed in the results of question 26 for the pilot study, which asked what information was missing from the system. In reply to that question 28% of respondents were civilians who stated that civilian pay and leave information were missing. Civilian pay and leave were updated before the population sample was sent the questionnaire, which provided insight into whether the update solved the perceived system shortcomings. The population sample result was 80% acceptance, which was acceptable under Z-test analysis for both 50% and 70% acceptance points. Viewing the responses, only six civilian respondents from the civilian sample population of ninety-three stated that there was a problem with civilian pay and leave. It therefore appears that the update of civilian personnel information has removed the majority of concerns raised in the pilot study about civilian leave and pay information on the DKS.

5.4.2.3 ANALYSIS RESULTS

The sub hypothesis that stated that the DKS has all of the information that employees need is accepted for the population sample, and for the entire population based upon the response rate and results of the sample.

5.4.3 SUB HYPOTHESIS THREE

The third sub hypothesis asks: “Can employees use the DKS to answer all of their personnel questions?” The provision of personnel information to employees is beneficial only if they can use that information. If employees can answer their own questions by accessing the relevant information online

whenever they need to they will feel empowered and have more control over their personnel information and possibly their careers. This is also important to the organisation, as if employees answer their own questions they will not be tying up human resource practitioners' time with routine questions.

5.4.3.1 POPULATION QUESTION RESPONSES

The respondents from the population sample were asked whether they could use the information on the DKS to answer their personnel questions. When asked, 93% of the population sample responded to the question, thereby providing statistical validity for the response. The response showed that 87% of population sample respondents believe that they could use the DKS to answer all of their personnel questions. This result surpasses both the 50% and 70% acceptance points and related 75% confidence intervals as shown in the following table:

Statistical Criteria	Z-Test Result	Result	75% Confidence
Acceptance at 70%	0.488516997	Accept	Cannot Reject
Acceptance at 50%	1.075502195	Accept	Cannot Reject

Table 5.28 Use To Answer Personnel Questions

The number of responses exceeded the required sample size enabling the results to be generalised for the entire NZDF population.

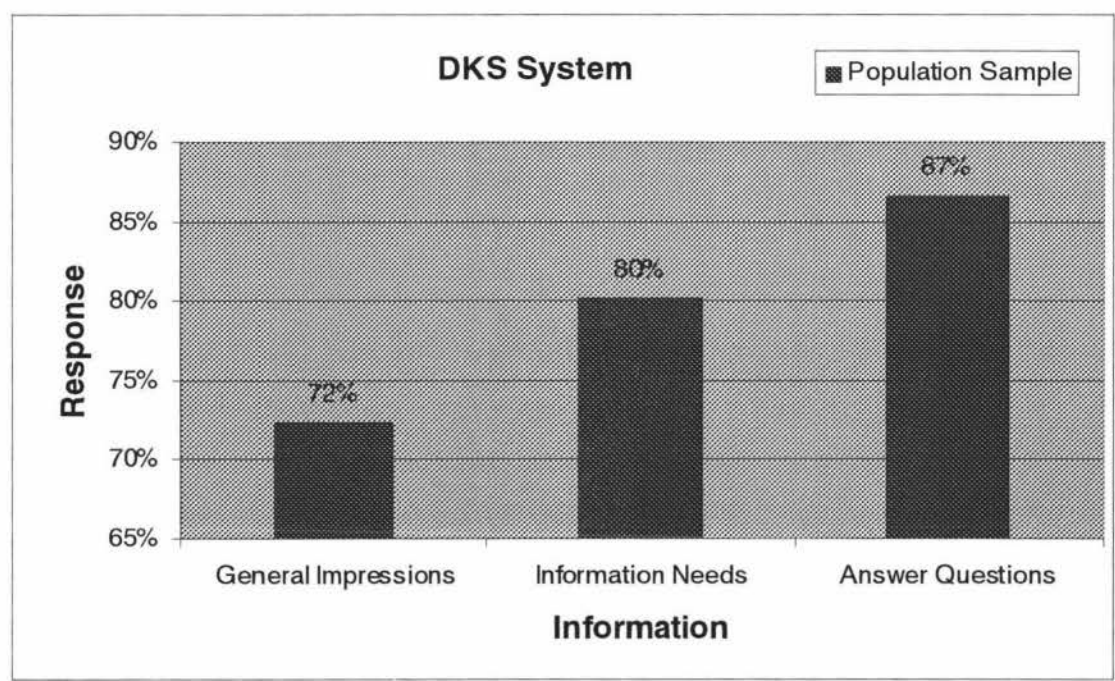
5.4.3.2 ANALYSIS RESULTS

The analysis results from the population sample and associated response rate enables the acceptance of the sub hypothesis. With a response above 180 the result can be generalised to enable acceptance of the sub hypothesis for the entire population.

5.4.4 RESULTS FOR HYPOTHESIS FIVE

Acceptance of hypothesis five, which asks whether the DKS as an ESS system meets employees' personnel information needs, is dependent upon three sub hypotheses. To accept the hypothesis all three sub hypotheses had

to pass the Z-test analysis. The results for these sub hypotheses are shown in the following graph:



Graph 5.2 DKS

The pass is also dependant upon the response rate. If only a few members of the sample responded then the result would not be an accurate reflection of the views of the sample or the population. The response rates were all above 87%, the lowest response being 307 members of the population sample. As the sample size required for statistical validity was calculated to be 180 then the responses for all sub hypotheses provide statistical validity, reliability and the ability to generalise the result to encompass the entire population. These results and response rates are shown in the following table:

Name	Acceptance Percentage	70% Acceptance	75% Confidence	50% Acceptance	75% Confidence	Response Rate
General Impressions	72.29%	Accept	Cannot Reject	Accept	Cannot Reject	95.14%
Information Needs	80.18%	Accept	Cannot Reject	Accept	Cannot Reject	93.71%
Answer Questions	86.64%	Accept	Cannot Reject	Accept	Cannot Reject	87.71%

Table 5.29 DKS Responses

As all of the results for the sub hypotheses passed the Z-test analysis at 70% and had responses above the sample size required for statistical validity the hypothesis is accepted as true for the population sample. The result and response rate mean the result can be generalised to enable the acceptance of the hypothesis for the entire population. It can therefore be stated that the DKS (as an example of an ESS system) does meet the personnel information needs of NZDF employees.

5.5 HYPOTHESIS ONE

Do Employees Want Control Over Their Personnel Information?

Hypothesis One asked whether employees want control over their personnel information. To answer this question the results from hypotheses two to five were combined to provide a composite picture of respondents' views. As previously discussed, hypotheses two to five asked the following questions, and associated sub questions:

5.5.1 REVIEW OF HYPOTHESES

Hypothesis Two

Do Employees Want Control Over Administrative Personnel Information.

- Is access to administrative personnel information important to employees?
- Is the ability to change administrative personnel information important to employees?
- Do employees want control and access over administrative personnel information?

Hypothesis Three

Do Employees Want Access To Managerial Information.

- Is access to managerial personnel information important to employees?
- Is access to managerial personnel information useful?

Hypothesis Four

Do employees want control over personnel information and are they willing to use personal computers as a tool to gain that control?

- How important is access to personnel information?
- Are employees willing to use a personal computer to access personnel information?
- Are employees willing to use a personal computer to change personnel information?

Hypothesis Five

Does The DKS Meet Employee Personnel Information Needs?

- Do employees think that the information stored on the DKS is useful?
- Does the DKS have all the personnel information employees need?
- Can employees use the DKS to answer their personnel questions?

The individual hypotheses have been analysed in more depth previously in Section Five. By combining these hypotheses the research will be able to ascertain whether employees want control over their personnel information and thereby provide an answer for hypothesis one.

5.5.2 ANALYSIS OF HYPOTHESES

The responses for hypotheses two to five were measured against two acceptance levels; these were a 50% acceptance point and a 70% acceptance point. The hypotheses comprised of questions from the DKS User Survey. The user survey was sent to a pilot study and later to a population sample of 1000 users. The responses to these questions by the population sample respondents have been analysed with the findings presented in the following sections.

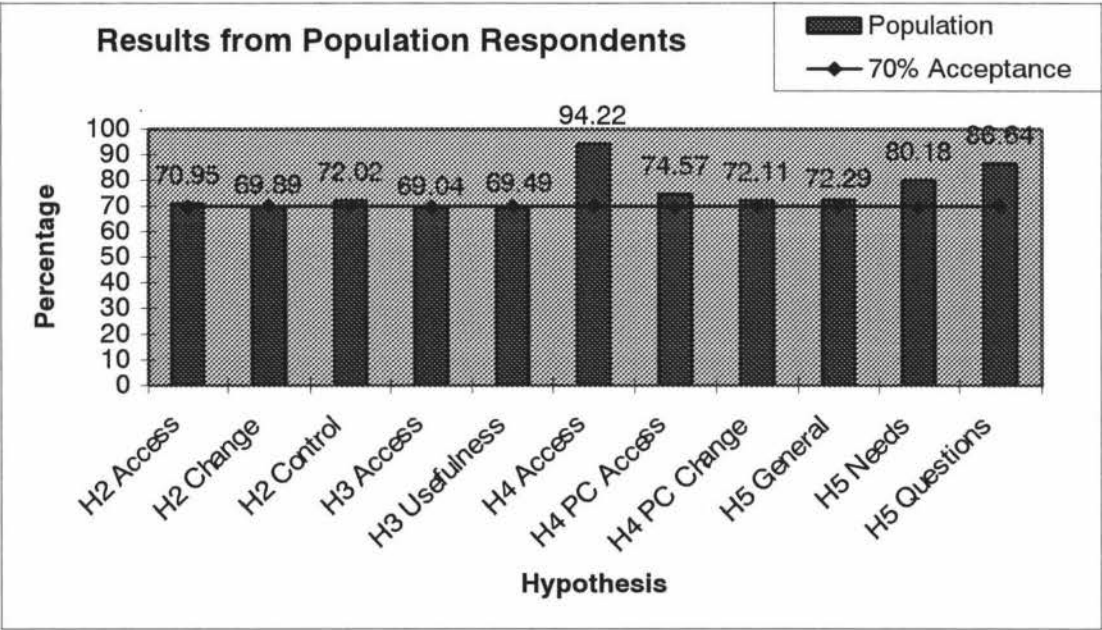
The pilot study provided indicative results for the research. These results were used to forecast the results of the population sample and to compare against the population sample to test results. As the pilot study only had 18 people in the sample it had limited statistical validity and the main value it provided was as a test for the population sample. The pilot study is indicative

of population responses, however as it is a small sample it has limited statistical validity and does not allow for inference about the population with any great degree of confidence. The sample size required for to generalise the results with confidence for the DKS user population is 180. The results of the population study were more reliable and valid due to the size of the sample and response rates.

The DKS was established to supply employees with all of their personnel information to empower them and enable them to answer any personnel questions they had. If the DKS does not have the information that employees need then it is not effectively meeting that objective.

5.5.3 POPULATION SAMPLE RESPONSES

The statistical analysis provided some interesting results for hypotheses two to five, with all of the average results exceeding the 70% acceptance or being within one percent of the 70 percent acceptance point. The averaged results for all of the hypotheses are shown on the graph below:



Graph 5.3 Hypotheses Compared

The results for all of the hypotheses were sufficiently close to 70% to be accepted for the population sample. There were enough responses for all of the hypotheses to be deemed statistically valid.

ESS systems, like the DKS, provide employees with access and control over their personnel information. To gain a better understanding of user views it is important to differentiate between different types of personnel information. There are two different types of personnel information stored on the DKS; these are administrative information and managerial information. Administrative information is information stored about the employee that affects the employee on a day-to-day basis. Managers use the managerial information to make longer-term decisions about the employee. Employees were asked in hypothesis two whether it was important for them to be able to: access, change and control their administrative personnel information. They were then asked whether they wanted access to managerial information in hypothesis three. Hypothesis four attempted to ascertain whether access to personnel information was important and asked whether employees would be willing to use a personal computer to access and change their personnel information. Finally the research focussed on the information provided by the DKS. Hypothesis five asked whether the DKS meets the information needs of users, in an attempt to gauge the success of the DKS.

5.5.3.1 *INDIVIDUAL HYPOTHESES*

Hypothesis two asked whether employees wanted control over their administrative personnel information. This consisted of questions about whether employees wanted: access to, the ability to change, and control over, administrative personnel information. The responses to these questions were all close enough to be accepted at the 70% acceptance point. It is important to note that the results for some questions are reduced due to the influence of pages that are of limited appeal to the entire population and therefore adversely affected results. There were enough responses for all of the hypotheses to be deemed statistically valid. Combining the results and response rate it can be stated that employees want access and control over

their administrative personnel information and hypothesis two is therefore accepted as true for the sample population and for the entire user population.

Hypothesis three asked employees whether they wanted access to their managerial personnel information. It was not considered practical to provide employees with the ability to change managerial information about them, due to a possible conflict of interest eg: employees should not be able to enter the amount of their salary. Respondents were asked whether they wanted access and whether access to managerial personnel information was important. The acceptance for both of these sub hypotheses was 69%, which was deemed to be close enough to be accepted at 70%. The result is slightly lower due to the influence of pages that are of limited appeal to the entire population. As both sub hypotheses were accepted at 70% with suitable response rates, hypothesis three, which states that employees wanted access to their managerial personnel information was accepted for the population sample. The response rate was also high enough for the result to be generalised and accepted for the entire NZDF population.

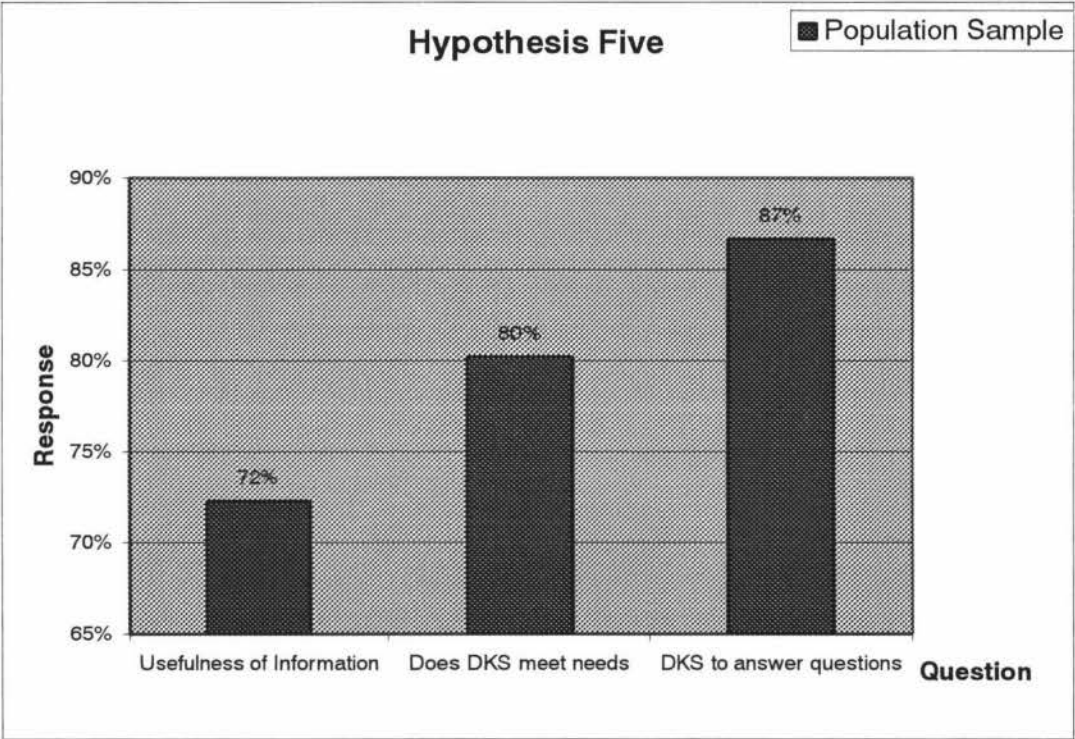
Hypothesis four asked whether employees wanted control over their personnel information and whether they would be willing to use computers as a tool to gain that control. Respondents overwhelmingly stated that access to their personnel information was important to them. Interestingly this figure is 20-25% higher than the results of the access to administrative and managerial information responses in hypothesis two and three. This may mean that there is additional information that respondents want to access. Another possible explanation is that the lower scores could have been influenced by results for pages that were of limited interest to the entire population. Once it was ascertained that respondents thought that access to personnel information was important, the responses to the questions about whether they would use a personal computer to access or change their information were assessed. As the DKS is computerised it is important to know whether respondents would use a computer to access and change personnel information. It is important to note that as the survey is computerised and that only employees with access to a computer could respond. This can be justified by the fact

that the target population of the system would have to have computer access to use the system. The response showed that 75% of respondents would use a personal computer to access personnel information and that 72% would use one to change personnel information. The responses for all three of these sub hypotheses were accepted at the 70% acceptance point. The response rate was sufficient for hypothesis four to be accepted for the population sample and to be generalised for acceptance by the entire population.

Hypothesis five asked whether the information held on the DKS met employee personnel information needs. To answer this hypothesis the sample members were asked whether the information stored on the DKS was useful, whether it held all the personnel information they needed, and whether they could use that information to answer any personnel questions they might have. When asked whether the information was useful 72% of the respondents stated that it was, meaning that it was accepted by the Z-test for the 70% acceptance point. The next two questions focussed on personnel information needs and whether the DKS met those needs. The responses were both above 80% and therefore showed a strong belief by respondents that the DKS provided personnel information that met their needs and could be used to answer their personnel questions. The results exceed the 70% acceptance point and response rate for statistical validity, removing the concerns raised about employee acceptance by the pilot study response to hypothesis five.

A question was raised in hypothesis four asking why the score for access to information was much higher than the results for access to administrative information and managerial information. These lower scores are due to results for pages that were of limited interest influencing the overall result. This assertion is strengthened by 80% of respondents answering that the DKS meets their information needs and 87% of respondents stating that they can use the DKS to answer their personnel questions, meaning the DKS holds the information that employees want to use.

The results from the population sample for all of the sub hypotheses in hypothesis five were all accepted at 70% acceptance either by Z-test analysis or by virtue of being close enough to 70% to be deemed acceptable. The response rate for the sub-hypotheses were high enough to exceed the sample size required for statistical acceptance of the population sample and for the entire population by generalisation. All of the sub hypotheses were therefore accepted for the population sample and for the entire population of NZDF users, as is shown in the graph below:



Graph 5.4 Hypothesis Five

As all of the sub hypotheses were accepted and the response rate exceeded 180, hypothesis five has been accepted for the population sample and entire NZDF population.

5.5.4 RESULTS FOR HYPOTHESIS ONE

Hypothesis one consists of four hypotheses:

- Employees want control over administrative personnel information.
- Employees want access to managerial personnel information.

- Employees want control over personnel information and are they willing to use personal computers as a tool to gain that control.
- The DKS meets employee personnel information needs.

For hypothesis one to be deemed acceptable the results for all of these hypotheses would have to be accepted. There were two measures of acceptance that were used: 50% acceptance and 70% acceptance, using the Z-test analysis. The results for these hypotheses are displayed in the following table:

Hypothesis	Population Sample
Do Employees Want Control Over Administrative Personnel Information	Accepted at 70%
Do Employees Want Access To Managerial Information	Accepted at 70%
Do employees want control over personnel information and are they willing to use personal computers as a tool to gain that control?	Accepted at 70%
Does The DKS Meet Employee Personnel Information Needs?	Accepted at 70%

Table 5.30 Hypotheses Two To Five Compared

For statistical validity and to generalise the results, the responses need to be above the required sample size of 180. The average response rate for the population sample exceeded the required sample size, so the results can therefore be generalised for the entire NZDF population.

The pilot study results raised several questions as to whether hypothesis one would be accepted. One factor that has contributed to this was the limited civilian personnel information available on the DKS at the time of the pilot study. The civilian information was updated before the population sample was sent the questionnaires.

The results of the population sample have shown that the sub hypotheses can be deemed acceptable at 70% acceptance with a response rate that is suitable to make generalisations about the entire population. As all of the sub hypotheses have been accepted at 70% acceptance hypothesis one has been deemed acceptable. Based on these results hypothesis one is therefore accepted at 70% with a suitable response rate for the acceptance of hypothesis one to be generalised for the entire NZDF population.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The NZDF commissioned this study to gain an understanding of employee perception of the DKS and ESS systems, to ascertain whether they enable empowerment and knowledge management. The major benefits the system could provide are through employees looking on the DKS for their personal information to answer any questions they may have rather than calling their HR administration area and providing up to date information for knowledge management. This would empower employees and provide savings through HR staff being able to perform more strategic duties. The benefits of the automated queries have reinforced the empowerment and knowledge benefits the DKS is providing the NZDF and its employees. For the system to work employees must be prepared to use the system and keep their personnel information up to date.

Surveys were sent to a population sample to solicit responses from NZDF employees. These surveys asked a variety of questions which were grouped into five hypotheses. Through provision of information and sharing of control over personnel information the organisation can provide openness and trust, which is a prerequisite for empowerment (Spreitzer, G.M., & Quinn, R.E. 2001). The DKS, as an ESS system, is a tool that promotes the sharing of personnel information across the organisation, in particular with employees thereby enabling empowerment. The survey asked whether the DKS was succeeding and whether employees wanted that control over their personnel information.

6.2 ANALYSIS CONCLUSIONS

The survey responses were measured against two acceptance points; these were 50% and 70% acceptance. The analysis of the population sample responses has resulted in the acceptance of the following hypotheses and related sub hypotheses at both acceptance points. The number of responses

to the questions exceeded the required sample size enabling the acceptance of these hypotheses to be generalised for the entire NZDF population.

Hypothesis 1: Employees want control over their personnel information.

Hypothesis 2: Employees want control over their administrative personnel information.

- Importance of access to administrative information.
- Ability to change administrative information.
- Control and access over administrative information.

Hypothesis 3: Employees want access to their managerial personnel information.

- Access to managerial information for self management.
- Importance of access to managerial information.

Hypothesis 4: Employees are prepared to use computers to access their personnel information.

- Is it important for employees to access their personnel information?
- Would employees use a computer to access their personnel information?
- Would employees use a computer to change their personnel information?

Hypothesis 5: Does the DKS, as a computerised HR ESS system, provide a useful personnel information source to employees?

- What are employees' initial impressions of the DKS?
- Does the DKS have all of the personnel information that employees need?
- Can employees use the DKS to answer any personnel questions they have?

The results of these hypotheses and associated questions have been used to answer the research questions, and to test the theoretical models presented in the literature review.

6.2.1 KNOWLEDGE MANAGEMENT

Knowledge management requires access to information that is relevant, up to date and accurate. ESS systems enable this to occur through employees updating their own information. By providing employees with information access and control they can ensure the information the organisation has is up to date. The organisation can then use that information with the knowledge that it is up to date and accurate. If employees do not use the system the information becomes out of date, causing the breakdown of the knowledge management programme. Empowerment and knowledge management are entwined as shown in the literature review, with empowerment enabling employees to contribute, and encouraging them to share their knowledge with the organisation.

6.2.2 EMPOWERMENT

Employee self service systems provide employees with empowerment by providing them with access to their information and the ability to change that information. Employees can use that information to make decisions that affect them, thereby gaining control and therefore empowerment.

If employees do not use the DKS then it will fail, and will not provide empowerment or facilitate knowledge management. To ascertain whether employees will use the system, the research asked the following questions:

- Do employees want access and control over their personnel information?
- Is access to personnel information important?
- Would employees use a personal computer to access and change personnel information?
- Can ESS systems meet the personnel information needs of employees?
- What type of personnel information is important to employees?

These questions can be solved using the results from the hypotheses. The responses to the questionnaires by the population sample were sufficient to

generalise the acceptance of the results for the entire NZDF population. The responses to the questions asked by the hypotheses are discussed in the following sections.

6.2.3 ACCESS AND CONTROL OVER PERSONNEL INFORMATION

The success of the DKS is dependant upon employees using the system. If personnel information is not important to employees then they will not use the system. Hypothesis one asked whether employees wanted access and control over their personnel information. The results of the research have shown that NZDF employees want access and control over their personnel information. The acceptance of access and control over personnel information was based upon the findings of hypotheses two to five, as discussed in Section 5 Analysis.

6.2.4 IS ACCESS TO PERSONNEL INFORMATION IMPORTANT?

Before ascertaining whether employee self service applications can meet employee personnel information requirements it is important to find out whether access to personnel information is useful to employees. This question was asked as part of hypothesis four.

The analysis results for the population sample showed that 94% of respondents think that access to personnel information is important. It can therefore be stated that NZDF employees want to access their personnel information.

As ESS systems use computers to provide access and control over personnel information, it is important to check that employees would be willing to use a computer to access and to control their personnel information, as user resistance to personal computers could cause a failure to use the system.

Employees were asked whether they would use a personal computer to access their personnel information and whether they were willing to use a personal computer to change their personnel information.

6.2.5 PERSONAL COMPUTERS TO ACCESS AND CHANGE INFORMATION

Resistance to use of personal computers to access personnel information could provide a barrier to system use. Respondents were asked whether they would be willing to use a personal computer to access and also to change their personnel information. In both instances over 70% of respondents stated that they would be willing to use a personal computer as a tool to access and change their personnel information, meaning that there was little user resistance. The result can be generalised to state that NZDF employees are willing to use personal computers as a tool to access and to change their personnel information.

6.2.6 CAN ESS'S MEET EMPLOYEE PERSONNEL INFORMATION NEEDS?

Discipline four of Spreitzer and Quinn's Five Disciplines For Empowerment model states that openness and trust are important for developing empowerment. A large part of this involves sharing information. It was therefore important to find out whether an ESS system could provide all of the personnel information needs of employees. In hypothesis five employees were asked whether an ESS system could meet their personnel information needs using the following three questions:

- Does the DKS have all the personnel information employees need?
- Can employees use the DKS to answer their personnel questions?
- Do employees think that the information stored on the DKS is useful?

The responses to all three questions all passed the 70% acceptance point and were therefore accepted, meaning that the hypothesis was accepted. The DKS meets the personnel information needs and as the DKS is an ESS system it can be inferred that ESS systems can meet the personnel information needs of NZDF employees.

6.2.7 WHAT PERSONNEL INFORMATION IS IMPORTANT TO EMPLOYEES?

Two important factors for ensuring the success of an empowerment programme are providing employees with the information required for making decisions that affect them, and the authority to make those decisions.

Horibe (1999) has addressed these factors with the Employee Decision Making Methodology, which stated that there are three types of employment decisions: Technical, Administrative and Managerial. Horibe stated that employees should be provided with the information and authority required to make technical decisions, however they should not be allowed to make administrative or managerial decisions.

The DKS provides personnel information, which is administrative and managerial in nature. Employees were asked whether they wanted access and control over administrative and managerial personnel information in hypothesis two and managerial information in hypothesis three. The results of these hypotheses have been compared with the response to the question in hypothesis four which asked whether access to personnel information was important. These results were then combined to test against Horibe's methodology to see if employees agree that they should not be making administrative or managerial decisions and therefore not be supplied with the information needed to make those decisions. The results show that employees want access to both administrative and managerial information and want control over administrative information. Employees were not offered control over managerial information due to a potential conflict of interest and loss of control.

The results for hypotheses two to four are all comparable, sharing a consistency of responses from the respondents. There was no marked difference between the different types of information, or with the results for access to personnel information as a whole. The results are all around the

70% mark showing a consistent value placed on all three personnel information types by respondents.

Respondents stated that they wanted access and control over administrative personnel information, which appears to disagree with Horibe's methodology, however is consistent with Spreitzer and Quinn's view of openness and trust.

Managerial information has to be controlled to avoid conflict of interest; however, employees want access to that information. Horibe stated that employees should not have access to managerial information or have the ability to make managerial decisions. The NZDF believes in keeping control of management information, which is consistent with discipline five of the Five Disciplines For Empowerment model, and therefore removing a potential conflict of interest. Respondents have stated that they want access to managerial information, which is contrary to Horibe's model, however consistent with Spreitzer and Quinn's view of openness and trust.

Whether an organisation may individually decide to share personnel information about employees with them, there is a compelling argument to share personnel information. Aside from legal requirements there is a desire among NZDF employees for the organisation to share personnel information, including administrative and managerial information.

The findings of the research point to a difference between the employees' views and Horibe's methodology. NZDF employees want access and control over their administrative personnel information and access to managerial personnel information, whereas Horibe's methodology states that employees should not be provided with access and control over these sets of information for decision making. This raises questions about the applicability of using Horibe's methodology for decision making about personnel matters, especially with the advent of ESS systems like the DKS.

6.2.8 FIVE DISCIPLINES MODEL

Spreitzer and Quinn presented the five disciplines model as a method for attaining empowerment within an organisation. The five disciplines model shows that an empowerment programme involves organisational change, not only in processes but also in organisational strategy and culture. Organisational strategy and cultural change are outside the initial scope of this research, so that, while disciplines one to three were considered they did not form the basis of the research. Disciplines four and five form the predominant focus of the research. The fourth discipline is organisational openness and trust, which relies upon sharing information and authority across the organisation. The fifth discipline involves guidance and retained control by management to balance the sharing of power through delegation.

The research investigated whether ESS systems, in particular the DKS, can be used to facilitate empowerment for the organisation. For the system to provide any benefit to the organisation or to employees, the employees have to be willing to use the system. Therefore the information has to be useful to employees and presented in a fashion that they can access and are prepared to use. Once the employees have access to the information, they need to be empowered to use and gain control over it, thereby enabling openness and trust within the NZDF. The results of the analysis showed that the respondents believe that the DKS provides them with these requirements, and therefore enables openness and trust for empowerment as described in the fourth discipline of Spreitzer and Quinn's Five Disciplines Model.

The responses indicated that the DKS provided employees with all of the personnel information that they required. The respondents also stated that the information was presented in a way that was easy to access and control.

The previous results have shown that NZDF employees believe personnel information is important and that the DKS, as an ESS system, supplies all of the personnel information that they require, thereby meeting their personnel information needs.

What remained to be asked was whether the employees use a computerised system to access their personnel information? The results from the questionnaire have shown that NZDF employees are willing to use a computerised system to access and to change their personnel information. The DKS therefore provides access to personnel information that employees need, and want, to access in a way that they are prepared to use to access the information. It can therefore be stated that the DKS has increased the openness and trust by providing employees with a facility to access their personnel information, that they are willing to use. Providing employees with access to this information enables employee empowerment as it provides them with the information required to make decisions.

Discipline five discusses the organisation retaining control of the system, information and decision making. Employees are provided with access to the information, however they are only given the ability to change limited information on the system. This means that the employees have limited control over the information, as the organisation has retained the control required to change most personnel information.

If the organisation was to provide employees with the ability to change more information types, then the following benefits could be cultivated:

- Reduced administrative overheads.
- Up to date accurate information.
- Increased employee empowerment.

This research has showed that there are areas where openness and trust could be extended, without jeopardising organisational control, to provide increased employee empowerment and savings to the organisation with the additional benefit of accurate and up to date information. This information could then be used by the organisation to populate knowledge management applications.

6.3 THESIS CONCLUSIONS

The literature review established that there is a link between ESS, Empowerment and Knowledge Management. It showed that ESS systems could aid knowledge management and empowerment through the provision of up to date accurate information in an instantaneous and transparent fashion. It also showed that for an ESS system to provide benefits to the organisation, and to employees, that the employees had to be willing to use the system.

Organisations utilise empowerment to enable employees to solve difficult business issues, as they are where the issues occur and understand the context the issues occur in. Empowerment ensures employees have the knowledge, information & authority to make all decisions that concern them. These decisions can provide the organisation with a competitive advantage, provide savings and improve organisational effectiveness. The sharing of control between employers and employees is vital for the success of empowerment programmes; if information is not shared then the benefits offered by empowerment will be minimal. Employees should be provided with the authority to make decisions and with the resources they require for making informed decisions, especially access to relevant, timely information.

When employees are provided with autonomy, they need to be made aware of the boundaries of their decision-making discretion. The DKS is an employer-initiated empowerment system that offers limited control over personnel information to employees. The DKS has facilitated the removal of barriers by providing employees with instantaneous, transparent access to their personnel information. Sharing this information with employees enables them to use it to make decisions that help to achieve organisational goals and can provide a competitive advantage to the organisation. Management has retained control over managerial personnel information and employees can only change limited administrative personnel information. These boundaries have been created to ensure that employees act properly and only make decisions that they are authorised to make. Creating these boundaries has

ensured that employees will not become overconfident and exceed their authority.

The questionnaire was sent to NZDF employees to ascertain their views on the DKS. The responses have enabled the acceptance of all of the hypotheses proposed in this research. The following can therefore be stated as true about the NZDF:

- Access to personnel information is important to employees.
- Employees are prepared to use a personal computer to access and control their personnel information.
- The DKS, as an ESS system, meets employee personnel information needs.
- Access and control over administrative personnel information is important to employees.
- Access to managerial personnel information is important to employees.

The findings of the research have therefore confirmed that the DKS, as an ESS system, enables increased openness and trust and therefore aids employee empowerment within the NZDF, in accordance with Spreitzer and Quinn's Five Disciplines For Empowerment. Furthermore, there is sufficient control over information in the DKS to satisfy the fifth discipline of control in the five disciplines model. There is scope for increased empowerment and sharing of control with employees, and savings to the organisation, by enabling employees to update more of their administrative personnel information.

The benefits provided by the DKS could be improved by increasing the control afforded to employees without the organisation losing undue control. Employees have stated that they would like to be able to change more information on the system, thereby gaining increased control over their personnel information. This increased authority would enable increased empowerment, increased savings to the NZDF and more accurate up to date information for knowledge management. Although perceived as a loss of

control by the organisation, it would actually lift an administrative burden upon human resources clerical workers, as employees would be responsible for entering their own administrative personnel information onto the DKS.

Respondents have stated that they want control over their administrative personnel information and access to their managerial information. These responses have raised questions about the suitability of using Horibe's Employee Decision Making Model for personnel information, particularly with the advent of ESS systems.

In conclusion, the DKS is a successful application that provides benefits to the NZDF and its employees. The DKS has enabled empowerment in the NZDF by providing employees with access to, and control over, their personnel information. Employees have stated that they are willing to use the DKS to access and control their personnel information, meaning that employees will use the information on the DKS. If the NZDF were to allow employees the ability to update their own personnel information the information would be more up to date and accurate, thereby improving the quality of information. This information could then be used as a source of knowledge for the organisation.

6.4 RECOMMENDATIONS

The results of this research have shown that employees believe that the DKS meets their personnel information needs, and that they are willing to use the system. As the DKS provides benefits to both the organisation and employees, it is recommended that the DKS continue to be used. The NZDF and employees should continuously evaluate the system and look for potential innovation and improvements.

This research has focussed on openness and trust, and control of personnel information within the NZDF. The NZDF should examine the organisational culture and associated empowerment of employees, possibly using disciplines

one to three of Spreitzer and Quinn's Five Disciplines Model. This could be combined with the results of this research to provide a better understanding of empowerment within the NZDF. It would be beneficial to find out whether employees are actually empowered to make decisions using the personnel information provided by the DKS. The NZDF should investigate ways to further empower employees that provide benefits to the organisation and to employees, however they need to ensure they retain control and maintain the integrity of the system.

The NZDF should ensure adequate controls are in place to avoid security issues or a conflict of interest, especially with managerial information, and particularly when changes are made to the system.

The organisation could use the DKS to enable employees to perform a wider range of their personnel administration functions. Possibilities include making additional personal information changes, applying for internal jobs, reporting the amount of time they have worked, and reporting holiday and sick leave.

Employees are willing to use the DKS, which provides the organisation with benefits. Empowering users to change administrative personnel information held on the DKS could increase these benefits. Examples of information that employees could change include:

- Allotment Details.
- Bank Account Details.
- Child Care.
- Contact Details.
- Next of Kin.
- Other Addresses.
- Will Details.

Managers could update the managerial personnel information on the DKS, providing accurate up-to-date managerial personnel information for employees and the organisation. Managers could also be supplied with

access to their employees' DKS records to enable them to manage their personnel online, rather than using paper files. In addition the permissions for managerial information access could be reviewed to see if employees could amend and use the information to make decisions, provided appropriate safeguards are in place.

The organisation should investigate what other information could be held on ESS systems, whilst ensuring boundaries are set to limit possible breaches of trust by employees. The NZDF could use the DKS to provide organisational knowledge gathering and sharing. The DKS could be used to provide knowledge to other systems, be expanded to increase the application's scope or used as a part of a connected suite of knowledge providing applications to enable knowledge management and increased empowerment. The information from these systems could be consolidated and used for analysis of personnel trends and forecasting. These applications could also provide technical information about positions and encompass personnel reporting and other personnel functions.

These further applications would have to be investigated and links established; however, if portal technology were utilised it could provide a platform for a one stop personnel management system that provides the personnel function and makes information available to those that require it. This would simplify and automate the organisational processes in an open, easily accessible real time fashion.

Although the hypotheses were all accepted, the analysis showed that many users did not view some individual pages as useful. The findings of this research could be compared with the findings of the previous usage study to ascertain which pages are being utilised and are providing benefits, to see if certain pages are worth keeping. The NZDF should also assess any benefits outside the boundaries of this research before any pages are removed from the DKS.

Some of the DKS pages are only used by part of the population, for example: only naval military personnel use the Navy Task Book page. User profiles should be modified so that they only see the pages that are meaningful to them. To aid empowerment, employees could be provided with the ability to modify their profiles to only include pages that pertain to them.

The NZDF should continue to monitor and control access to the personnel information stored on the DKS and MIS, to ensure privacy requirements and data integrity are maintained.

The NZDF should look for ways to increase the number of DKS users. There are many potential DKS users who do not have permission to use the system, or physical access to a terminal. Increasing the number of users will increase the benefits the DKS provides to the organisation and to employees. The NZDF should distribute more machines, or possibly use the existing kiosks (Currently used for the Pay As You Dine (PAYD) system), to enable more employees to access the system.

The DKS provides openness and trust, as well as sufficient control to ensure the success of the system. The system enables employee empowerment and provides employees with access and limited control over their personnel information. This foundation provides the NZDF with several options for improving the DKS and gaining increased benefits from ESS, Empowerment and Knowledge Management initiatives; as shown by the recommendations above. Some of the improvements that could be made include increased control by employees, rationalisation of pages on the DKS, linking to other systems, provision of knowledge, increased usage and an analysis of the NZDF empowerment culture that could build upon the initial success of the system. It is important for the organisation to review and update the DKS on a periodical basis to ensure that it continues to meet the needs of the organisation and employees.

6.5 SUGGESTIONS FOR FURTHER RESEARCH

This research has shown that employee self service can provide benefits to the organisation and employees through knowledge management and empowerment initiatives. ESS systems rely upon employees to use and update them. NZDF employees have stated that they are willing to use the DKS to gain access and control over their personnel information. To build upon the findings of this research, the following research could be undertaken:

- A study of empowerment in the NZDF could be conducted to see if the organisational culture is conducive to empowerment. The study could ascertain whether employees are given the ability to make decisions or whether they are only supplied with their personnel information. The study could also investigate what decisions employees use personnel information to make.
- An investigation of the NZDF culture of empowerment could be undertaken to measure the current environment against disciplines one to three of Spreitzer and Quinn's Five Disciplines Model. These results could be combined with the results of this research to provide a better understanding of the NZDF empowerment culture.
- The results of the previous usage research could be compared to the results of this research to decide which DKS pages are worth keeping.
- Research could be conducted to see whether this survey has increased awareness and usage of the DKS.
- Another sample could be drawn and sent questionnaires to test the validity of these findings.
- An analysis of the MIS could be conducted to ascertain what other benefits the DKS is providing the NZDF and employees.
- Research could be undertaken to find out if there is any additional personnel information that employees should be able to access.
- The organisation could investigate what information employees should be able to update, and the impact that any changes would make.

- A study could be conducted into other areas of employee self service, to see whether other ESS applications could be developed within the NZDF e.g. for technical information about positions.
- The NZDF could evaluate the DKS for potential innovation and improvements.
- The organisation could examine what additional administrative personnel information employees could access and change without jeopardising control.
- This research could be conducted in a different organisation to see whether the results are replicable. These results could be used to test Horibe's Employee Decision Making methodology.
- The NZDF should undertake a review of their KM applications and strategies. This review would establish a baseline for knowledge management within the NZDF, which could be used to develop new KM strategies to make the best use of knowledge within the NZDF. ESS systems could provide benefits to these KM initiatives by gathering, storing and providing knowledge to the NZDF.
- An investigation of the authority delegated to NZDF employees could be conducted. The investigation could ascertain whether empowerment could be increased, and whether increased empowerment would provide benefits to the organisation and employees.
- The NZDF could examine whether employees could use managerial information for decision-making and whether they should be given limited ability to change managerial information. Proper controls should be ensured to avoid a conflict of interest with managerial information.
- Research could be conducted into the role of managers using the DKS, possible areas for investigation include:
 - Managers accessing employee information from the DKS, including consolidated reports about groups of employees that they manage;
 - Managers updating the managerial personnel information for their employees directly onto the DKS; and
 - Personnel processes automated and conducted on the DKS or related systems e.g. personal appraisals.

7 APPENDIX A DKS SURVEY QUESTIONNAIRE

DKS System User Survey

Thank you for taking the time to consider taking part in this survey.

The Defence Kiosk System (DKS) system was set up so that NZDF employees could access their personnel records easily over the NZDF intranet. This survey is an attempt to explore:

- What personnel information you need,
- Whether the DKS system provides the information that you need,
- How the DKS system can be improved to meet your personnel information needs.

You have been selected randomly to take part in this survey to find out what personnel information you want to access. Your input is important, as the information on the DKS is information about yourself. Any responses you make will be treated confidentially.

This survey is being sent out to a cross section of NZDF civilian and military personnel to gauge the responses of the NZDF community, not just those who are high users of the system. If you haven't used the DKS system or would like to refer to it when answering questions, it can be accessed by clicking the following hyperlink: [View DKS](#) before you answer the questions.

The results of the survey will be compiled as a report to Atlas Systems of the NZDF Personnel Branch for DKS system improvements and as part of a Massey University Thesis. A copy of the thesis will be held by both NZDF and Massey University. The supervisor for this research is Peter Blakey from Massey University.

Privacy and Additional Information

This survey is your opportunity to have your say about the current DKS system and whether it could be improved to meet your personnel needs. It is assumed that filling in the survey implies consent. You have the right to decline to respond to this survey or omit answers to any questions at your discretion.

Under the Privacy Act 1993:

- (a) You have the right to seek access to the personal information collected about you.
- (b) You may seek the correction of any personal information collected about you.

If you would like a copy of the results or you would like to ask any questions about this research, please contact the researcher. The researcher responsible for this survey is Richard Williams, who can be contacted on DTelN 342-5820 or via email at richard.williams@nzdf.mil.nz

In the survey you are asked to provide demographic information. This information will **not** include your name. The demographic information will show whether there are differences in opinions or levels of satisfaction across different groups such as rank or service.

Your response will be allocated a code to ensure your anonymity. The way the data is analysed and reported will prevent the identification of individuals, and at no time will data about individuals be reported. This means that your responses will remain **confidential**. The responses will be stored securely in a database on the defence network and will only be accessed by the researcher. They will be destroyed after the researcher's thesis has been assessed.

Your opinions are the key to shaping a system that provides you with access to your personnel information. Please only complete the questionnaire if you are satisfied with the conditions under which this research is to be conducted. All responses will be treated confidentially.

Survey Instructions

Please complete this questionnaire electronically. **Do not** print off the questionnaire and return it through the mail system. This questionnaire is best read on a full screen (press the F11 key on your keyboard).

To respond to a question, move your mouse cursor and left click inside the box of your choice. If you wish to change your response simply click in a different box. **Do not use the Enter key until you have completed the questionnaire.**

Throughout this survey we are interested in your views of the DKS system. Even if you feel that you may not know the system very well it is important that you respond, as your views represent many people within the NZDF who are in the same situation as you.

On completion of the questionnaire click on the "Submit Survey" or press the Enter key and the questionnaire will automatically be submitted.

The survey should take about 20 minutes to complete.

A. Demographics

1. What is your gender?

- ☐ Male
- ☐ Female

2. What is your age group?

- ☐ Under 20 years
- ☐ 20 - 29
- ☐ 30 - 39
- ☐ 40 - 49
- ☐ 50 - 59
- ☐ 60+

3. Which of the following best represents the highest level of education that you have completed?

- ☐ No Formal Qualification
- ☐ School Certificate or Equivalent
- ☐ Sixth Form Certificate or Equivalent
- ☐ Tertiary or NZQA Accredited Diploma
- ☐ Bachelors degree
- ☐ Post Graduate Degree

4. What service are you in?

- ☐ Air Force
- ☐ Army
- ☐ Navy

☐ Defence

5. What is your current rank?

- ☐ Civilian
- ☐ Private to Corporal
- ☐ Sgt to WO1
- ☐ Officer Cadet to Captain
- ☐ Major or above

6. Do you use a computer as part of your employment/current job?

- ☐ Yes
- ☐ No

7. Do you have your own computer at work?

- ☐ Yes
- ☐ No

8. How often do you use a computer?

- ☐ Daily
- ☐ Once every couple of days
- ☐ Weekly
- ☐ Less than weekly

B. Usage of the System

9. How often do you use the DKS system?

- ☐ Daily
- ☐ Weekly
- ☐ Monthly
- ☐ Less than monthly
- ☐ Never used it

10. How do you usually access the DKS system?

- ☐ Individual computer
- ☐ Shared computer
- ☐ Kiosk

C. User Impressions of the DKS System

11. What do you like about the DKS system?

12. Is the DKS system layout user friendly?

- ☐ Yes
- ☐ No

13. If No, what changes would you make to the layout?

14. What, if any, other changes would you make to the system?

D. User Personnel Information Needs

15. Is it important to you to be able to access your personnel records?

- ☐ Yes
- ☐ No

16. Please explain why / why not

17. Does the ability to access your personnel record improve your ability to manage your career?

- ☐ Yes
- ☐ No

18. Please explain why / why not

19. What career based purposes do you use, or could you foresee using, your online personnel information for?

- ☐ Checking entitlements
- ☐ Promotion prospects

- ☐ Training requirements
- ☐ Pay reviews
- ☐ Postings
- ☐ Other (please state)

20. Would you prefer to use a computer to access your personnel information rather than contact your administration centre?

- ☐ Yes
- ☐ Depends on the information
- ☐ No

21. Please state what information you would like to access by computer, or why you would not access personal information by computer

22. Would you prefer to use a computer to change details on your personnel information rather than have to pass the information to your administration centre?

- ☐ Yes
- ☐ Depends on the information
- ☐ No

23. Please state what information you would like to change by computer, or why you would not change personal information by computer

E. Information on the DKS System

24. What are your general impressions of information on the DKS system?

- ☐ Really useful
- ☐ Useful
- ☐ Not Much Use
- ☐ No Use at All

25. Does the DKS system provide access to all the information about your personnel records that you need?

- ☐ Yes [[Go to question 27](#)]
- ☐ No

26. If No, what information is missing from the DKS system?

27. If you had a question about your personnel information do you think that you could get the information you require easily from the DKS system?

- ☐ Yes [Go to question 29]
- ☐ No

28. If No, what would hinder you from getting the information?

29. You can currently only change your phones numbers and "known as" name in the Contact Information page, what information in your personnel records would you like to be able to change?

- ☐ Allotment Details
- ☐ Bank Account Details
- ☐ Child Care
- ☐ Contact Details
- ☐ Next of Kin
- ☐ Other Addresses
- ☐ Will Details
- ☐ Other (please state)

30. Does the DKS system provide you with access to the information you need to manage your personnel information?

- ☐ Yes [Go to question 32]
- ☐ No

31. If No, how could the DKS system be improved to help you gain access to your personnel information?

32. Paper payslips are expensive and could easily be replaced by online copies that can be printed out as required by employees. Would you prefer to have your payslips on paper, online or both online and paper copies?

- ☐ Online Copy
- ☐ Paper Copy
- ☐ Both Online and Paper Copies

33. Paper based leave applications can be time consuming and difficult to track. Would you prefer to apply for leave and have leave approved online?

- ☐ No, Stay with paper copies
- ☐ Only leave applications online
- ☐ Leave application and approval online

34. Please rate the usefulness of information on the following DKS pages

Not Applicable means that the information is not related to you, for example: information about military medals would be not applicable to civilians.

	Not Applicable	Very Useful	Useful	Not Very Useful	No Use
a. Contact Information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Home Address	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Next of Kin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Casualty Notification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Postal Address	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Ration Ashore	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Child Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Career Progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Promotion Details	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Navy Sub Spec	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Navy Task Book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Dining Statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. Change Card Pin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n. Branch Corps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o. Engagement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
p. Service History	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
q. Supernumerary Appointments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
r. Leave	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
s. Administration Details	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
t. Personal Documents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
u. Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
v. Honours and Awards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
w. Sport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

x. Dependants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
y. Personal Details	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
z. Courses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
aa. Qualifications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
bb. Security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

35. Please make any recommendations for changes to the following pages

Contact Information	<div></div>
Home Address	<div></div>
Next of Kin	<div></div>
Casualty Notification	<div></div>
Postal Address	<div></div>
Ration Ashore	<div></div>
Child Care	<div></div>
Career Progression	<div></div>
Promotion Details	<div></div>
Navy Sub Spec	<div></div>
Navy Task Book	<div></div>
Dining Statement	<div></div>
Change Card Pin	<div></div>
Branch Corps	<div></div>
Engagement	<div></div>
Service History	<div></div>
Supernumerary Appointments	<div></div>
Leave	<div></div>
Administration Details	<div></div>
Personal Documents	<div></div>
Health	<div></div>
Honours and Awards	<div></div>
Sport	<div></div>
Dependants	<div></div>
Personal Details	<div></div>
Courses	<div></div>
Qualifications	<div></div>

Security

Submit Survey

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