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E-TRUST: A BUILDING BLOCK FOR DEVELOPING VALUABLE ONLINE PLATFORMS IN HIGHER EDUCATION

by

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DECLARATION

I, Byron Jay Van Wyk, declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

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ABSTRACT

The aim of this research project was to provide an answer to the question: "How can an understanding of online trust be used to build valuable online applications in Higher Education?"

In order to present an answer to this question, a literature survey was conducted to establish:
- An understanding of the phenomenon of online trust
- What the factors are that influence a loss of trust in the online environment

The literature survey highlighted several factors that influence a loss of trust in the online environment, called trust cues. These factors, however, were often tested within the E-commerce environment, and not in organization-specific contexts, such as online platforms in use in Higher Education.

In order to determine whether or not these factors would influence the development of trust in context-specific environments, the author of this research grouped the indentified trust factors into three focus areas, i.e. *content*, *ease of use*, and *navigation*. These factors were then incorporated into a series of nine different prototypes. These prototypes were different versions of a particular online platform currently in use at the Cape Peninsula University of Technology (CPUT).

The prototypes were tested over a three week period, with certain staff members at the institution in question recruited as test participants. During each week of user observations, a different focus area was targeted, in order to establish the impact that it would have on the perceived trustworthiness of the platform in question. User observations were conducted while test participants completed a standard process using the various prototypes. Semi-structured interviews were also conducted while participants completed the specific process. Participants were asked to evaluate each screen in the process according to its perceived trust worthiness, by assigning a trust level score. At the completion of the three rounds of user observations, in-depth interviews were conducted with test participants.

The participants' trust level scores for each prototype were captured and graphed. A detailed description for the score given for a particular screen was presented on each graph. These scores were combined to provide an analysis of the focus area tested during the specific round. After the three rounds of user observations were completed, an analysis of all the trust factors tested were done. Data captured during interviews were transcribed, combined with feedback received from questionnaires, and analysed.

An interpretation of the results showed that not all trust factors had a similar influence in the development of trust in the online platform under investigation. Trust cues such as content organization, clear instructions and useful content were by far the most significant trust factors, while others such as good visual design elements, professional images of products, and freedom from grammatical and typographical errors had little or no impact in the overall trustworthiness of the platform under investigation. From the analysis done it was clear that the development of trust in organization-specific contexts is significantly different than developing trust in an E-commerce environment and that factors that influence the development of trust in one context might not always be significant in another.

In conclusion, it is recommended that when software applications are developed in organization-specific contexts, such as Higher Education, that trust factors such as good content organization, clear instructions and useful content be considered as the most salient. Organization-specific contexts differ quite significantly in that the users of these systems often convey a certain degree of trust toward the online platforms that they work with on a daily basis. Trust factors that are geared toward developing an initial or basic trust in a particular platform, which is often the case with first time users engaging in an E-commerce platform, would therefore not be as significant in the development of a more developed level of trust, which is what is needed within the development of organization-specific online platforms.

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I wish to thank:

GLOSSARY

Human-computer interaction (HCI)	The design of interactions between users and computers
Learner Management System (LMS)	A web-based application used to facilitate the learning process as well as manage organizational processes at educational institutions.
Interaction Design	The creation of a dialogue between a person and a product, service, or system (Kolko, 2011)
Higher Education	A stage of learning that takes place at universities, colleges, institutes of technology, etc.
Service	A chain of activities that form a process and have value for the end user (Saffer, 2007).
OPA	Online Information Management System that currently underpins most of the online services available to staff at Cape Peninsula University of Technology (CPUT)
Sociological Phenomenon	An occurrence that affects the relationships around us, as well as influencing our behaviours and attitudes.
Design Framework	A set of design patterns plus other elements and information, used together to guide the design of a complete system or site context (Hoekman & Spool, 2010).
Ethnographic Research	Research methods that explore the everyday realities of people living in small scale, non-western societies and to make understandings of those realities explicit and available to others (Blomberg, 2003).
Phenomenology	The person's construction of the meaning of a phenomenon, as opposed to the phenomenon as it exists external to the person (Leedy, 1997:161).
iEnabler System	Online Human Resources Tool currently in use at the Cape Peninsula University of Technology
ICT	Information and communication technologies
E-Commerce	Industry of buying and selling products and services via an electronic system such as the internet.

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CHAPTER 1
INTRODUCTION

1.1 Overview

The purpose of this research was to investigate the phenomenon of online trust, what the factors are that influence staff members' interactions with online services and the role that online trust plays in these interactions. It was found that there had been sufficient research done on trust in the E-commerce environment, but hardly any research had been done on trust in organization-specific online platforms, which staff members use on a regular basis.

This research was therefore aimed at investigating the phenomenon of online trust and the role that it plays in organization-specific online platforms and how an understanding of the importance of online trust can aid in the development of these platforms.

1.2 Research Problem

1.2.1 Background

Through an in depth literature survey on the concept of online trust, the author of this research discovered that although online trust has been researched extensively within E-commerce environments, the research on the significance of trust with regards to organization-specific contexts have been limited. Organization-specific online platforms are used on a daily basis, and therefore the use qualities of these platforms are especially important, not to only increase effective use, but also to facilitate quicker task completion and therefore an overall increase in productivity. This research is therefore aimed at answering the following question: "How can an understanding of online trust be used to build valuable online applications in Higher Education?"

1.2.2 Importance of online trust

The concept of online trust or e-trust is becoming an increasingly important issue, and one that can have a profound impact on how people use online applications in the future. The more online applications and services exude qualities that convey trustworthiness, the more effective it will become. This will lead to more satisfying online interactions, and therefore happier, and more productive users. Central to any successful online application, is the concept of trust. Whereas in the early days of EC(E-Commerce) growth came from skills in building and managing networks and

developing information systems, it now comes from building and maintaining trust and sustaining relationships (Keen, Schrump & Chan: 2000).

1.2.3 Statement of the problem

This research will investigate the phenomenon of online trust, what the factors are that influence these interactions, and the role that online trust plays in these interactions. The author of this research has not found sufficient evidence to suggest how the impact of a gain or loss of trust in organization-specific software might influence users' online interactions. Therefore the research problem stems from the lack of research done on trust in this particular discourse.

1.2.4 Research Objectives

The main objective of this research is to answer the question: "How can an understanding of online trust be used to build valuable online applications in Higher Education?" In order to answer this question, a literature review was done to determine the definition of online trust and what the factors are that influence a loss of online trust. Staff members with various levels of experience with the online platform in question were identified and involved in various rounds of user testing to determine the effects that the identified trust factors, or a lack thereof, in the current platform, had. These results were used to identify the most salient trust factors. The data was collected to determine which trust factors should be incorporated in future software applications developed by this institution.

The answer to the above-mentioned question will enable the decision makers at this institution to develop software that incorporates the identified trust factors, which may lead to online platforms that are easier to use, which leads to quicker decision-making, and therefore increased productivity.

1.3 Methodology

A literature survey was conducted to investigate the concept of online trust, and the factors that influence a loss or gain in trust. The aim of the survey was to gain a solid understanding around the various definitions of online trust that currently exist, as well as to determine which factors might possibly lead to a loss or gain in online trust.

The literature revealed various elements of online trust that are critical to the overall understanding of this multidimensional concept. These include:

- Online trust relationships
- Definitions of online trust
- Dimensions of trust

- Preconditions of trust
- Trust development
- Trust Cues
- Trustworthiness
- Credibility

Each of these concepts were looked at in detail to establish a thorough understanding of the concept of online trust. The literature on Trust Cues highlighted several cues or factors that influence the development or loss of online trust. These identified trust factors were grouped into three distinct focus areas. These focus areas were further investigated by means of an extended literature survey. These included:

- Ease of use
- Content
- Ease of searching or Navigation

1.4. Research Design

This research was divided into three distinct sections. Firstly, a literature survey was done to establish a theoretical underpinning for any further investigation. During the literature survey, the most salient trust factors that influence trust in online environments were identified and grouped into the following focus areas:

- Content
- Ease of Use
- Ease of Search / Navigation

The second section of this research study consisted of user observations and semi-structured interviews. During this phase, the I-Enabler online leave management system was redeveloped and used as the testing instrument. The application currently being used by the institution could not be used because of potential risk and difficulties its use might incur. Risk, in that confidential details such as user's personal details, leave history and pending leave requests could be revealed. Difficulties, in that in order to complete the processes, users had to complete a leave application, which would mean a leave day being deducted from their current annual leave allocation. This leave application could have been cancelled after the process had been completed, but the author of this research refrained from suggesting this method, as this would have had some element of risk which would have cautioned participants against partaking in this research study.

A scenario was therefore developed, whereby the participants were asked to complete a leave application on behalf of a colleague on a particular day. Detailed instructions were provided in terms of the colleague's personal details such as staff number, head of department, faculty in which the colleague worked, and details with regards to the leave application such as type of leave, the amount of days and the reason for the leave application.

The current system was redesigned with the exact design and layout features employed to create continuity and familiarity with the current system. The three identified focus areas were tested during the three different rounds of testing, with the focus areas of 'content' incorporated in the first, 'ease of use' in the second, and 'ease of searching' or 'navigation' in the third round. Nine different versions of the application in question were developed and tested over three rounds of user observations. The nine different versions each violated or incorporated the various elements associated with the three identified focus areas, regarding online trust. Participants were asked to complete each process and provide a trust level score for each of the screens in the process, of which there were five. The scores were graphed for later analysis.

The final part of this research study consisted of interviews being conducted with the participants that took part in user observations. Test participants were asked specific questions with regards to their online experiences using applications currently in use at the institution in question. These responses were captured and analyzed.

1.4. Research data and analysis

The research data was gathered and graphed. Interviews and scenarios were video recorded and transcribed.

1.5. Limitations

One limitation was that interviews were conducted during the assessment period, which meant that some test participants were often rushed during the user observation sessions, which had a negative impact on the feedback that was received. Also, one participant completed only the first round of user testing and could not complete the last two rounds. This data could therefore not be used during the analysis phase.

1.6. Chapter Layout

The rest of this research is laid out as follows:

Chapter 2 contains a literature study that was conducted to investigate the concept of online trust, and the factors that influence a possible loss or gain in online trust.

Chapter 3 describes the research methods used to collect the data.

Chapter 4 describes the data that was collected as well as the analysis that was done.

Chapter 5 concludes this research and provides suggestions on how to develop trust in online environments within Higher Education.

1.7   Summary

The purpose of this research was to investigate the phenomenon of online trust, what the factors are that influence staff members' interactions with online services, specifically the I-Enabler tool at Cape Peninsula University of Technology (CPUT), and the role that online trust plays in these interactions. In order to answer the research question in section 1.2.4, an in-depth understanding of the concept of trust was developed. The factors that influence online trust were then identified and tested. The most salient of these factors were incorporated into various rounds of user observations, which were tested by test participants from this institution. The results for each characteristic were obtained and the respective conclusions were drawn.

The author of this research makes a recommendation regarding the most important trust factors, how they influence the online experience, and how to incorporate these in future online applications developed in higher education. These recommendations are based on the results that were obtained during this research project.

The following chapter will contain a literature survey regarding the phenomenon of trust and the factors that influence the development or loss of trust in the online environment.

CHAPTER 2
LITERATURE SURVEY

2.1   Introduction

'Someone who thinks the world is always cheating him is right. He is missing that wonderful feeling of trust in someone or something'. This statement, by Eric Hoffer, the twentieth century philosopher, has indeed been proven to be accurate by various bodies of work during the past few decades. Trust has been described as the social capital or lubricant that makes coordination and cooperation between people possible (Corritore, Kracher, & Wiedenbeck, 2003). Literature on trust include various definitions of trust, different kinds of trust, the trust development process, trust cues, and related topics such as trustworthiness and credibility. In recent years, the offline literature on trust has extended to the online world, with various authors stating that trust is just as, if not even more, important in the online, than offline environment. The internet and especially ICT (Information and Communication Technologies) have become an integral part of for-profit, non-profit, governmental and educational institutions world wide. With an increasing amount of information being transferred via the internet, the importance of trust in online systems has been intensified in recent times. This is especially true in higher educational institutions, where large staff compliments transfer huge amounts of data via internet communication networks on a regular basis. Online systems that handle sensitive information, such as employee, salary and leave data, is especially important, since the element of risk is quite prevalent.

The current research concerning online trust is geared towards websites, and especially E-commerce websites, where the user has a choice of whether or not they want to engage in a particular website or not. There is no established literature concerning developing trust in online systems where users are obliged to use a particular system. The current literature on online trust predominantly looks at developing a basic trust in the website to increase the likelihood that the website users will eventually convert to customers. The effects of concepts such as trust are often overlooked in the development of online systems that form part of users' daily works schedules/routines, especially because the users of these systems are required to use them, and therefore no alternative options are available. With sensitive information being transferred via these systems, though, should the development of trust in these systems not be equally, if not more important that in its E-commerce counterparts?

Section 2.2 describes online trust relationships, definitions of online trust, dimensions of trust, preconditions of trust, trust development, factors that influence a loss of trust, and trustworthiness.

Section 2.3 in particular looks at focus areas around the development of trust, such as ease of use, content, and ease of searching.

2.2   Trust concepts

2.2.1   Online Trust Relationships

Chopra & Wallace (Chopra & Wallace, 2003) defines trust in terms of three key elements, i.e. a *trustee* to whom the trust is directed, *confidence* that the trust will be upheld, and a *willingness* to act on that confidence. The role of *trustee* is often inferred as another person (Rotter, 1971), but has also been expanded to include computer systems (Prietula & Carley, 1999). It is for this reason that the definition of online trust rests on the offline definitions of trust that have been developed through various disciplines.

According to Olson and Olson (2000) there are two approaches to defining relationships between trustors and objects of trust i.e. individual-to-individual trust relationships mediated through technology, and technology as the object of trust. Some bodies of work disagree that technology can be seen as an object of trust, while others are of the view that technology, and especially computers have a social presence and therefore qualifies as an object of trust. Various studies have indicated that the human-computer relationship is fundamentally social (Nass, Steuer & Tauber, 1994) and that computer systems can assume the role of objects of trust, i.e. trustors and trustees (Corritore, Kracher, & Wiedenbeck, 2003). Nass, Steueber & Tauber (1994) argue that because these technologies are social actors they have a social presence, and that it is this quality that people tend to respond to. Computer systems can therefore take the role of *trustee* in the trustor-trustee relationship.

2.2.2   Definitions of Online Trust

The literature is quite extensive in terms of the definition of trust in the offline world. Research on the concept on trust includes disciplines such as philosophy, psychology, sociology, marketing and human computer interaction (HCI). Even though each discipline might include its own discipline-specific definitions, each stream acknowledges the importance of trust in social relationships. The following are some of the definitions of trust that have been offered:

- Trust is a personality characteristic of an individual that influences that person's interactions with the world at large (Chopra & Wallace, 2003).
- Trust is an attitude, such as expectation or confidence, that is directed toward a specific other (Luhman, 1979).
- Trust is the property of the recipient, such as dependability or reliability (Giddens, 1990).
- Trust is an action performed by an individual, such as cooperation of reliance (Kini & Choobineh, 1998).

From the above mentioned definitions, it is clear that key elements such as expectation, confidence, dependability, reliability and cooperation play a fundamental role in the definition of trust in any relationship. One other important element in the definition of trust is that of risk. Trust enables people to live in risky and uncertain situations (Corritore, Kracher, & Wiedenbeck, 2003). The key concepts of risk in especially significant in the online environment, as users interact with a computer system (website) and not with another individual.

Since the online definition of trust builds on the offline definition, one can deduce that the prominent concepts in the offline trust definition will also hold true for online trust. The fundamental concepts of the definition of online trust therefore are risk, expectation and confidence.

As mentioned earlier, trust can appear in different trustor/trustee relationships. For the purpose of this research though, the definition will be narrowed down to the relationship between a person and an informational website, in this case, an educational website. This website will, in some ways, represent the company's human resources department/practitioner.

2.2.3 Dimensions of Trust

The offline literature on trust shows that trust is multi-dimensional and can differ according to generality, kind and degree. This multi-dimensional nature, as stated above, most likely reflects online trust as well. To gain an in-depth understanding of online trust, it is thus important to explore the different dimensions of trust.

2.2.3.1 Generality

Generality refers to the breadth of the trust, and extends from general to specific trust (Rotter, 1971). An individual can have general trust in a particular person, group or technology (a person trusting his/her siblings), whereas specific trust refers to a

person trusting a person, group or technology to carry out certain actions under specific circumstances (a person trusting his doctor to give him the correct medical advice).

2.2.3.2 Kinds

Lewis and Weigert (1985) suggest two kinds of trust: cognitive and emotional/affective trust. Cognitive trust is based on partial knowledge of the trustee (person, group or technology), with the trustor having a 'good reason' why he/she trusts the particular trustee. It therefore focuses on characteristics such as competence, reliability and credentials (McAllister, 1995). System trust is a form of cognitive trust based on expectations of behaviour in accordance with social roles, whereby one relies upon the trust of others as a basis for extending trust (Luhman, 1979). Studies of trust in computers emphasize this dimension of trust (Prietula & Carley, 1999).

Emotional trust is based on the emotional bond between the trustor and trustee. Hardin (2001) states that in order for the trustee to maintain the relationship, he/she is compelled to reciprocate the trust afforded to him/her. Cognitive and affective dimensions of trust are not mutually exclusive, but are present in various mixes and can be mutually reinforcing (Lewis & Weigert, 1985). An offline example of both cognitive and affective/emotional dimensions of trust blending may be illustrated by an individual's trust in the Sunday Times newspaper. The Sunday Times newspaper predictably has high quality news articles and up-to-date information, which appeals to the cognitive dimension of trust, but it may also have an appealing layout, humorous cartoons and enjoyable games/brainteasers, which appeals to the emotional dimension. Similarly, in the online world, an individual's trust in supersport.com, for example, is assisted by reliable and up-to-date sports news and expert opinions, but also the up to date live scores of live sporting events, riveting imagery, and up to date sports commentary.

2.2.3.3. Degrees

'Degrees of trust' refers to the depth of trust that an individual has (Corritore, Kracher, & Wiedenbeck, 2003). Degrees of trust run from basic to guarded to extended (Brenkert, 1998). Basic trust is a primary form of trust that dictates how individuals interact with each other and with their surroundings in social life. An example would be the trust that an individual has that a particular chair will be able to carry their weight before sitting on it. Guarded trust is trust protected by formal contracts, agreements and promises (Corritore, Kracher, & Wiedenbeck, 2003). For example, the trust an individual has in the electrician who they hired, but may not know, to do

their electrical work. Extended trust is afforded in situations where agreements and formal contracts are not needed. An example of this would be close friends extending trust to one another. These degrees of trust may also exist in the online world. For example, when a customer wants to order a book from Kalahari.net, he/she has basic trust in the related technologies i.e. networks, internet connectivity, etc. When the customer uses his/her credit card to purchase a DVD from the online DVD catalogue, the user conveys guarded trust. When the user has purchased several products from the website and feels comfortable with sharing personal interests and leaving personal details, i.e. credit card details on the website, the user is then conveying extended trust.

2.2.4 Preconditions of Trust

The offline trust literature suggests that for trust to be applicable in a situation, two conditions must be met. Firstly, a state of dependence needs to exist between trustor and trustee, and secondly when acting on that dependence involves risk. The trustor possesses uncertainty about the outcomes and vulnerability to a potential loss if the outcomes are undesirable. (Corritore, Kracher, & Wiedenbeck, 2003). The first precondition of trust is the dependence of the trustor on the trustee (Rousseau et al, 1998). The dependence from the trustor on the trustee develops from a particular need that should be fulfilled by the trustee. The trustee should then also be able to fulfil that need. An extensive body of knowledge exist on the concept of risk, with several bodies of work stating that risk encapsulates both vulnerability and uncertainty. The presence for risk creates a need for trust (Seligman, 1997). Giddens (1990) argues that trust serves to reduce risk and to decrease risk taking in a relationship. The question of trust only becomes relevant if the trustor is vulnerable to suffering a loss if the trust is betrayed (Doney & Cannon, 1997). As stated earlier, risk is also often defined by the level of uncertainty that exists in a particular situation. The very function of trust is to decrease one's uncertainty (Luhman,1979).

2.2.5 Trust Development

As mentioned earlier, trust is multi-dimensional by nature and can therefore develop through several different processes, depending on the particular relationship. The established literature suggests the following taxonomy of processes: prediction, attribution, bonding, reputation, and identification where each of the processes enhances trust by increasing the perceived trustworthiness of the referent (Chopra & Wallace, 2003). Prediction refers to the reliability of the trustee's past behaviour. Attribution refers to the dependability of the trustee in general, unlike prediction, which is focused on a particular behaviour. Bonding entails the development of an

emotional relationship between trustor and trustee (Chopra & Wallace, 2003). Reputation develops through the recommendation of other parties. Identification is often referred to as relational trust (Rousseau et al, 1998) and occurs when both trustor and trustee share similar goals or values.

2.2.6   Factors that influence a loss of trust

2.2.6.1 Trust Cues

Trust cues indicate the elements that contribute to the overall trustworthiness of a website (Corritore, Kracher, & Wiedenbeck, 2003). These elements may be part of the interface design and include the following:

- Ease of use (Nielsen et al., 2000)
- Good visual design elements (Kim and Moon, 1997)
- Professional images of products (Nielsen et al., 2000)
- Freedom from small grammatical and typographical errors (Nielsen et al., 2000)
- An overall professional look of the website (Fogg et al., 2001b)
- Ease of searching (Nielsen et al., 2000)
- Ease of carrying out transactions (Lohse and Spiller, 1998)
- Useful content (Shelat and Egger, 2002)

Lee (Lee et al., 2000) suggests that conveying expertise, providing comprehensive information, projecting honesty, lack of bias and shared values between the website and the user also provide positive cues.

Negative trust cues include the following:

- Banner ads for products of low reputability (Fogg et al., 2001b)
- Impolite and non-constructive messages (Nielsen et al., 2000)

Poor website maintenance, such as broken links, outdated information, missing images, long download times (Nielsen et al., 2000)

2.2.6.2 Credibility

Credible sources have the ability to change opinions, attitudes, and behaviours, to motivate and persuade. When credibility is low, the potential to influence is also low (Fogg, 2003). Fogg suggests that credibility can also be referred to as 'believability' and differentiates between four different types of credibility, i.e. presumed credibility, which refers to the general assumption in the mind of the perceiver. Secondly, surface credibility, referring to the initial firsthand experience. Thirdly, reputed

credibility, referring to third-party endorsements, or referrals, and lastly earned credibility, which refers to firsthand experience that extends over time (Fogg, 2003).

2.2.7 Trustworthiness

The perceived trustworthiness of a participating party is often thought to be an important antecedent of trust (Lee & Turban, 2001). Chopra and Wallace (2003) state that the aspect of trustworthiness has four different attributes i.e. competence, positive intensions, ethics and predictability, and that these attributes can all be associated with the two different kinds of trust i.e. cognitive and emotional/affective trust. Lee & Turban (2001) also define trustworthiness by means of its attributes and mentions the following attributes: *ability* (the skills and competencies enabling a party of have influence within some specific domain), *benevolence* (the extent to which the trusting party believes that the trusted party wants to do good things rather than just maximize profit) and *integrity* (the trusting party's perception that the trusted party will be honest and adhere to an acceptable set of principles).

From the above-mentioned literature one can infer that the feeling/occurrence of trustworthiness toward a particular trust object is quite significant in the development of trust. The perceived trustworthiness of a computer system has a significant impact on the way people use it. (Kim & Moon 1998).

2.3 Trust Cues

2.3.1 Ease of Use

The term 'ease of use' is often a requirement from marketers to software developers as one of the characteristics a software application should have. It is often seen a 'must have' for any software/interface, but what exactly is 'ease of use' and what is the significance thereof? The term 'ease of use' has its origins in user-centered design, which in turn has its foundations in Human Computer Interaction or commonly referred to as HCI. Nielsen states that the usability of a system is the quality attribute that assesses how easy user interfaces are to use. Even though the HCI discipline has only been formalized within the last two decades, the study of human performance began at the beginning of this century, and especially during the Second World War, when the development of effective weapons systems was of critical importance. HCI involves the design, implementation and evaluation of interactive systems in the context of the user's task and work (Dix, 1997:3). Alan Dix argues that interaction systems are divided into three fundamental components i.e. the user, the computer system itself, and the nature of the interactive process (Dix, 1997:9). To develop a comprehensive understanding of how to design and incorporate trust cues,

such as ease of use, into an online system, it is therefore important to understand the capacity of humans to process information, how information is received, stored, processed and applied. If we design and construct products in such a way that the people who use them achieve their goals, these people will be happy. (Cooper, 2007: 3).

To understand how humans process information, it is important to explore some areas of human psychology, and in particular cognitive psychology. This is especially important when identifying the limitations and capabilities of potential users of these interactive systems. For instance, it is important to establish what tasks users find difficult or easy to accomplish. Card, Moran and Newell developed the *Model Human Processor* model, which compares the human to an information processing system that consists of three sub-systems i.e. the perceptual system (involves a person's perception of the outside world), the motor system (involves human action), and the cognitive system (provides necessary processing to combine first two systems). Dix (Dix, 1997:12) streamlines these systems into the following processes: input-output channels, memory and processing.

2.3.1.1 Input-output channels

Input to the human occurs predominantly through the five major senses, i.e. taste, smell, touch, sight and hearing. The field of HCI is mostly concerned with the last three. Output occurs via the motor control of the effectors i.e. fingers, limbs, head, eyes and vocal system. Imagine a person using a cell phone. He/she interacts with the cell phone via a specific piece of software/application, which consists of a graphical user interface (GUI), with icons, menus and windows. By interacting with the system, the user receives information via sight (what appears on screen), hearing (ring tones, message alert tones) and also via touch (vibrating alerts). Information is mostly sent via the users hands (pressing keys on the keypad). For the purposes of this research, only input via sight (what appears on screen) will be investigated.

2.3.1.1.1 Visual Perception

"Vision trumps all the senses. Half of the brain's resources are dedicated to seeing and interpreting what we see."(Weinschenk, 2011). It is estimated that the average person's brain receives 40 million sensory inputs every second. To make sense of these inputs, the human brain uses past experiences and rules of thumb to, in a sense, guess what the individual sees. Psychologists have often used optical illusions to illustrate this phenomena. Once such example is the Kanizsa triangle, named after the Italian psychologist Gaetano Kanizsa. This illusion highlights how the human

brain creates 'shortcuts' to make sense of the world. This works quite effectively, but can cause some errors, as highlighted by the optical illusion, using two lines, by Franz Müller-Lyer. One of the design implications for the above-mentioned phenomena is that users' perception of visual interfaces might depend on their familiarity with what is presented to them on screen, their individual expectations and their previous knowledge. Another design implication is that the interface designer might be able to make use of the brain's ability to guess, by persuading users to see things in particular ways.

2.3.1.1.2 Peripheral Vision

It is understood that people have two types of vision, i.e. central and peripheral vision. Central vision refers to things that people are directly looking at, where peripheral vision includes the rest of the visual field. Until recently, central vision as always been regarded as the most valuable and useful to how people visually perceive objects and its environments, but recent research has indicated that peripheral vision is in fact more important to understanding the world around than what is generally accepted. In one of the studies, Adam Larson and Lester Loschky (2009) presented people with photographs of common environments, such as a living room, kitchen, bathrooms etc. In some of images, the middle part of the image was concealed, while in others, the outside of the images was concealed. The researchers found that if the middle part of the image was concealed, the test participants were still able to spot what they were looking at. But when the outside/peripheral part of the image was concealed, they could not identify the environment. Their conclusion was that peripheral vision was more important to indentifying a particular environment that an object appeared in, while central vision was more critical in recognizing a specific object.

Peripheral vision is made possible by ganglion cells, which are specialized nerve cells located in the retina of the eye. These ganglion cells consist of two types, X-cells and Y-cells. The X-cells are responsible for the detection of pattern and is predominantly involved in central vision. The Y-cells are scattered in the retina and responsible for peripheral vision. The Y-cells are also responsible for the early detection of movement. This is the reason why people can't help but notice movement in their peripheral vision (Weinschenk, 2011). Internet marketers and advertisers have exploited this phenomenon for years, by using animated banner ads and blinking messages to catch the users' attention. The design implications for the role of peripheral vision is that users will use their peripheral vision to make sense of the page, so all the elements of a page is important and should clearly communicate the

goal and purpose of the page. Also, it is important to avoid animated banners or elements on pages where the user is required to focus on a certain part of the screen.

2.3.1.1.3 Perceiving objects

According to Weinschenk (Weinschenk, 2011), recognizing patterns help people make quick sense of the sensory input that is received every second. Experiments by David Hubel and Torsten Wiesel, 1959, suggested that some cells in the brain's visual cortex respond to horizontal lines, others to vertical lines, others to edges, and others to certain images. These findings support Irving Biederman's research, that suggests that people use basic shapes called geometric icons, or *geons*, to identify objects. He suggested that people recognize 24 basic shapes and that these form the building blocks of all the objects that are seen and identified. According to this research, patterns should be used as much as possible, since the users will subconsciously look to for them. An example of this would be using basic shapes to create icons. This will ensure that the user recognizes the underlying geometric icons easier, which makes searching the website for information easier.

2.3.1.1.4 Perceiving affordances

According to Donald Norman (Norman, 1988) the term affordance refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used. For instance, the handle of a coffee mug affords one to put one's fingers through the hollow space provided in order to use the object. Similarly, the handle on a steak knife provides the curvature to cut things with. Norman explains that this concept of affordance was highlighted when British Rail built panel shelters for train commuters. When the shelters were made of glass, it was smashed by vandals. It was replaced by plywood boarding and little further damaged occurred, regardless of the fact that it would have taken no extra force to break. Nielsen concluded that glass affords for seeing through, or breaking, while woods are normally used for support or carving. When you try to accomplish a task, such as opening a door to a room or ordering a book at a Web site, you automatically, and largely unconsciously, look around you to find objects and tools to help you. (Weinshenk, 2011). Creating elements with clear affordances in the online environment becomes especially important when the completion of tasks and activities are the main objectives. It is advisable that online affordances mimic the offline world, to ensure that they support the mental model already created with offline experiences. An example of this would be by providing buttons with the necessary affordances that encourages users to press or click. Buttons on a television or DVD-player remote-control allow the user to press the button to activate the appropriate

command. Online buttons should mimic these affordances to encourage effective use.

2.3.1.1.5 Perception of colour

Statistics show that nine percent of men are colour-blind. This 'colour blindness' often refers to an individual's inability to differentiate between different colours, as opposed to being blind to all colours. The most common form of colour blindness is "red-green" colour blindness, which refers to people being unable to differentiate between reds, yellows, and greens. To accommodate possible colour blindness, Weinschenk (Weinschenk, 2011) encourages the use of a redundant coding scheme, which uses, for instance, colour and line thickness (using borders or boxes around certain elements of importance), which allows users to interpret the page content without needing to see specific colours. Interface designers are also encouraged to use colours, such as shades and tones of brown and yellow, instead of red, green and blue, when constructing a colour code or palette.

The meaning of colour to different cultural groups are also important when putting together a colour palette. Different cultural groups interpret colours very differently, for example, white indicates purity and is used in weddings in the western world, where as in some other countries, white symbolises death and mourning. David McCandless developed a very useful online Color Wheel (www.informationisbeautiful.net), showing how different cultures view different colours, which is a great resource when putting together a colour palette for a website.

2.3.1.1.6 Reading

Within the discourse of interface design, the processing of text is especially important, as any interface design will invariably require some form of textual display "Design, speed, content fails when users can't read text." (Nielsen, 2000: 125). According to Dix (Dix, 1997:18), there are several stages in the reading process, including perceiving the visual pattern of the word on the page, the word being decoded to an internal representation of language, and finishes with syntactic and semantic analysis of phrases and sentences.

Research by James Cattell (1886) indicated that people read by recognizing the shapes of words and groups of words, and therefore words that are all capitalized have the same shape, and are therefore harder to read. More recent work by Kenneth Paap (1984) and Keith Rayner (1998) though, has indicated that people actually recognize and anticipate letters when they read. According to this research, the reason why people often read capitalized words slower is that they do not see capitalized words that often, and that if they would practice reading in all capital

letters, they would eventually read it just as fast as normal lettering. Weinschenk (Weinschenk) argues, though, that capitalized text is often perceived as shouting, and that it should be used sparingly, for instance in headlines, when the user's attention needs to be captured.

2.3.1.1.7 Comprehension

The comprehension of a piece of text differs quite significantly to reading it. This is often indicated when someone is presented with a piece of text that is in a language foreign to them. He/she might be able to read the text, but the understanding or comprehension thereof would be much more difficult. An effective tool for determining the readability of text is the Flesch-Kincaid formula, which provides a reading ease score and a reading grade-level score. A high score indicates that the passage is easier to read, and inversely, a low score indicates that the passage is harder to read. Another important factor in comprehension is using effective headlines and titles. Headlines and titles often provide the context for passages of text, which is invaluable to its overall comprehension. Font sizes also play a significant part in the overall comprehension of a passage of text. Font sizes need to be big enough for users to read, without adding additional strain. According to Weinschenk (Weinschenk, 2011), a font's X-height makes it look larger on screen, and that these fonts, such as Tahoma and Verdana, should be used more regularly.

Various studies have indicated that it is considerably harder to read text on screen compared to text on paper. This is due to the fact that the image on screen needs to be refreshed constantly. Screens also emit light, whereas paper reflects lights. It is the emitting of light and the refreshing of the screen image that creates strain on the user's eyes. Two ways to increase reading speed online is to create good contrast between background and foreground colours, and to use a large enough font. The most effective foreground/background combination is black text, on a white background, also known as negative contrast. Background images should also be used sparingly, if at all. "Background graphics interfere with the eye's capability to resolve the lines in the characters and recognize shapes" (Nielsen, 2000:126)

2.3.1.2 Memory

A person's ability to store and retrieve information is of the utmost importance, not only in learning, but increasingly in other areas such as sports, recreation etc. The recent success of the board game 30-Seconds is an excellent example of how important our memory is to recreational activities, such as board games. The focus of the game is to describe a particular object/person/location provided on a card within 30 seconds. The most accurate descriptions of the object/person/location provided

(which requires information retrieval), ensures that it is easier for their team mates to provide the correct answers, which results in the team moving closer to them winning the game. The established literature differentiates between three types of memory i.e. sensory memory, short-term memory and long-term memory.

2.3.1.2.1 Sensory Memory

According to Dix (Dix, 1997:27) sensory memories act like buffers for stimuli received through the senses and that each sensory memory exists for each sensory channel i.e. iconic memory for visual stimuli, echoic memory for aural stimuli and haptic memory for touch. He further goes on to explain that iconic memory can also be referred to as persistence of vision and is illustrated by the persistent image that moving firework sparklers create. An example of echoic memory is a person's ability to ascertain from which direction a particular sound is coming from.

2.3.1.2.2 Short-term memory

Short-term memory is very similar to a 'scratch/note pad' that we use to recall temporary information. An example of this would be if someone was asked to calculate 45 x 5. The calculation will undoubtedly be done in different phases, eg. 40 x 5 would be calculated first, then 5 x 5, then the two values would be added together. To perform such calculations, the temporary information needs to b stored for later usage. Short-term memory can easily be accessed, but is has a limited capacity and information can only be stored there temporarily. George A. Miller (Miller, 1956) proposed that the average person can remember 7 ± 2 digits in his/her short-term memory. Later experiments by psychologist Alan Baddeley (1986), and Nelson Cowan (2001), though, show that people are able to process four pieces of information a time more effectively. They concluded that people are able to hold three or four things in short-term/working memory as long as they are not distracted, which would interfere with the processing of information. This research formed the basis for the concept of 'chunking' information into groups. A common example of this is the way in which telephone/cellular phone numbers are often presented as chunks of three to four digits. Design considerations for these findings are that information should generally be limited or 'chunked' to four items or in groups of four items.

2.3.1.2.3 Long-term memory

Unlike short-term memory or working memory, long-term memory is an individual's primary resource for storing information. Everything that a person knows, i.e. experiential knowledge, procedures, information, habits, etc. is stored in long-term memory. Unlike short-term memory, long-term memory has massive capacity, is

accessed significantly slower, and information is not lost as easily as in short-term memory.

2.3.1.2.3.1 Long-term memory processes

According to Dix (Dix, 1997:34) there are three main activities related to long-term memory i.e. remembering information, forgetting and information retrieval. To investigate these activities, various experiments have been conducted. Ebbinghaus (Ebbinghaus, 1913) tested the ability to learn syllables comparing recall minutes, hours and days after the experiments were done. His conclusion was that the amount learned was comparative to the amount of time spent learning. This is also known as the *total time hypotheses*. Some experiments from Baddeley (Baddeley, 1978) though, indicate that learning is most effective when spread over time, known as the *distribution of practice effect*. Other studies have shown that repetition is in fact not enough to learn information well, and that meaningful information often makes it easier to remember information. Experiments by Bartlett (Bartlett, 1932) indicate that sentences were easier to remember than random words or concepts, and that information that is related to already existing concepts in memory, are more easily remembered. From the above conclusions, it is clear that remembering information is supported by a person's familiarity with the material and logical structure of content. Two major theories provide insight into why people tend to forget, which is the second process of memory, and these are *decay* and *inference*. The theory of decay states that information in memory will eventually be lost. Ebbinghaus (Ebbinghaus, 1913) supports this theory by stating that information in memory is lost logarithmically. The second theory states that people lose information from memory by it being replaced my new information. This often occurs when one piece of information is replaced by a similar type of information. An example of this would be replacing an old cellular phone number with a new one. After a while it becomes increasingly more difficult to remember the old cellular phone number due to it being replaced in memory by the new one.

Information retrieval, the third process in memory, consists of two types, i.e. recall and recognition (Dix, 1997:34). Recall reproduces information stored in memory, while through recognition, information is presented that provides cues to information in memory. Certain signals/cues have been proven to assist quicker access to information in memory, thus speeding up the recall process, an example of this being the use of categories. Bousfield (Bousfield, 1953) proved this through his experiments where participants were asked to recall lists of words, some categorized and some not. The words which were related to a specific category were easier recalled by the

participants than those that were not. This stakes a claim for the importance of categories when presenting information. Categories should be incorporated, especially if it is important to retrieve information easily from memory, which is common in organization specific systems, like the I-Enabler system, where users complete similar tasks and activities regularly.

2.3.1.3 Processing - The Gestalt Theory and its role in human perception

There have been various psychological theories that have governed human perception and cognition. They include Fitts' Law, Hick's Law, Tesler's Law, and many more. In terms of instructional screen design, few other theories have been as influential as the Gestalt Theory. Gestalt Theory is one of the foundations for instructional screen design (Preece, 1994). Gestalt theories are normally referred to as laws and have been formulated by various psychologists. Traditionally the Gestalt laws are used to suggest how static visual elements should be presented in order to achieve effective visual results (Chang, 2002). The Gestalt laws explain how the individual elements from the environment may be visually organized into fields or structures (Koffa 1935). Not all of the Gestalt laws are applied to visual design though. Very few Gestalt laws are commonly applied to instructional visual screen design (Fisher, 1998–99). Chang (Chang, 2002) suggests that the following laws are the most significant in terms of screen design:

Law of Balance/Symmetry - A visual object will appear as incomplete if the visual object is not balanced or symmetrical (Fisher *et al.*1998–99).

Law of Closure - Fisher and Smith-Gratto (1998–99) highlights that "open shapes make the individual perceive that the visual pattern is incomplete" and the "sense of incompletion serves as a distraction to the learner." Our minds will tend to close gaps and complete unfinished forms (Fisher and Smith-Gratto 1998–99, Fultz 1999).

Law of Figure-Ground - We distinguish the foreground and background in a visual field (Fultz, 1999).

Law of Prägnanz (Good Form) - Fultz (1999) defined prägnanz (good form) as: "A stimulus will be organized into as good a figure as possible" meaning that good form highlights a even layout or a good design.

Law of Proximity - The law of proximity states that items placed near each other appear to be a group (Fisher and Smith-Gratto 1998–99).

Law of Similarity - Fisher and Smith-Gratto (1998–99) states that similar objects will be counted as the same group and this technique can be used to draw a viewer's attention.

Law of Simplicity - When learners are presented with visuals, there is an unconscious effort to simplify what is perceived into what the viewer can understand (Fisher *et al.* 1998–99).

As highlighted by the above mentioned sections, the term 'ease of use' incorporates various aspects, starting from how information is entered into the human brain, how an individual perceives this information, how it is processed, stored and retrieved in memory and how, through the principles of cognitive psychology, it can be incorporated into visual design methods to create user-centered designs. The aspects of cognition and memory are especially important when individuals use a particular system on a regular basis, as is the case with the system currently under investigation. Quicker access to information from memory, for instance, either by recall or recognition, leads to quicker processing of information, which in turn leads to quicker task completion and increased productivity. Similarly, the more effectively the Gestalt laws of human processing are applied to screen designs, the easier users will process in the information presented, which leads to better decision making, quicker task completion, and ultimately an increase in the user's goals being achieved. The following section looks at content as another important trust factor and its value in building trust in online environments.

2.3.2 Content

According to author and speaker Rachel McAlpine, "The web has turned the traditional sequence and hierarchy of content, design and technology upside down". She argues that this, in fact is in direct contradiction with how traditional media formats, for instance books, are produced. In the production of a book, the writer usually produces a manuscript, after which the book is designed. Thereafter, the book is printed and bound. On the web, developers build pages first, and add the content later. Web site developers place more importance on the functionality and aesthetic appeal of web pages, than on the content. In the web development process, the content and design processes are often dependant on technology. Even with the apparent shift in the hierarchy of importance, content still plays a vital role in the user experience. Users who log on to a website hardly ever consider any 'hierarchy of importance' and more often than not, look for information they need. In order for users to be successful in their quest to find what they are looking for, the content

needs to be presented in such a way, that best suit their needs and facilitates task completion.

2.3.2.1 Writing for the Web

According to Nielsen (2000, 103) the three main guidelines for writing for the Web are to "be succinct, to write for *scannability*, and to use hypertext/links to split up information into multiple pages". To be succinct means to keep text short. One of the unique features of the web is that one can go from one section or web page to the next with a click of the mouse. A user's experience with a website usually consists of jumping from one section to the next using hypertext/links. Because of this constant moving, it is important that users spend a minimum amount of time on finding information.

According to Krug (2000: 24), "users don't choose the best option, but the first reasonable option, a strategy known as *satisficing*". This means that as soon as users find a link that they think will help them find what they need, they will activate it. The reason that users *satisfice*, is because they are usually in a hurry. Scanning through an entire document, weighing up the options and then choosing the best one is hard and takes time, which users often do not have. *Satisficing* is much more efficient, and even if the user chooses the wrong option, he/she can always just use the 'Back button' to get to where they were. "There's not much of a penalty for guessing wrong" (Krug 2000: 24)

2.3.2.2 Visual hierarchy

Creating a clear visual hierarchy entails organizing information at each level of the website so that it shows a clear and logical structure to users. Organizing website content involves putting critical content near the top of the website, grouping related sections and ensuring that necessary information is readily available to the user. "The more important something is, the more prominent it is." (Krug, 2000: 33). The most important headings are always bolder, larger, a different font face or colour, or a combination of these. This ensures that the user immediately knows that an importance is attached to the heading or section. Other media formats such as newspapers, magazines and brochures use similar conventions to illustrate importance, therefore it is vital that designers implement these to make web content easier to digest.

A good visual hierarchy allows the user to easily interpret any web page. Changes in font face, color, and size, increases the chances of the user understanding the

content and being able to find what they need. "If everything looks equally important we're reduced to the much slower process of scanning the page for revealing words and phrases and then trying to find our own sense of what's important and how things are organized." (Krug, 2000: 34)

2.3.3 Ease of searching

Ease of searching is commonly referred to website navigation. Web navigation describes the method of finding information on a website and should allow users to find information quickly and easily. Website navigation has three objectives. "It tells the users where they are, where they have been, and where they are able to go" (Nielsen 2000: 188). A well-designed website navigation structure is similar to a map in a shopping mall in that it tells consumers exactly where they are, and provides directions on how to get to where they want to be. In order to interpret Web navigation systems correctly, websites should conform to certain offline conventions. For example, maps use certain symbols to help people find what they need. The 'P' sign on a map of a shopping mall, for instance, indicates where the parking areas can be found. Over time, people have become adept at interpreting maps because of their familiarity with the conventions incorporated. It is therefore important to use offline examples as blueprints when building online navigational structures.

2.4. Summary

In conclusion, it is clear from this literature study that trust is fundamental to online relationships and of the utmost importance when a high likelihood of risk is prevalent. This is especially true in the transmission of highly confidential data. It is therefore imperative that the concept of trust in online systems, and especially systems responsible for sensitive staff information be investigated to establish what the effects of concepts such as trustworthiness, trust cues and credibility have with regards to the users of these systems.

Trust cues such as 'ease of use', 'content' and 'ease of searching' play a significant role in the overall online user experience of any online platform, which undoubtedly encourages the development of online trust.

During the next chapter of this research, above-mentioned trust cues will be incorporated into prototypes of the I-Enabler online system. Preselected test participants will be asked to complete a standard task using a specific scenario. Different versions were developed where identified trust cues have been purposefully

incorporated or violated. The measurement techniques as well as the actual measurements that were incorporated will be discussed.

CHAPTER 3
Research Design and Methodology

3.1.   Introduction

The main purpose of this research study is to investigate the phenomenon of trust in online environments within higher education, and specifically online platforms currently in use at the Cape Peninsula University of Technology. This research study further aims to answer the following questions:

1. What are the perceptions of staff regarding their experiences with online platforms currently in use at this institution?

2. What are the factors that impact these interactions?

3. How can an understanding of online trust factors change the way online services are developed in higher education?

This chapter will include the discourse on the chosen research design and methodology, the selection process of test participants, as well as the methods and instruments to be used. Alternative data collection procedures, assumptions, ethical assurances, and limitations will be presented. This chapter will conclude with an overall summary of the research methodology.

3.2.   Research Planning

Greener (2011) categorizes research methods into the following categories i.e. quantitative, qualitative research and mixed methods.

3.2.1. Quantitative research

Greener (2011) indicates that quantitative research is primarily concerned with techniques that analyse numbers, or the results of the numeric processes that the research has been through. Myers (2008) indicates that quantitative research methods include survey methods, laboratory experiments, formal methods and numerical methods.

3.2.2. Qualitative research

Greener (2011) defines qualitative research methods as those that generate data that are non-numeric, and is mostly made up of words or images. He argues that qualitative research methods are often used because it can capture more naturally what selected test participants wish to express, because they can use their own

words, rather than express them using tick boxes on a questionnaire that researchers have designed.

Within the discourse of Information Systems Design, Cooper (2007) argues that qualitative research methods allow researchers to identify patterns of behaviour among users and potential users of a product much more quickly and easily than would be possible with quantitative research methods. He further argues that qualitative research helps us to better understand:

- Behaviours, attitudes, and aptitudes of potential product users.
- Technical, business, and environmental contexts of the product to be designed.
- Vocabulary and other social aspects of the domain in question.
- How existing products are used.

According to Cooper (2007), qualitative research methods include stakeholder interviews, user interviews, literature reviews, user observation/ethnographic field studies, prototype and competitive audits, focus groups and user testing.

3.2.3. Mixed Methods

Greener (2011) states that mixed methods are a combination of both qualitative and quantitative research methods, and is often used to overcome the problems associated with each of these approaches. He cautions against using a mixed method approach though, stating that the knowledge produced from each approach are often different, and that this might impact negatively on the research output. He urges researchers to consider the philosophical issues related to each approach before settling on a particular approach.

3.3. Research Design

This research study aims to identify the shared experiences of individuals who use online applications in higher education. A qualitative research approach was therefore employed. Creswell (2007) identifies five different qualitative approaches to conducting research.
These are:

Narrative Research, which, according to Polkinghorne (1995) describes any text or discourse with a specific focus on the theories told by individuals.

Phenomenological Research, which "describes the meaning for several individuals of their lived experiences of a concept or phenomenon" (Creswell: 2007).

Grounded Theory Research, according to Strauss & Corbin (1998), is a qualitative research design in which the inquirer generates a general explanation of a process, action, or interaction, shaped by the views of a large number of participants.

Ethnographic Research, where the researcher describes and interprets the shared and learned patterns of values, behaviours, beliefs, and language of a culture-sharing group (Harris: 1968).

Case Study Research, which according to Creswell (2007), involves the study of an issue explored through one or more cases within a bounded system.

This research study aims to identify the shared experiences of individuals who use online applications in higher education, in order to gain a more profound insight into the phenomenon in question. The research approach is qualitative, using Phenomenology and ethnographically-inspired research methods as research methodologies.

3.3.1. Phenomenology as Research Design

Creswell (2007) describes a phenomenological study as one where participants describe what they all have in common as they experience a phenomenon. Van Manen (1990) further elaborates on this by stating that the basic purpose of phenomenology is to reduce individual experiences with a phenomenon to a description of the universal essence. This 'essence', according to Moustakas (1994), is a description of 'what' the participants experienced, and 'how' they experienced it. Stewart and Mickunas (1990) underline four philosophical perspectives of phenomenology:

- A return to the traditional tasks of philosophy.
- A philosophy without presuppositions.
- The intentionality of consciousness.
- The refusal of the subject-object dichotomy.

Authors van Manen (1990) and Moustakas (1994) highlight two types of phenomenology i.e. hermeneutic phenomenology (van Manen, 1994) and transcendental or psychological phenomenology (Moustakas, 1994). According to van

Manen, hermeneutic phenomenology is based on the description of the participants' lived experience of the phenomenon combined with the researcher's interpretation thereof. On the other hand, psychological phenomenology, according to Moustakas (1994), is focused less on the interpretations of the researcher, and more on the descriptions of the experiences of participants. The author further states that the concept of epoche, or bracketing, becomes especially important process in which the researcher sets aside his or her own experiences, as much as possible, to take an unbiased perspective toward the phenomenon in question.

Even though there are various definitions, interpretations and approaches to Phenomenology as research design, van Manen (1990) argues that the common ground between all interpretations are that the study has to be that of the lived experiences of the individuals under investigation, that these experiences have to be conscious, and that the description of these experiences, and not the explanations or analysis thereof are of the utmost importance. Polkinghorne (1989) substantiates this argument with the following quote: "the reader should come away from the phenomenology with the feeling, "I understand better what it is like for someone to experience that"".

3.3.2 Ethnography as research design

Harris (1968) describes Ethnography as a qualitative design in which the researcher describes and interprets the shared and learned patterns of values, behaviours, beliefs, and language of a culture-sharing group. Creswell (2007) defines this culture-sharing group as people who interact over time, e.g. teachers in a school, a community social work group, etc. According to Cresswell (2007), the process of ethnography involves extended observations of the group, through participant observation.

Cooper (2007) states that ethnographic interviews, which is a combination of immersive observation and directed interview techniques, are the most effective and efficient tool for designers to gather qualitative data about users and their goals. An ethnographic interviewing technique, called *contextual inquiry*, was developed and established by Beyer and Holtzblatt. According to them, this technique is based on the *master-apprentice model* of learning, which entails asking questions of the user as if he/she is the master craftsman, and the interviewer the apprentice. Beyer and Holtzblatt put forward the following four principles for conducting ethnographic interviews:

- Context – observe the user in a normal working environment.
- Partnership – the interview should take the tone of an collaborative exploration.
- Interpretation – the researcher should 'read between the lines' of facts gathered about users, and analyze to uncover its implications.
- Focus – the researcher needs to subtly direct the interview rather than providing a set questionnaire.

3.4. The researcher's process of bracketing

According to Creswell (2007), phenomenological procedures have a strong philosophical component and draws heavily on the work of German mathematician Edmund Husserl (1859-1938). Husserl developed the concept of bracketing, or epoche, meaning the suspension of all judgements or presuppositions. This is especially significant when conducting psychological or transcendental phenomenological research, where the descriptions of participants takes precedence over the interpretations of the researcher.

The author of this research has a strong educational and vocational background in the design and development of online platforms and has, through previous research endeavours, concluded that the systems currently in place at this institution are not designed according to user-centred design principles, as indicated by various authors such as Nielsen, Norman, Cooper, Krug et al. The author of this research therefore has a degree of bias with regards to online systems currently in place at the institution under investigation. The author will, however, as much as possible try to be objective in the testing and data collection phases, to ensure the integrity of the results collected.

3.5. Research Approach

The following section will discuss the research population, sample, sampling size and sampling procedure.

3.5.1. Research Population

As mentioned earlier, a phenomenological study explores the lived experience of individuals of a particular phenomenon (Creswell, 2007). The phenomenon, in this research study, refers to the experience of online platforms at Cape Peninsula University of Technology. The research population therefore consists of current staff members of the institution under investigation.

The criteria for inclusion in this study were:

- Full-time/part-time employees working at the institution
- Exposure to online platforms currently in use at the institution

3.5.2. Sample

According to Creswell (2007), a sample represents a group of people that can best inform the researcher about the research problem under investigation. The sample was chosen from the institution under investigation, i.e. Cape Peninsula University of Technology. Staff members from the Research, History and Theory of Design Department were chosen, seeing as they are a culture-sharing group (working together in the same department), and also share the phenomenon in question (exposure to online platforms at this institution). The majority of the chosen group of people selected work within the same office space, teach similar subjects across the various course levels and have similar educational qualifications.

3.5.3. Sampling size

Polkinghorne (1989) recommends that a sampling size of 5 to 25 participants be used for a phenomenological study. For this study, eight test participants were identified, of whom six participated in the study. Some participants were not available as the study was conducted during an assessment period and some, being lecturers, were not available.

3.5.4. Sampling Procedure

The sampling of the participants was done as follows:

- The staff members of the selected department were approached two months in advance about their possible involvement in the research study.
- After consent was received about their participation, a written request, via email, was sent to each individual participant.
- The details of the study and the extent of each participant's involvement were explained via email.
- Test participants received correspondence/reminders a few days before the scheduled interviews.
- Appointments were created and sent to participants, via email, on the day of the interviews, to ensure participation.

3.6.   Data Collection

Various methods can be used to conduct both phenomenological, as well as ethnographic research. These include, among others, interviews, user observations, ethnographic interviews and focus groups. For the purposes of this research study, interviews were used as a phenomenological research method, while user observations and semi-structured interviews were also used.

3.6.1. Research Instrument

In this research study, the author of this research was the primary data collection instrument, since the data collected was in the form of words from selected test participants, as stated by van Manen (1990). This allowed for a more in depth account of the participants' experiences with the phenomenon under investigation.

The author of this research laid aside all his preconceived ideas by documenting his opinion of the phenomenon under investigation. This 'suspension of all judgement', according to Husserl (1859 - 1938) was necessary to insure the integrity and credibility of data collected.

3.6.1.1 The Instrument

Even though Creswell (2007) states that user observations are generally considered an ethnographic research method, Polkinghorne (1989) argues that user observations may also serve as a valid data collection technique when doing phenomenological research. User observations were thus chosen to gather data concerning the participant's experiences with online platforms.

The rationale for choosing user observations as a data collection method was:

- To obtain different perspectives concerning the phenomenon under investigation.
- To observe visual cues, or non-verbal communication.
- To ensure that the researcher approached the phenomenon without any bias.

3.6.1.2 Structure of the instrument

The research was conducted in two sections. The first section involved doing interviews and user observations while test participants completed a standard process using an online application currently in use at this institution. Test participants were asked to complete a standard leave application using the online leave application system currently employed at this institution (iEnabler System). The

observations were conducted over a three week period, where test participants were exposed to different versions of the application.

The current online version of the application could not be used during the testing phase, as this would have disclosed confidential details of staff members such as user's personal details, leave history and pending leave requests. In order for test participants to complete the process, they would have had to complete a leave application, which would have resulted in a leave day being deducted from their current annual leave allocation. Even though this leave application could have been cancelled at a later stage, the author of this research refrained from suggesting this method, as this would have had some element of risk which would have cautioned participants against partaking in this research study.

The author of this research developed an off-line version of the online leave application system currently in place to test different variables with regards to trust in online environments. The current system was redesigned with the exact design and layout features employed to create continuity and familiarity with the current system. Each iteration or version included elements, identified in Chapter 2, which would possibly influence the user's trust in the online application. The three focus areas that were identified in Chapter 2 were Ease of Use, Content and Ease of Search, or Navigation. These three focus areas were implemented into nine different versions observed over a period of three weeks. Each user observation and coinciding interview took an average of 30 minutes to complete.

3.6.1.3 Instrument Scenario

Test participants were introduced to a specific scenario before commencing with the interviews/user observations. They were asked to complete a standard leave application for a colleague from a different department. The leave application was scheduled for a specific day with reasons for the leave request provided. According to the scenario, the participant had also been given their colleague's login details, staff number, faculty in which the colleague worked, and details of the head of department, in order to carry out the leave application. The author of this research decided to use a fictitious co-worker as the object of the scenario, seeing as the participants knew that the instrument was a prototype and not actually linked to the current live system. The system could have been customized to each individual participant, but the author of this research did not feel that this would have altered the participant's feedback, or would have increased an element of risk, seeing as the test participants were

informed that the online application which they were to use was a standalone prototype and not in any way linked to their current online details.

The online leave application process consisted of five different screens or pages. Each user observation was accompanied by a document explaining the process, as well as a Trust Level Indicator Table. The trust-level indicator table had a level from 1 to 5, with 1 representing a very low level, or no trust in the particular screen, to 5, representing a high level of trust in the particular screen. After viewing each page, the participant had to gauge the level of trust in the particular page. A base level of 3 was assigned to every page, which indicated a moderate level of trust. This allowed the test participants to clearly indicate variances in the trust level of each specific screen.

Whenever any screen caused them to deviate from the assigned base level of three, participants were asked to comment on this by either documenting their reasons, or by expressing them verbally. Reasons expressed verbally were captured via the video recorder as well as noted by the author of this research. Semi-structured interviews were conducted whenever there were deviations from the assigned base trust level, as well as after each observation had been completed.

The second section involved an interview concerning the participants' experiences with the phenomenon in question, and the factors that influenced their interactions with this phenomenon. The interviews were conducted directly after the final round of user observations was completed.

3.7. Data Collection Techniques

The following section discusses the techniques used during this research study.

3.7.1. The researcher's role

During each interaction with the selected participants, the researcher greeted the participants and thanked them for their time, to establish rapport. The participants were subsequently informed about the details of the interview.

The author of this research was the facilitator during the user observations. The author of this research made prior arrangements to be granted access to video recording equipment i.e. a Sony hard disk camcorder and accompanying accessories and tripod, as well as extension cables and fully functional power outlets. The following ground rules were established:

- Participants could ask questions at any time.

- Participants were asked to express their feelings and emotions as often as possible.

These rules were established to ensure that the participants were put at ease and to encourage an environment of trust.

3.7.2. Interview Technique

The author of this research used the following techniques to conduct interviews:

- The author of this research conducted the interviews using semi-structured interviewing techniques.
- The author of this research ensured that eye contact was maintained with participants.
- Interview techniques such as 'probing' were used. The author of this research used phrases such as "Could you elaborate on your answer?" or "Why would you say that?"
- Test participants were encouraged to elaborate and continue speaking.
- Test participants were asked if they had any other comments. This often provided discourse on focus areas that were not specifically addressed, but often provided some insight into the underlying reasons for answers provided.
- Test participants were given a summary of the aspects covered during the specific round of interviews.
- Test participants were informed of follow-up interviews.

Phenomenological research interviews were conducted after the initial interviews were completed. Participants were able to answer questions using a questionnaire provided, or could answer verbally. Responses to questions were discussed using probing techniques. The following questions were asked:

- What are your experiences with regards to online platforms used at this institution?
- What possible emotions do these experiences invoke?
- What would you change about the platforms currently in use, and why?

3.7.3. Recording interview data

During the interview process, data collected was video-recorded, and field notes were taken.

3.7.3.1 Note taking during interview process

Notes were taken as a backup to data being video recorded. Participants were informed in advance of notes being possibly taken, to ensure that the process would not be a distraction.

3.7.3.2 Video-recording the interview

To ensure that the video-recording process was successful, the following measures were put in place:

- Permission to video-recording equipment and accompanying accessories were arranged.
- Permission from participants for its use was consented.

In order to ensure the quality of the data captured, the following was ensured:

- The video recorder was positioned close enough to the participants to ensure that responses would be captured with good audio quality.
- Other members of the staff were informed about the interview process.
- The video-recorder was tested beforehand to ensure that is was in good working order.
- Batteries were inserted beforehand, in case of a possible power failure.
- Each interview was labelled according to participant name, date of interview, and round of interview.

3.8. Data Analysis

 "The purpose of interviewing is to find out what is in and on someone else's mind… We interview people to find out from them those things we cannot directly observe" (Patton, 1990). Neuman (2003) states that the process of data analysis is a means to look for patterns thereby explaining the goal of the studied phenomena.

As soon as the data is collected, the information will be categorized, with the key objective being to identify specific patterns or themes from the information captured. Recurring themes will be explored to highlight 'significant statements' (Moustakas, 1994). Moustakas (1994) explains that these 'significant statements' provide researchers with an understanding of how the participants experienced the phenomenon, and refers to this process as horizonalization. Creswell (2007) further states that researchers use these 'significant statements' to develop clusters of meaning from the data captured. These 'clusters of meaning' will provide an insight into the participants experience with regards to the phenomenon in question and possibly provide a description of the nature, or essence, as van Manen (1990) states, of the phenomenon in question.

3.9. Validation

According to Creswell (2007), 'validation' in qualitative research refers to an attempt to assess the 'accuracy' of the findings, as best described by the researcher and the participants. There are, however, various views regarding the significance of validation within qualitative research. Le Compte and Goetz (1982) compared the issues of reliability and validation with both quantitative and qualitative research methods and established that qualitative research has gathered significant criticism for its failure to "adhere to canons of reliability and validation". Ely et. al. (1991) state that, "the language of positivistic research is not congruent with or adequate to qualitative work". To establish a study's trustworthiness, Lincoln adnd Guba (1985) used distinctive terms, such as "credibility", "authenticity" and "dependability" that, according to them, adhered more to qualitative research. Cresswell (2007) states that, "the naturalistic researcher looks for confirmability rather than objectivity in establishing the value of the data". He further goes onto to suggest that this "confirmability" can be established by auditing the entire research process. Eisner (1991) prefers using the term credibility as opposed to "validation" to describe qualitative research and stated, "We seek a confluence of evidence that breeds credibility that allows us to feel confident about our observations, interpretations and conclusions." Some other authors, such as Wolcott (1990) does not place a high importance on validation in naturalistic research, stating that, "validation neither guides nor informs" his research. He goes on to state that his goal was to identify "critical elements" and document "plausible interpretations for them". He further stated that the term "validation" did not in fact capture the meaning or essence of what he was trying to achieve, and said that the term "understanding" captured it much more accurately. Whittemore, Chase, and Mandle (2001) analyzed various texts on validations and extracted the following essential validation criteria:

- Credibility – do the results accurately describe that the participants meant?
- Authenticity – were there enough different opinions regarding the topic?
- Criticality – are all the aspects of the research being critically assessed?
- Integrity – have researchers documented or 'bracketed' their bias?

3.9.1. Validation Strategies

According to Creswell (2007), the process of triangulation involves the use of multiple and different sources, methods, investigators and theories to provide corroborating evidence. Triangulation was used, through a combination of in-depth interviews, semi-structured interviews, and user observations. This technique was employed to ensure the validity and credibility of the data captured.

Merriam (1998) states that the researcher should clarify his/her bias from the outset of the study to ensure that the reader understands the researcher's position. The author of this research has declared his bias toward the phenomenon under investigation. *See Section 3.4.*

Ely et al. (1991) suggests that in order to ensure the validity and credibility of the study, the researcher should request participant's views of the findings and interpretations, a process termed *member checking*. The author of this research will make the entire study available to participants who took part in this study.

3.10. Methodological Assumptions, Limitations and Delimitations

This study only included staff members of the Cape Peninsula University of Technology. Only staff members who were willing to participate in the study were selected. Only data collected from test participants who completed all three rounds of user observations and semi-structured interviews, as well as in-depth interviews will be collected. Data collected from participants who only completed parts of the study will not be analyzed.

3.11. Ethical Assurances

The following precautions were done to ensure that the study was ethically conducted:

- Each participant was contacted in advance to discuss this research study.
- The participants were able to withdraw at any time.
- Participants were not obligated to answer any question they did not feel comfortable with answering.
- All captured data and documentation will be kept in a secure space to ensure confidentiality.

3.12. Summary

This chapter discussed the research methodology that was employed in this qualitative research study. Also included was information on the data collection process and data analyses, which include identifying themes from the answers of the participating staff members during interviews and observations. In conclusion, this chapter discussed the appropriateness of the research design, the population, assumptions and limitations, and ethical assurances. The following chapter presents the results and analysis for this research study.

CHAPTER 4
RESEARCH DATA AND ANALYSIS

4.1   Introduction

This chapter presents the findings and analysis from the data that was gathered through the data collection methods that were employed.

Data was gathered in three different ways i.e. literature survey, user observations and semi-structured interviews, and interviews. Information concerning the definition and related topics concerning trust in online environments were collected via the literature survey, whereby a theoretical underpinning for the phenomenon of trust was developed. The literature survey identified various 'trust cues' that influence trust in online environments, and these were subsequently grouped into three focus areas. The focus areas were identified as being content, ease of use, and navigation. Other important aspects of online systems, such as system security, were not investigated during this research study, as this falls out of the scope of this research study. The identified focus areas and the significance thereof were further investigated through the literature survey. Data was collected through three rounds of user observations and semi-structured interviews. Phenomenological research data were collected through interviews.

As discussed in Chapter 1, various texts have indicated the importance of trust within the E-commerce environment, but the impact of this phenomenon has rarely been tested within an organization-specific environment, like the institution under investigation. This research aims to address this identified gap within the body of knowledge, by means of the methods stated above. Through the above-mentioned methods, the author of this research aims to gain an understanding of the staff members' perceptions and experience of the online systems that they currently engage with, what the effects of the identified trust factors are when implemented, and how the results of the data gathered might influence future development of online platforms in higher education.

This chapter discusses the results (section 4.2) from the data as well as the analysis (4.3) and concludes with a summary of the findings.

4.2   Results

This section describes the results that were gathered from the three different rounds of user observations and semi-structured interviews, as well as the data collected from in-depth interviews.

Best practices concerning content, ease of use and navigation were introduced within nine different prototypes of the platform under investigation. The best practices were explored by explicitly implementing some, violating some others, and using different variations of some others. A combination of these were used throughout the three rounds of user testing to establish the resultant effects on the perceived trust levels of individual prototypes. In some prototypes, the violation of best practices would provide the most accurate indication of a particular trust factor, whereas other trust factors could be more accurately tested by explicit implementation. Some best practices, especially with regards to content could be more easily tested by violating them, such as introducing errors where there were none before, whereas best practices with regards to ease of use, such as better instructions, could be gauged more accurately by implementing them. The violations or implementations were introduced throughout the three rounds of user testing.

4.2.1 Data gathered during round one

Each round was geared towards one of the focus areas identified within the literature survey i.e. content, ease of use, and navigation. All six test participants took part in the first round of user observations. During Round one, participants were tasked with completing a standard leave application using a redesign of the online leave application system currently in use at this institution. Through the literature survey the author of this research discovered that online content was especially critical within the online experience, and therefore various best practices concerning content, discussed in Chapter 2, were explored. Through this round of user observations, the author of this research aimed to identify whether the implementation of the identified trust factors would have a similar effect that it would normally have, if it had been an E-commerce or informational website on the internet.

4.2.1.1 Scenarios introduced

Participants were presented with a scenario, in which they were tasked with completing a standard leave application on behalf of one of their colleagues. The process was designed at the point where the user has already logged on successfully to the system. Fig 4.1 shows a screenshot of the currently active leave application system, with the author of this research logged in.
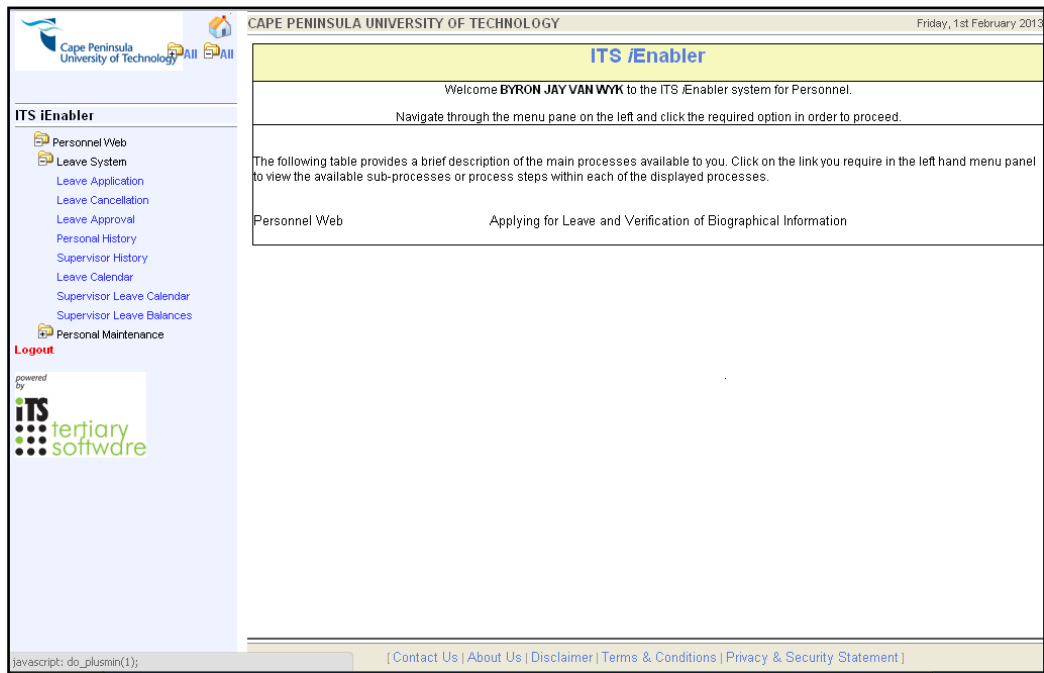
Fig 4.1 Screenshot of Leave Application System

The redesigned prototypes were designed and developed from this particular screen onward, to ensure the privacy of the participants' personal details. Fig 4.2 below shows the redesigned prototype, with Jane Wilcox, the participant's colleague, according to the scenario, logged onto the system. Alternative menu options, such as Personnel Web and Personnel Maintenance that appeared on the menu on the original version were omitted from the redesigned prototype.
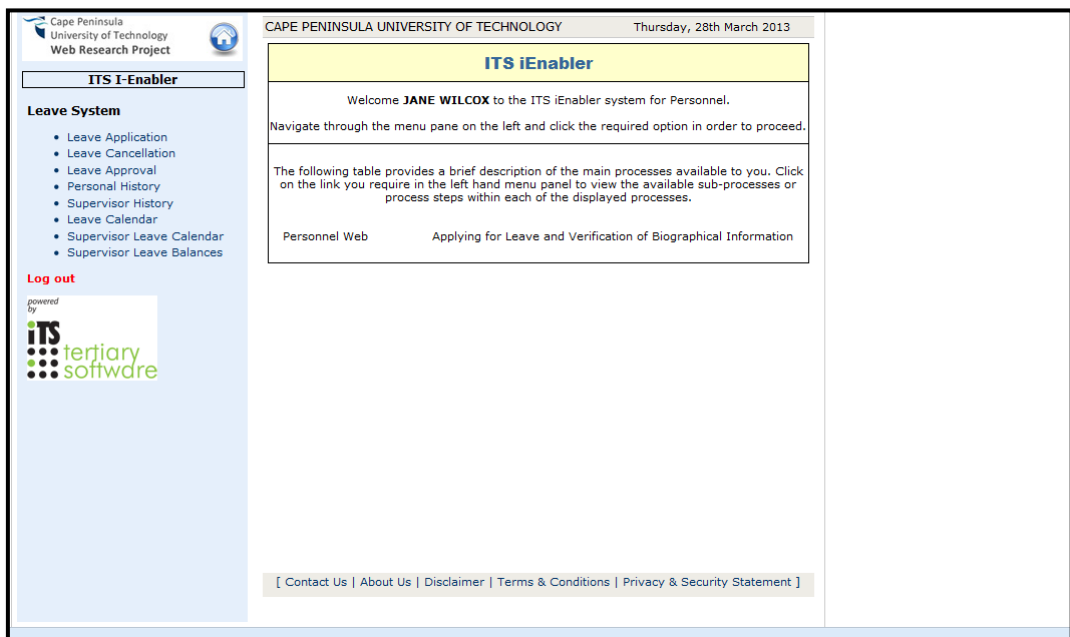
Fig 4.2 Redesigned prototype of the online leave application system

40

The process consisted of five different screens, Fig 4.2 being the first of the five. Participants were asked to rate each page or screen, according to its perceived trustworthiness. A score of 3 was assigned as the base trust level score. The author of this research decided on this as this would allow participants to indicate if they perceived the interface to be either trustworthy or not. Whenever scores of a particular page or screen deviated from the base level of 3, participants were asked to communicate their reasons, either via writing them down, or communicating them verbally.

Round One consisted of four different prototypes of the current online version. Each of the prototypes explored the content best practices in different ways.

4.2.1.2 Content 'best practices' explored

The following content best practices were explored during the first round of user observations:

- Headlines – the headline that is currently in place in the online version i.e. ITS iEnabler, was kept in place, as this violates the best practice of using headlines that clarifies content, according to Nielsen (2000).

- Content errors – spelling errors were introduced to particular pieces of text. This violated another best practice when writing for the Web, according to Nielsen (2000), who states that "misspelled words are an embarrassment and may slow down users or be confusing".

- Credibility – content inaccuracies, such as of the dates on certain web pages, leave being processed on incorrect dates and incorrect employee details were introduced. Copyright information was also omitted from some of the prototypes, which, according to Fogg (2003) hampers website credibility.

- Instructions – instructions in certain prototypes that were long and confusing on the current online version were kept as is, as this violates the best practice of sentences that should be concise, with no unnecessary words (Strunk, 1979).

Content errors such as misspelled words and content inaccuracies, among others, were explored during this round, as this directly corresponds to the trust factor in Chapter two that states that content should be free from grammatical and

typographical errors. The author of this research decided that the only way to test this trust factor was to introduce grammatical and typographical errors as well as content inaccuracies. The other violations were not specifically introduced, but were violations that already existed within the current online version of this online platform. No other best practices were violated during this round of user testing.

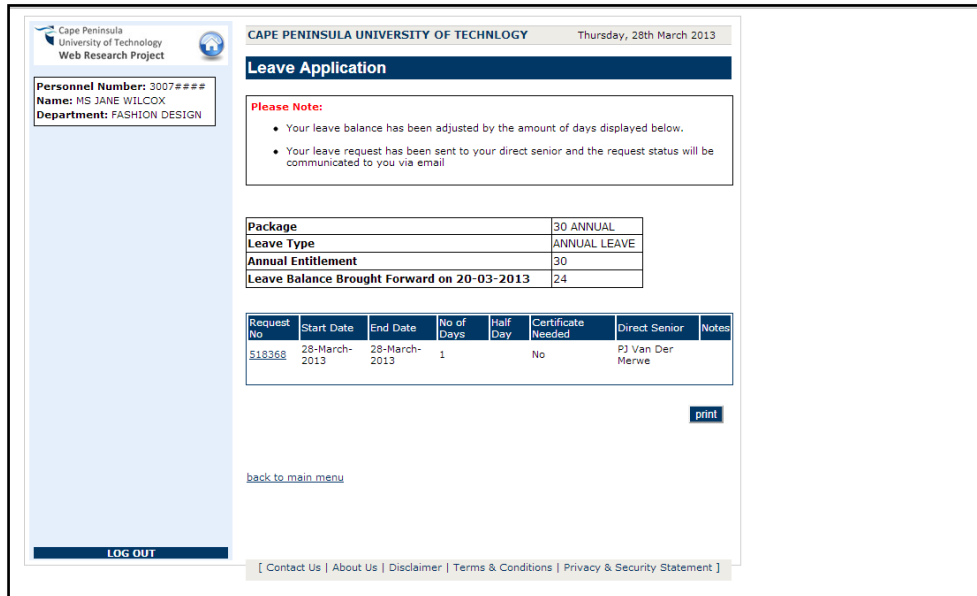Any comments from participants during the observations were captured via the video recorder and transcribed.

4.2.2 Data gathered during round two

During the second round of user observations, participants were asked to complete the same scenario as in Round one. All six test participants took part in the second round of user observations. The round consisted of three different prototypes of the online leave application system. During this round, however, the second focus area identified, i.e. ease of use was explored. The following best practices were introduced:

- Content organization – distinct content areas were grouped together. According to the Gestalt Laws of human perception, similar elements should be grouped together, which increases information processing and comprehension.

- Instructions limited – the instructions on certain screens within the process were limited and rewritten. Fisher (1998-9) states that users unconsciously try to simplify content that they are presented with in order to understand the information better.

- Labels – labels of buttons were changed to more descriptive text, e.g. labels such as 'new record' were changed to 'new leave request', which conforms to Nielsen's (2000) views on text being descriptive.

- Additional features – additional features such as print and email features were introduced on the last page of the process, which allows participants to print their completed leave application.

- Colour – subtle changes in colour were introduced, to ascertain whether this would have an influence on the overall experience.

- Images – Icons were introduced to add visual balance to the interfaces.

Fig 4.4 illustrates an example of one of the prototypes where colour changes were introduced.

Fig 4.3 Colour variation introduced in second round of prototypes

During Round two, best practices regarding ease of use were explored. This was introduced to establish whether or not the introduction of these would create a change in the actual user experience. Comments that were made during this round were captured via the video recorder and transcribed.

4.2.3   Data gathered during round three

During the third round of user observations, participants were asked to complete the same scenario as in Round One. All six test participants took part in the third round of user observations. The round consisted of two different prototypes of the online leave application system. During this round, however, the third focus area identified, i.e. ease of searching or navigation, was explored. During this round of prototyping, two different variations of navigational structures were introduced. These were:

Navigational elements – Navigational elements such as the menu structures that appeared on the left-hand side of the page on the original version, were moved to the right. Nielsen (2000) states that the Web has few conventions but those that have developed over time should be implemented. One of these are that web page layouts, and especially navigational structures, should conform to what users are use to expecting, which is that primary navigational elements should be located in the top

third part of a web page, and that secondary navigational elements, or section specific navigational elements, should to be on the left-hand side of the web page.

Process indicators – since the actual leave application consists of four steps, a step-by-step navigational element was introduced. Cooper (2007) refers to such elements as 'signposts' and adds that these refer to persistent objects on a web page that tell the user where they are within the website, which, in this particular instance, refers to where they are within the process. Fig 4.4 shows a screenshot of the 'signpost' that was introduced in one of the round three prototypes.
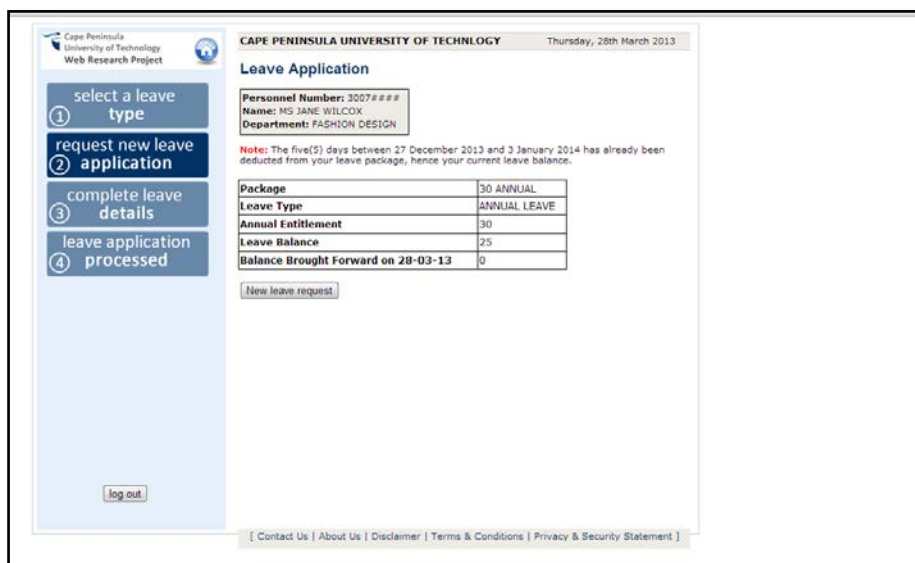
Fig 4.4 Signpost introduced in one of the round 3 prototypes

During Round three, certain navigational best practices were introduced as well as alternatives introduced to establish what effect these would have on the trustworthiness of the online platform, and whether or not this would have an impact on the participants' ability to complete their assigned task.

4.2.4 Data captured from in-depth interviews

In depth interviews were done after the completion of the three rounds of user testing. Participants were asked the following questions:

- What is your experience with regards to online platforms used at this institution?
- What possible emotions do these experiences invoke?
- What would you change about the platforms currently in use, and why?

Participants were able to provide answers to these questions on a questionnaire provided, or could express them verbally. Participants were asked to elaborate on their answers, through the probing technique, with their responses being captured via the video recorder. The analysis of the data captured will follow in section 4.3.2.

4.3   Data Analysis

The following section contains the steps that were taken to analyze the data captured during the three rounds of user observations and semi-structured interviews, as well as through in-depth interviews.

4.3.1   Data analysis from user observations and semi-structured interviews

Data from each round of user observations and semi-structured interviews were captured and analysed after each specific round. The following sections explore the analysis from each specific round.

4.3.1.1 Data analysis during round one

Round one introduced some identified violations with regards to online content, as discussed in chapter 4.2.2. All six test participants took part in the second round of user observations. Participants' responses were captured and graphed to indicate whether or not the violations of best practices would affect the participant's trust in the online platform. Fig 4.5 illustrates an example of one participant's chart of Prototype One, from the first round of user observations and semi-structured interviews.
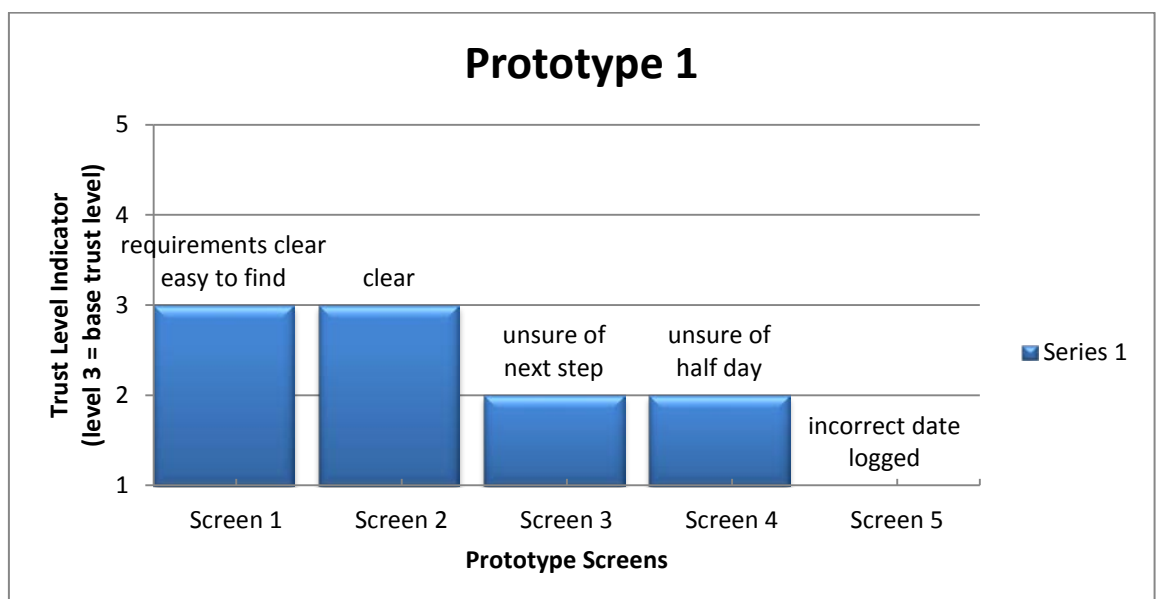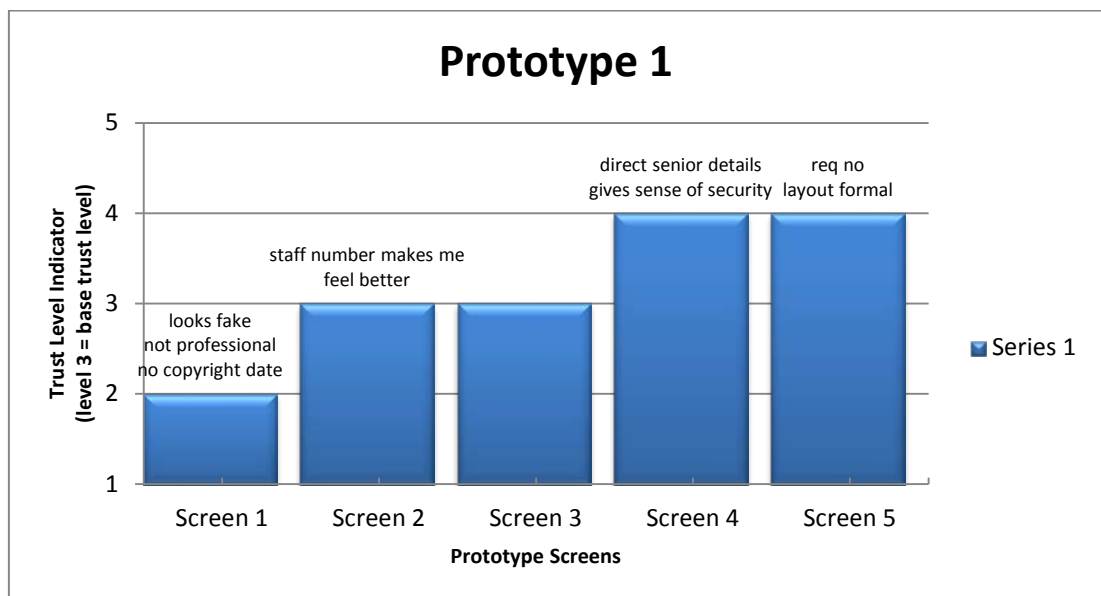

Fig 4.5 Participant's chart from prototype one

The chart from Fig 4.5 illustrates the trustworthiness level of each screen within the particular prototype. The Y-Axis of the chart represents the trust level, whereas the X-Axis represents the 5 different screens incorporated into the prototype. The explanations for the trust level score given by each participant, is indicated above each screen within the process. As indicated from the chart, the participant felt that the requirements to complete the process were clear in the first two screens, and allocated a score of 3, which is the base trust level. The next two screens reflects a drop in the trust level, the reasons being that the participant felt unsure about the next step to take on screen 3, and also unsure about the 'half day' option presented in screen 4. Finally, in step 5, the trust level dropped to 1, which relates to a complete lack of trust in the platform. This was due to the fact that the incorrect date was provided on screen 5, which provides confirmation on the leave application.


Fig 4.6 A second participant's chart, based on prototype one.

Fig 4.6 illustrates a second participant's chart using the same prototype. In this chart, however the graph is somehow reversed. A score of 2 was allocated to screen 1, with the participant stating that the page did not look professional, with no copyright information. The scores gradually increase throughout the process though, with the visibility of the staff member's staff number the reason for the move from a level of 2 to 3. The score increases to 4 on screen four, the reason being visibility of the staff member's direct senior. This score in maintained for screen 5, with the participant stating that the layout looked formal, and that a leave requisition number was allocated to the leave application, meaning that there was a way for the participant to track the leave evaluation process.

4.3.1.1.1 Round one analysis

Various best practice violations with regards to content were introduced during Round One of user observations and semi-structured interviews. This was incorporated to explore the effects that these would possibly have on the participants' user experience, and particularly how they would gauge the trustworthiness of the platform. All six participants' feedback were graphed and reasons for the increase or decrease in trust levels were tabled to ascertain whether or not these factors stated above would contribute to the trust levels allocated to each page. Fig 4.7 illustrates the most significant reasons why there was a drop from the original base trust level of 3, while Fig 4.8 illustrates the reasons why there was an increase in the base trust level.
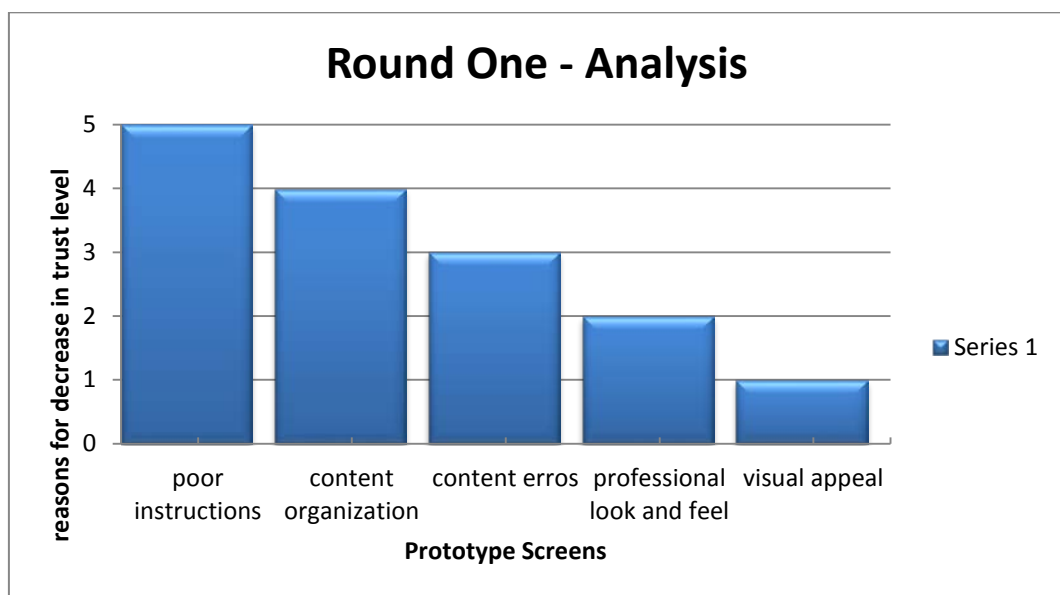
Fig 4.7 Analysis of round one – reasons for decrease in trust level

According to the analysis of the four prototypes that were completed during Round one, poor instructions were the dominant reason why participants felt that the platform was not trustworthy. Content organization was the second most important reason, while content errors and professional look and feel were significant as well. Visual appeal was only mentioned once throughout the entire round of user observations. Even though poor instructions were only introduced in one of the four prototypes during Round one, it was mentioned by most of the test participants throughout the entire round of testing. No content reorganization was done during this particular round, but featured strongly in the reasons why the platform was deemed to be untrustworthy. The content errors that were introduced were identified by some participants, but did not have the impact that the author of this research envisaged.
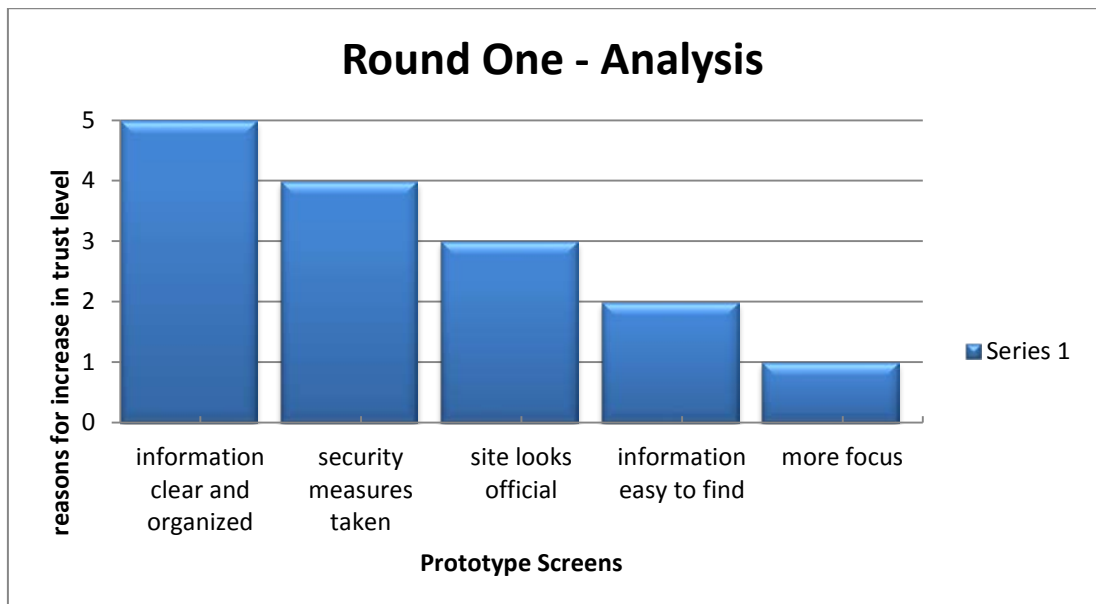
Fig 4.8 Analysis of round one – reasons for increase in trust level

According to Fig 4.8, the dominant reason why there was an increase in the trust level during the first round of user observations was the fact that the information was clear and organized. The security measures that were taken on the site were the second most significant reason, with participants stating that the visibility of the staff member's direct senior, providing a sense of security, and therefore increasing the trust levels. Some participants also stated that because the staff member's staff number was also partially hidden, that this also increased the sense of security and therefore the trust levels of the site. According to participants, the fact that the site looked official and information was easy to find, also contributed to an increase in the overall trust level of the site.

The next section will discuss the analysis of the second round of user observations.

4.3.1.2 Data analysis during round two

During the second round of user observations, participants were asked to complete a similar leave application using three more prototypes. All six test participants took part in the second round of user observations. Ease of use was the focus area for this particular round, with some best practices being introduced during this particular round. Participant's responses were captured and graphed to illustrate what the impact of these best practices would be on the participants trust in the online platform. Fig 4.9 illustrates a graphed response from one of the participants, during the second round of user observations.
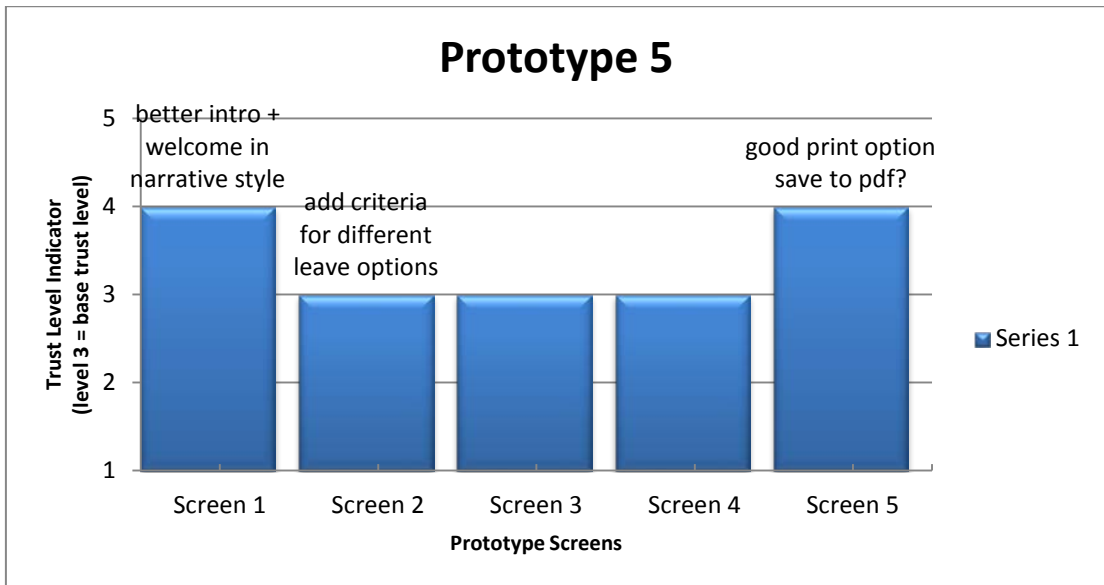
Fig 4.9 Participant's chart based on a prototype during the second round

In the above chart, the participant increased the trust level of the first screen from 3 to 4, stating the better introductory information and narrative style of text used as the reason. The base trust level of 3 is maintained for screens 2 to 4, with screen 5 also increasing to 4, with the participant highlighting the print option as the reason for the increase. Both these increases in trust levels were a direct reflection on the best practices that were introduced during this round.

Fig 4.10 illustrates a second participant's graph during the second round of user observations.
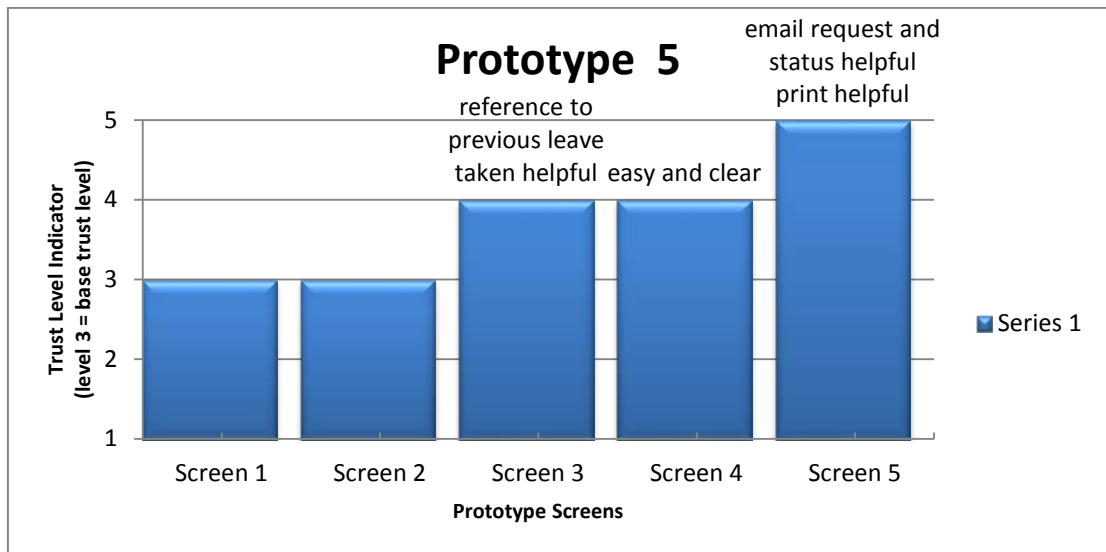
Fig 4.10 Participant's chart based on a prototype during the second round

In the above chart, an increase in the base trust level of 3 occurs in screen 3, 4 and 5. The participant indicates the "reference to previous leave taken", as the reason for

the increase in screen 3. This information was specifically added during the second round of user observations. A decrease in the amount of instructions, which was also introduced, contributed to the increased score in screen 4, while print and email features that were introduced in screen 5, contributed to a score of 5, indicating a very high level of trust in the platform.

4.3.1.2.1 Round two analysis

The results from Round two supported the current literature on trust in online environments. The best practices concerning 'ease of use' were the dominant reasons for the increase in trust levels. The two charts below illustrate the reasons for the decrease and increase in the respective trust levels.
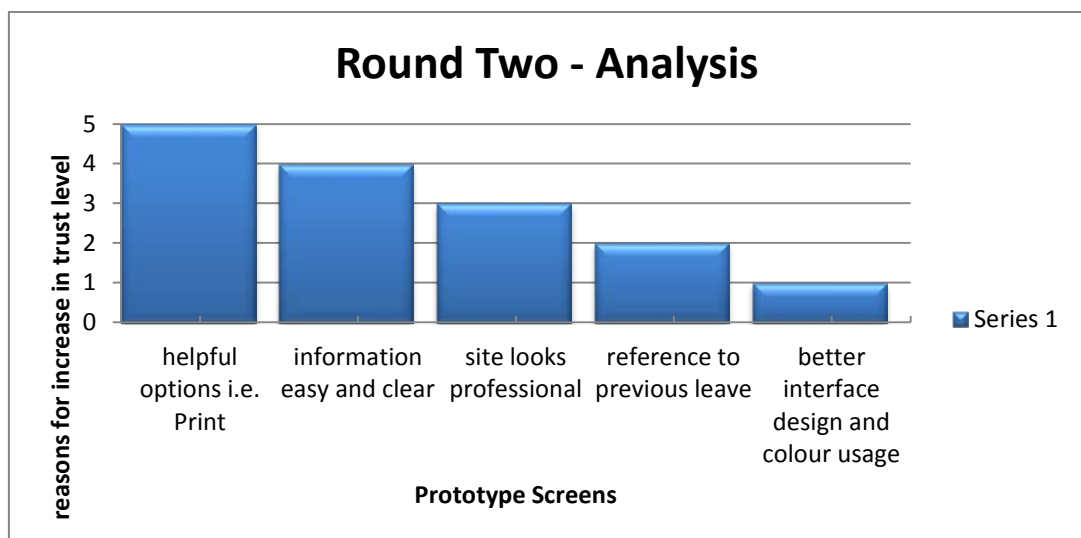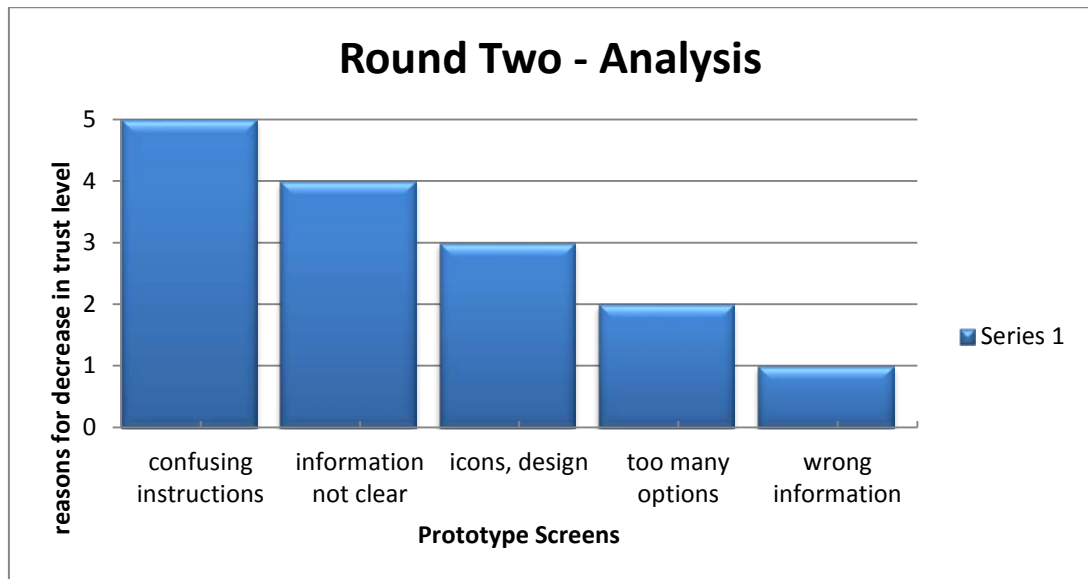

Fig 4.11 Analysis of round two – reasons for increase in trust level

Fig 4.11 above illustrates how the features, such as the print option that was introduced during this round, caused an increase in the trust level of the site. The fact that instructions were limited during this round also contributed to information being clear and easy to comprehend. The reference to previous leave information introduced in screen 4 also impacted the scores of several participants, while only one participant mentioned the usage of a different colour as an improvement to the overall experience, and therefore the trust level of the site. The author of this research, because of his training and vocational experience in the field of visual design, envisaged that the introduction of colour would have had a much more profound impact in the user experience and overall trust levels. This was, according to this round of user observations, found to be the least significant factor.

Fig 4.12 below illustrates the analysis of the factors that caused a decrease in the trust levels during the second round of user observations.

Fig 4.12 Analysis of round two – reasons for decrease in trust level

Fig 4.12 illustrates the factors that contributed to a decrease in the trust levels. Some instructions throughout the application process were changed to test its impact, while the majority of the instructions were kept the same as in the original version. From the chart above, the instructions that were left unchanged still caused the biggest drop in trust levels. Information not being clear enough was the second most significant reason for the decrease in trust levels. This is quite significant, seeing that Fig 4.11 illustrated that clear information was the second most important reason for an increase in trust level. This could be due to the fact that the content was reorganized and instructions limited on only two screens in the application process. This again highlights the significance of content organization and presenting clear and concise content, as Round One highlighted as well.

The next section will discuss the analysis of the third round of user observations.

### 4.3.1.3 Data analyses during round three

During the third round of user observations, participants were asked to complete a similar leave application using two final prototypes. All six test participants took part in the second round of user observations. Ease of searching or navigation was the focus area for this particular round, with some best practices being introduced and violated during this particular round. Participant's responses were captured and graphed to illustrate what the impact of these best practices would be on the participants' trust in the online platform. Fig 4.12 illustrates a graphed response from one of the participants, during the second round of user observations.
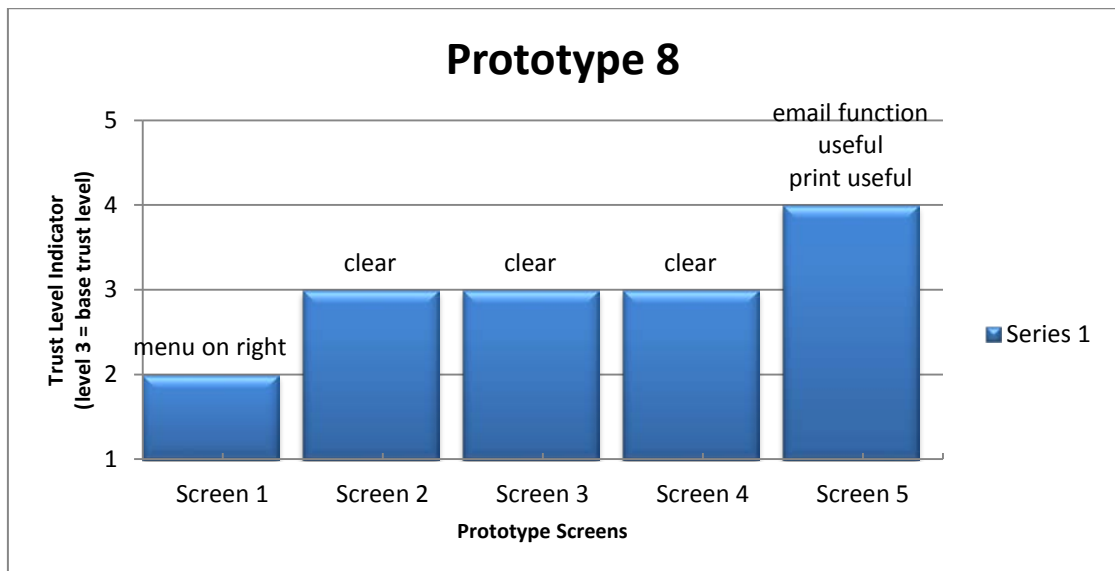
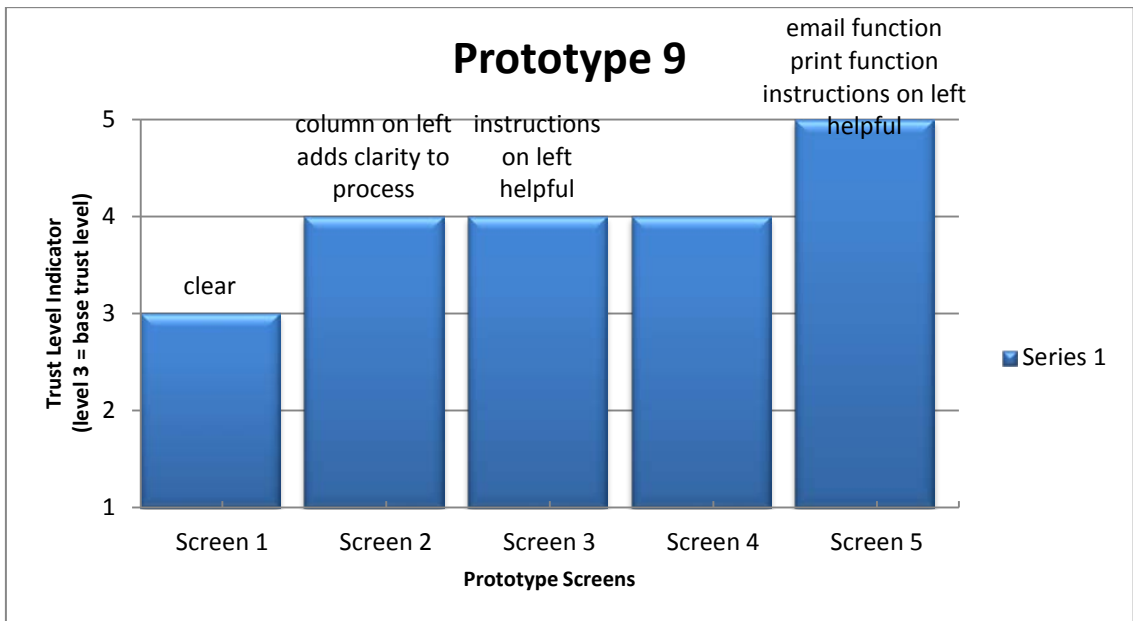**Fig 4.13 Participant's chart based on a prototype during the third round**

During this particular prototype, the main navigational structure was moved from the customary left position to the right. This violates the best practice that states that web layouts should provide a consistency to the user, and should be located where users might expect it to be, which, in most cases, is either horizontally, in the top third part of the page, or on the left-hand side of the page. As seen above, the score on the first screen dropped from the base level of 3 to 1, with the participant stating the movement of the menu as the reason for the drop in trust level. With the information being organized clearly enough though, the trust level increases to 3 for the next 3 screens, and even increases to 4 on screen 5, with the print feature the reason for the increase in trust level on that specific screen. Even though the right-aligned menu structure was not well received on screen one, it had little influence on the participant's subsequent ratings in the process.

The following chart (Fig 4.14) illustrates a participant's feedback on prototype 9, where signposts, as a navigational aid, were introduced.
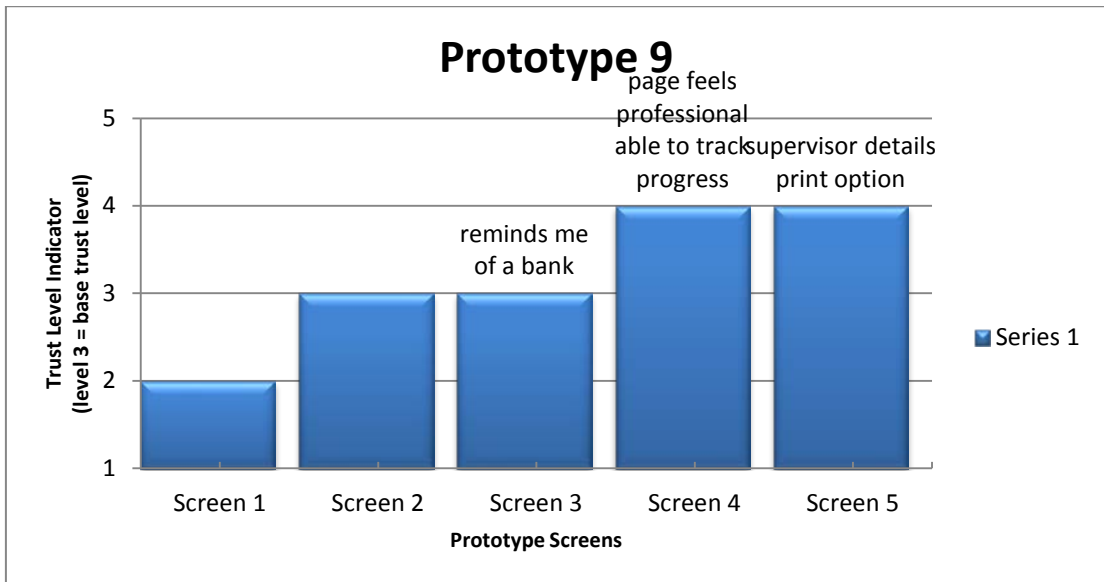
Fig 4.14 Participant's chart based on a prototype during the third round

The signpost was introduced on screen two. The participant starts off assigning a trust level of 2 on screen one. The trust gradually increases, and on screen 4, increases to four, with the participant stating that the signpost in fact made the particular screen look professional, and also allows him/her to track their progress. Fig 4.15 below illustrates another example of a participant's rating of prototype 9.

Fig 4.15 Participant's chart based on a prototype during the third round

The participant allocated scores of between 4 and 5 for every screen where the signpost was visible. In three of the four screens, the participant explicitly mentioned that the signpost, referred to by the participant as "the column on the left" and "instructions on left" were helpful.

4.3.1.3.1 Round three analysis

Fig 4.16 below illustrates the factors that contributed to an increase in trust levels during Round 3.
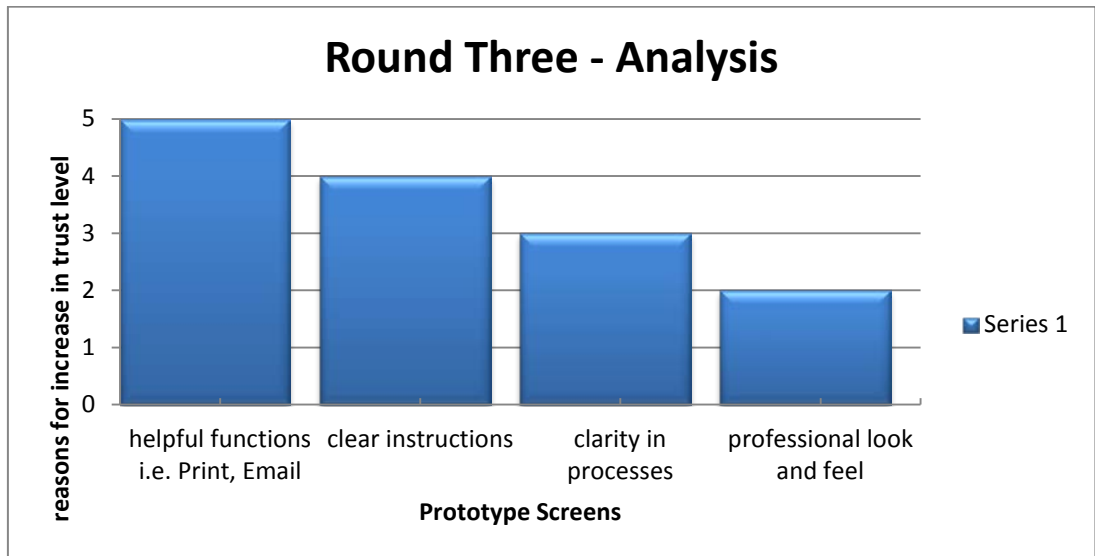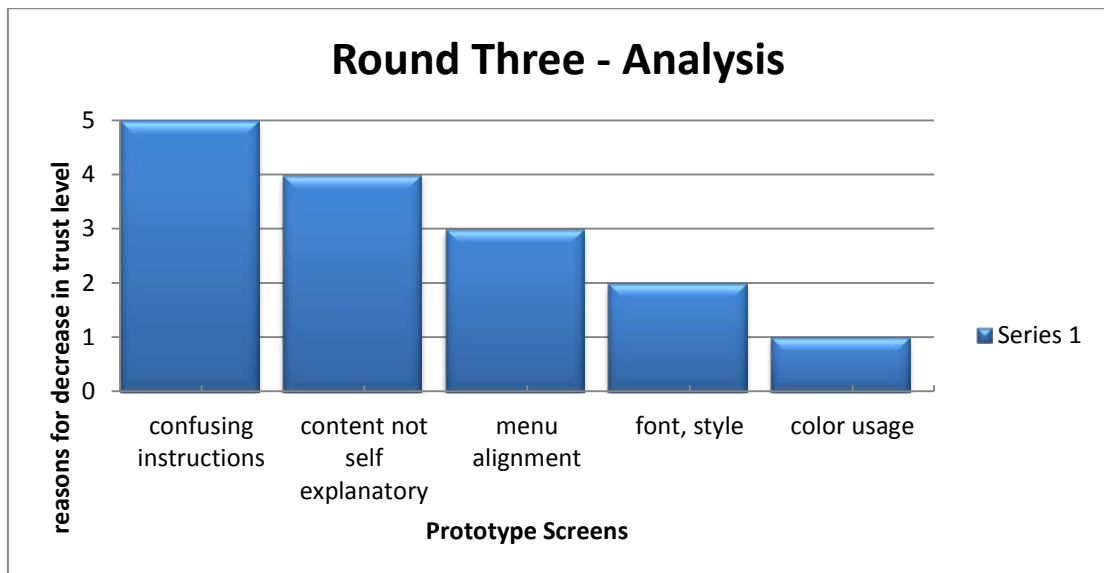

Fig 4.16 Analysis of round three – reasons for increase in trust level

The data captured during this round corroborated the literature on several aspects. The navigational aids introduced in prototype 9 were well received by test participants, which is highlighted by the fact that 'clarity in processes' was a significant reason for the increase in trust levels. Clear instructions, as in Round two, again was one of the dominant reasons why trust levels increased, while helpful functions, as it did in Round two, was the most significant reason trust level scores increased.

Fig 4.17 below illustrates the factors that contributed to a decrease in trust levels during Round 3.

Fig 4.17 Analysis of round three – reasons for decrease in trust level

Fig 4.17 illustrates the most significant factors that contributed to a decrease in trust levels during the third round of user observations. Confusing instructions, like it did during Round Two, were the most significant reasons why the trust level dropped. Self-explanatory content was the second most important factor in the decrease in trust levels. Menu alignment also featured strongly, which was often the case during the first few screens. Visual design elements such as font, style and colour usage contributed to a decreased trust level, but only slightly.

4.3.1.4 Summary of analysis done during all three rounds of user observations

During the three rounds of user observations and semi-structured interviews, various best practices were tested to establish their importance in the user experience and whether or not the implementation or violation thereof would influence the trust level of each of the individual prototypes. These best practices coincide with the trust factors that were established in Chapter 2. Some of the violations were not as influential as the established literature suggests which is illustrated during the first round of user observations. The introduction of some best practices, however, dramatically increased the trust levels on some of the prototypes, especially during the second round. Helpful functions, such as the print and email functions that were introduced, almost instantly increased the trust level on the screens where these functions were introduced. Subsequently most participant's graphs followed a similar pattern, moving from a score below the base trust level of 3 in screen one, to a score between 4 and five, on screen five, which is the screen where the print and email functions were introduced. The influence of visual design elements such as colour and changes in layout had a minimal effect on the overall trust level scores, which, in some ways, challenged the thinking and beliefs held by the author of this research.

Changes in the structure and alignment of navigational elements resulted in a decrease in trust level scores, but not with the significance that the author of this research had envisaged. Navigational aids, such as the signposts introduced, however, were clearly well received by test participants.

The following section describes the data captured and analysed during in-depth interviews.

4.3.2 Data captured during in-depth interviews

In-depth interviews were conducted once the initial rounds of user observations were completed. Participants were asked the following questions:

- What is your experience with regards to online platforms used at this institution?
- What possible emotions do these experiences invoke?
- What would you change about the platforms currently in use, and why?

Participants' responses were captured via the video recorder, and also via a questionnaire that was provided to them.

4.3.2.1 Process of horizonalization

According to Moustakas (1994), horizonalization is the process of highlighting recurring themes captured through conducting interviews. This provides the researcher with a better understanding of the experienced phenomenon. The process of horizonalization was initiated by the author transcribing video recorded material captured during the in-depth interviews. The transcribed data was combined with the data captured via questionnaires.

The following table (Fig 4.18) represents the initial list of significant statements captured through the process of horizonalisation.

Initial List of Significant Statements	
Unsure Security issue Inability to access the internet Too information heavy Better organized Trustworthiness and security is always in question i.e. MAS Lack of accessibility of information Not user friendly Not able to gain knowledge sufficiently	Security and accessibility E-learning portal potentially ill designed Needs to be available in mobile format for student availability Library info organization the best – centralized by using the same software in entire Western Cape by all universities. Feel empowered when using CPUT library website Frustration

Have limited experience,	Irritation
Have to adapt to environments	Unnecessary time taken
Platforms have potential	Frustration
Over-complicated and outdated	Causes embarrassment when advocating online
Easy to use once you've played around a bit	learning to students, and it ends up causing
Text heavy	problems.
Not well-designed information hierarchy	Frustration, general short temper
Not user friendly	Less information
Try not to use them	Online systems would 'have to win my trust back,
Complicated	and that will take a long time'
Visual impression is important	Frustration
Personalized system needed	Platforms standardized, formatted.
System represents the institution	Processes streamlined
represents the institution	Easier access to support
Frustrating	Training + online tutorials
Annoyance	Design makes platforms seem over complicated
Disbelief	and outdated.
Some improvement with new system	Integrated system which 'talks' to components.
Not empowered	Systems seem unconnected and not integrated.
Lack of security creates fear	
Available in mobile forms	

Table 4.1 Initial list of significant statements captured from participant interviews

4.3.2.2 Clusters of meaning

From Fig 4.18, 'meaning units' (Moustakas, 1994) were created, grouping significant statements into themes. Fig 4.19 below illustrates these clusters of meaning.

Table of themes from participants experiences

Organization of information

- Too information heavy
- Better organized
- Lack of accessibility of information
- Text heavy
- Not well-designed information hierarchy
- Less information

Ease of use

- Over-complicated and outdated
- Not user friendly
- Easy to use once you've played around a bit
- Not user friendly
- Try not to use them
- Complicated
- Visual impression is important
- Design makes platforms seem over complicated and outdated
- E-learning portal potentially ill designed

Platform Accessibility and Support

- Available in mobile forms
- Security and accessibility
- Needs to be available in mobile format for student availability

-	Personalized system needed
-	Library info organization the best – centralized by using the same software in entire Western Cape by all universities.
-	Integrated system which 'talks' to components
-	Platforms standardized, formatted
-	Systems seem unconnected and not integrated
-	Have limited experience
-	Easier access to support
-	Training + online tutorials

Table 4.2 Clusters of meaning developed from Fig 4.18

4.3.2.2.1 Textural and Structural Descriptions

Creswell (2007) refers to textural descriptions as those that describe what the participants' experienced. Participants' responses were tabled and grouped into textural and structural descriptions. The following table (Fig 4.20) describe the textural and structural descriptions from test participants.

Participant	Textural Descriptions (What was the experience?)	Structural Descriptions (How has the experience impacted you?)
Participant 1	The platforms are text heavy. Interfaces are not well designed, especially information hierarchies. Platforms are not user-friendly.	Experiences cause frustration, especially since I generally have a short temper
Participant 2	Online platforms need to have less information, as this make them more complicated	Online experiences cause frustration. I try not to use them
Participant 3	I have limited experience in using online platforms, so I tend to adapt to existing schemes.	Experiences cause frustration. I get irritated if unnecessary time is taken to complete certain online processes.
Participant 4	I constantly have to enter my password, to access the internet, which was not the case previously. I am never sure of how secure online platforms are.	Online processes causes frustration, especially when I try to log a call to Help desk. The current system often annoys me, and I am often left with a sense of disbelief. The situation has improved with the new system though.

Participant 5	Some platforms are too information heavy and could be better organized. Trustworthiness and security is always in question i.e. Marks Administration System.	I do not feel empowered when I use most online platforms, which is due to the fact that information is not accessible and platforms are not user-friendly. The lack of organization on the CPUT website makes one feel disempowered. Security issues create a sense of fear i.e. MAS
Participant 6	Platforms have potential. Seems a little over complicated and outdated, however easy to use once you have played around a bit.	Frustrating, as students seem to find it difficult to get support and training. Platforms causes embarrassment, especially if you advocate online learning to students, and it ends up causing problems instead of solving them.

Table 4.3 Textural and structural descriptions from participant responses

4.3.2.3 Essence of the experience

Participants were asked to talk about their experiences using online platforms currently provided by this institution, the emotions these experiences evoked, and what they would change with the current platforms in place. The participants' accounts clustered around three subordinate themes: organization of information; ease of use; and platform accessibility and support.

All participants related to how, as a consequence of using online platforms at this institution, they had experienced a sense of frustration. Even though frustration was the most common emotion experienced by all participants, the reasons behind these frustrations were often quite different. Some experienced this 'frustration' as a result of how information was organized on some of the online platforms. The difficulty of accessing information effectively within the various platforms was also one of the most significant reasons why participants experienced a sense of frustration, as well as the ease of use of individual platforms. Some participants drew comparisons with other platforms, such as the institution library website though, stating that their experience with this website had been much more positive, and contributing the centralized nature and approach of the library website as the dominant reason. Some participants made mention of other Higher Educational institutions, such as the London University of Arts, as an example of a platform that is much more effective. In both of these instances, the reasons for their choices were the fact that these platforms were examples of an integrated platform, that allowed for easy access to

subordinate platforms. With regards to individual platforms, information organization and ease of use were the dominant reasons why participants experienced frustration when using these platforms.

The author of this research initially thought that visual design elements would be the determining factor in how participants would experience online platforms at this institution, but these were mentioned only rarely by those under investigation. Instead, the qualities such as ease of use, information organization, and platform accessibility and support were by far the most influential factors.

Qualities such as ease of use and information organization mentioned in the interviews coincide with the reasons why trust level scores increased during user observations and semi-structured interviews. It is therefore apparent that online platform qualities such as ease of use and efficient information organization play a significant role in not only the online user experience, but also the development of trust in online environments, specifically in an organization-specific context.

4.3.2.4 Summary of data captured during in-depth interviews

In-depth interviews consisted of asking participants specific questions regarding their online experiences at the institution under investigation. Significant statements were gathered through the process of horizonalization, and grouped according to clusters of meaning. From these clusters of meaning, textural as well as structural descriptions of participants' accounts were documented and summarized to provide an essence of the participants' overall experiences.

4.4. Chapter summary

This chapter discussed the data collected from user observations, semi-structured interviews as well as in-depth interviews.

Data captured during user observations and semi-structured interviews were graphed and analyzed. The findings of each round of user observations were presented as well as an analysis thereof. The findings from the different rounds of user observations were in contrast to what the author of this research initially expected. Content organization, clear instructions, and helpful features were by far the most significant factors that influenced trust in the online platform under investigation, whereas the impact of visual design elements such as colour, the use of images, and page layout were minor in comparison.

The data captured during in-depth interviews were analyzed and presented. Data captured during in-depth interviews proved to be in contrast to what the author of this research initially expected. Some focus areas, such as platform accessibility and support were uncovered, which has provided the author of this research with a better understanding of the phenomenon under investigation.

The next chapter contains the conclusion as well as some recommendations for the future development of online applications in Higher Education.

CHAPTER 5
CONCLUSION

5.1 Introduction

This chapter describes the conclusions of this research study, based on the data depicted in the previous chapters.

This research study set out to explore the phenomenon of online trust, what the factors are that influence staff members' interactions with online services currently being used at the Cape Peninsula University of Technology (CPUT), and the role that online trust plays in these interactions. Even though sufficient research had been done with regards to online trust within the E-commerce environment, research done with regards to online trust in organization-specific contexts, and specifically Higher Education, had been limited. The study sought to answer the following question:

- How can an understanding of online trust be used to build valuable online applications in Higher Education?

To answer this research question the following subsidiary questions were developed:

- What are the perceptions of staff regarding their experiences with online platforms currently in use at this institution?

- What are the factors that impact these interactions?

- How can an understanding of online trust change the way online services are developed in higher education?

5.2 Findings

The main findings for this research study were summarized within Chapter 4. This chapter will synthesize these findings to answer the study's three research questions.

1. What are the perceptions of staff regarding their experiences with online platforms currently in use at this institution?

Most participants who took part in the study expressed frustration at using the current online platforms at the institution under investigation. The reasons for these 'frustrations' were a result of platform ease of use, content organization with regards to individual platforms, and the platform accessibility and support of online platforms currently in use.

Platform ease of use included platforms that were felt to be outdated, complicated to use and an overall lack of visual impression and 'user-friendliness' of online platforms. Content organization included the organization of content within specific platforms, such as the instructions that were provided to complete specific processes, the amount of text-based content certain pages consisted of, and the fact that most platforms were too information heavy. Platform accessibility and support consisted of the inability of participants to find sufficient support for online platforms, a lack of training (online help) provided and easier access to certain platforms.

2. What are the factors that impact these interactions?

During user observations and semi-structured interviews, a variety of trust cues (Corritore, Kracher, & Wiedenbeck, 2003) or factors were tested to establish the importance thereof with regards to trust in online environments. According to Corritore et.al (2003), these are elements that contribute to the overall trustworthiness of an online application. Some of these 'trust cues' were incorporated and purposefully violated within three rounds of user observations to test the effect that these would have. From the analysis done from all three rounds, useful content, good instructions and good content organization were by far the most significant trust factors, while some, such as good visual design elements (Kim and Moon, 1997), professional images of products (Nielsen et al., 2000) and freedom from small grammatical and typographical errors (Nielsen et al., 2000) had little or no impact in the overall trustworthiness of the application used.

3. How can an understanding of online trust change the way online services are developed in higher education?

Online platforms being developed in organization-specific contexts differ quite significantly from online platforms in other environments, such as E-commerce. Whereas in the E-commerce environment, the online platform, or website is available to everyone on the internet, organization-specific platforms serve a very specific community. The role of online trust therefore changes quite significantly. In the E-commerce environment, users that purchase goods online, especially first time buyers, convey guarded trust, which, according to Corritore et.al (2003) is a type of trust protected by formal contracts, agreements and promises. Within an organization-specific context, such as the institution under investigation, the user, or staff member, conveys extended trust, which, according to Corritore et al (2003) is extended when the person feels comfortable with sharing personal interests and

leaving personal details. This was highlighted during the first round of user observations, where trust cue violations were introduced into different prototypes. Almost none of the participants noticed grammatical errors in the headings, dates, and leave descriptions, with content organization and ease of use being much more significant in their overall trust level ratings. This was also true in the subsequent rounds of user observations where visual design elements, and navigation, among other factors were tested.

From this research study it is therefore apparent that staff members have a certain level of trust with regards to the platforms that they use as part of their daily work activities. Several of the trust cues mentioned in the literature are geared toward developing guarded trust, and not extended trust, which is the degree of trust most employees working with organization-specific online platforms would convey. Developing this 'extended trust' should therefore be the focus in the development of organization-specific online platforms, which in this discourse, refers to Higher Education, with focus areas being that of content organization, ease of use, and platform accessibility and support.

5.3   Limitations of the Research

During this research study, the author of this research found that the time spent with the research population selected was quite limited, which in some ways limited the overall effectiveness of the study. Using ethnographic research as a research approach requires the researcher to spend considerable time with the research population to uncover the motivations and reasons for why people act in a particular way. The research population was also a bit small, only being six people. The study would have been much more effective had the research population been larger, between 15 and 25 people, and especially if the author of this research had had more time to observe the participants behaviour in relation to each other, and not only in isolated instances.

Another limitation was that interviews were conducted during the assessment period, which meant that some test participants were often rushed during the user observation sessions, which had a negative impact on the feedback that was received. Also, one participant completed only the first round of user testing and could not complete the last two rounds. This data could therefore not be used during the analysis phase.

5.4 Recommendation for future research

During this research study, the author of this research discovered that there are different focus areas with regards to online trust that were not mentioned in the current literature. Most of the literature on online trust has a focus on establishing a basic level of trust with the online user. Building trust in organization-specific environments requires the development of a more developed, or extended trust. Exploring the following as future research areas can facilitate this goal:

- How trust is converted from guarded to extended trust.
- The factors that influence this conversion.
- The role of factors that such as ease of use, content organization and platform accessibility in the development of extended trust.

5.5 Conclusion

In spite of the amount of literature currently available on trust in online environments, this development of trust is mostly geared towards the development of a basic level of trust. In organization-specific contexts, however, a more sophisticated level of trust needs to be developed. The development of this extended level of trust is often not dependant on factors that influence the development of a basic level of trust, but is developed when online platforms allow users to find what they are looking for easily and efficiently, which facilitates quicker task completion, incorporating a framework that increases accessibility to interconnected platforms, and providing adequate training and support structures.

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APPENDIX/APPENDICES

APPENDIX A: PROTOTYPE EVALUATION DOCUMENT

Research Study: Trust in Online Environments in Higher Education – Round 3

Participant: _____

Scenario:

Your colleague in the Fashion Department, **Jane Wilcox**, has asked you to complete her **leave application** on her behalf. She is attending a conference on **Thursday, 28 March 2013** and she wants you to apply for leave for **only that specific day.** She has supplied you with all the necessary details, i.e. **staff number and password** and leave type (**Annual Leave**) to complete this transaction.

You are required to:

- Process your colleague's leave application using the online leave application software provided.
- Rate each individual page according to its **perceived trustworthiness** on a scale from **1** (*does not instill an adequate level of trust*) to **5** (*trustworthy, you would definitely trust this application with your details*).
- Each individual page has a **base trustworthy level of 3**

Scenario __

Trust Level Indicator	Why?
Trustworthiness of **Screen 1** ◯ ◯ ⬤ ◯ ◯ 1　2　3　4　5	
Trustworthiness of **Screen 2** ◯ ◯ ⬤ ◯ ◯ 1　2　3　4　5	
Trustworthiness of **Screen 3** ◯ ◯ ⬤ ◯ ◯ 1　2　3　4　5	
Trustworthiness of **Screen 4** ◯ ◯ ⬤ ◯ ◯ 1　2　3　4　5	
Trustworthiness of **Screen 5** ◯ ◯ ⬤ ◯ ◯ 1　2　3　4　5	

Research Study – Trust in online environments within Higher Education

Participant name: _____

Interview Questions

1. What is your experience with regards to online platforms used at this institution?

   _____

   _____

   _____

2. What possible emotions do these experiences invoke?

   _____

   _____

   _____

3. If you could change one thing with regards to online platforms in use at this organization, what would it be, why?

   _____

   _____

   _____

4. Would better designed or developed online platforms change your perception of these online platforms developed by this institution?

   _____

   _____

   _____