Benefits and challenges of following a user experience design methodology in information systems consulting in South Africa

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ABSTRACT

This research report chronicles the adoption of a User Experience Design (UXD) methodology at an information systems consulting firm. The report examines the benefits and challenges of adopting a UXD methodology, experienced by project teams and managers of information systems development projects.

This research was approached from within the qualitative research paradigm, employing an interpretivist philosophical orientation. Data were gathered through interviews, and the case study was informed by documentary evidence. The research reveals that in addition to the benefits currently documented in previous studies, UXD also complements traditional business analysis and provides additional value to the information systems development lifecycle (SDLC). The study also found that while most challenges proposed by the existing literature were confirmed, the belief that UXD methodologies are rigid and could constrain innovation was opposed. A lack of buy-in from project sponsors and misperceptions about the field of UXD commonly held by project sponsors and team members, were also identified as typical challenges that a UXD practitioner might face.

DECLARATION

I, Jaco van den Heever, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Jaco van den Heever

Signed at ……

On the …….. day of …… 2013

DEDICATION

To my loving wife, Ellenore.

ACKNOWLEDGEMENTS

I would like to thank my wife and family for the support they provided while I was studying for this M.B.A. I would also like to thank my supervisor, Professor Louise Whittaker, for the guidance and structure that she provided; this enabled me to complete this research report.

Business Systems Group (Africa) is acknowledged for allowing me to conduct my qualitative research within that company, as well as for their overall support of my studies and career.

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“Any darn fool can make something complex; it takes a genius to make something simple”

Albert Einstein

CHAPTER 1: INTRODUCTION

1.1 Purpose of the study

The purpose of this research is to investigate the impact of introducing a User Experience Design (UXD) methodology, on a consulting firm operating within the information systems industry in South Africa.

1.2 Context of the study

According to Innes (2011), businesses need to master innovation to ensure their long-term survival, or else they risk being displaced either by competitors refining their products or services more quickly for a new market, or by competitors introducing entirely new products. Innes proposes further that both of these types of innovation are at the centre of Human-Computer Interaction (HCI) work focused on tailoring technologies to match human needs. An increasing number of organisations have realised that, in order to develop more innovative products and richer user experiences that are more attuned to the needs of their customers, there is a need to learn from and involve users in the design process. This should lead to a better understanding of the functional, social and personal contexts within which the proposed product needs to function (Sleeswijk Visser, Van der Lugt, & Stappers, 2007).

This has been a long journey, which started in the 1980s when Donald Norman coined the term “User-Centered Design” (UCD) in his Human Computer Interaction (HCI) laboratory at the University of California, San Diego (UCSD), This term became popular after he co-authored the book entitled “User-centered system design: New perspectives on human-computer interaction” (Norman & Draper, 1986). Later, Jakob Nielsen revised and popularised some of the elements of Norman’s theory to produce heuristics for usability engineering (Nielsen, 1994).

According to Hassenzahl, Law and Hvannberg (2006) the fields of UCD and Usability Engineering have neglected to consider the impact of the users’

behavioural goals, satisfaction and the attainment of a sense of well-being or positive emotions from the experience of using a product or service. With this in mind, the field of User Experience Design (UXD) has developed. According to Hobbs, Fenn and Resmini (2010, p. 41), UXD may be defined as “an overarching term for the practices of information architecture, interaction design, information design, interface design – and other related practices, applied user-centered research and iterative design methods collectively employed for the design of digital experiences and products.”

Boersma (2004) illustrated how UXD encompasses elements of various related practices in a single field in the Figure 1 below:

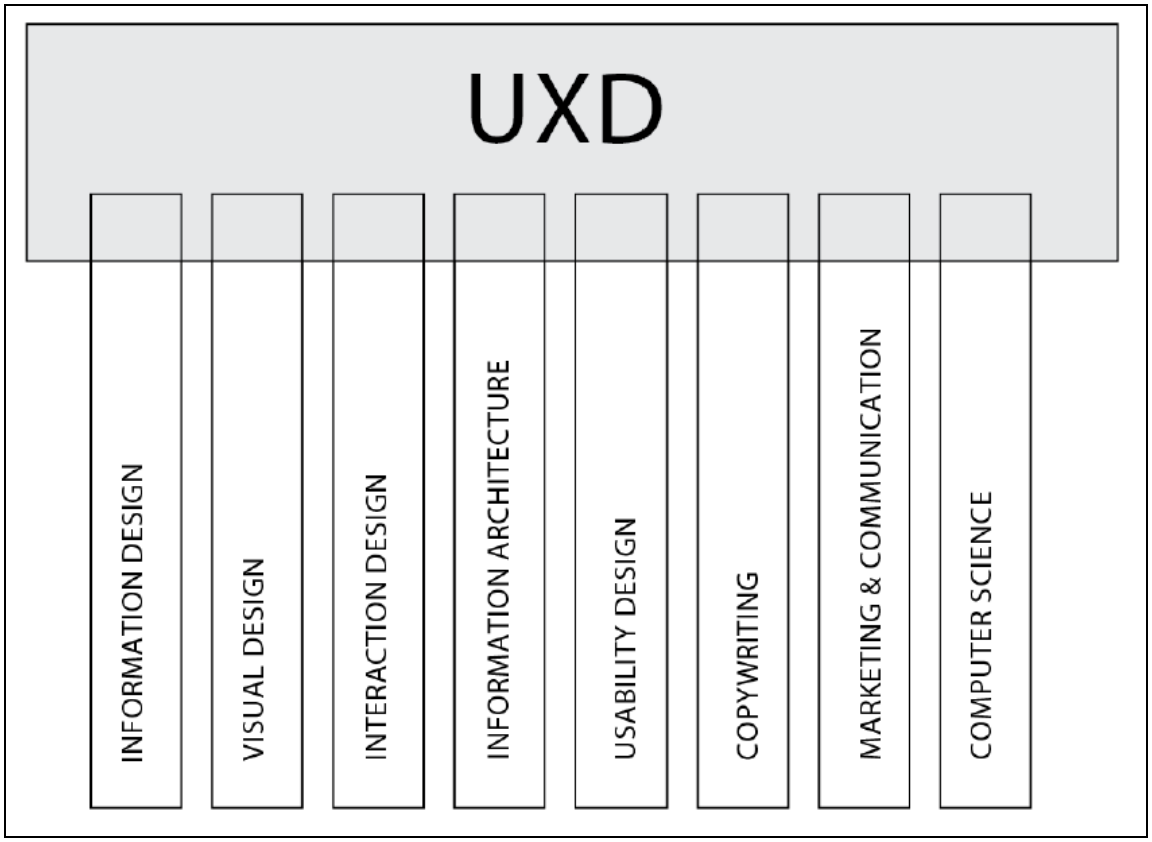

Figure 1: Boersma's T-model of user experience (Boersma, 2004)

Despite widespread success from a professional perspective, the field of UXD is only practiced casually at present, and has not been woven into a single coherent discipline that has been formally and institutionally defined (Hobbs et al., 2010).

Various studies have shown that positive effects are achieved by involving users in the design process or by including user focused design activities in software development projects. These effects can include the definition of better business requirements and an improvement in the overall quality of solutions and user satisfaction (Kujala, 2003; Kujala, Kauppinen, Lehtola, & Kojo, 2005).

1.3 Problem statement

1.3.1 *Main problem*

This study aims to determine the benefits and challenges typically experienced when following a UXD methodology during the process of information systems development.

1.3.2 *Sub-problems*

The first sub-problem is to determine the benefits typically experienced when following a UXD methodology during the process of information systems development.

The second sub-problem is to determine the challenges typically faced when following a UXD methodology during the process of information systems development.

1.4 Significance of the study

The study fills a gap because User Experience Design is still a relatively new field that has not been formally recognised by academia and institutions, although it is being increasingly practised (Hobbs et al., 2010). This study may add to the body of knowledge on the potential impacts of the introduction of such a methodology within the information systems sector. The impact of introducing such a methodology in a consulting environment has also not been explicitly documented within the South African context.

The study may provide guidance to managers of UXD teams in the information systems industry as well as to organisations considering whether to embark on new information system design projects. That guidance should improve understanding of what potential benefits could be realised through the introduction of User Experience Design methodologies and should help managers to understand the typical challenges that may be faced.

1.5 Delimitations of the study

- The research focuses on a single consulting firm.
- The research focuses on the information systems sector.
- The User Experience Design methodology that forms part of the study has been customised to the consulting firm under scrutiny, but aligns to industry best practice and is based on academic research.
- The study does not attempt to redefine the field of User Experience Design.

1.6 Definition of terms

Human Centered Design: The ISO 13407 standard “defines human-centred design in terms of four principles: the active involvement of users and a clear understanding of user and task requirements; an appropriate allocation of function between user and system; iteration of design solutions; and multidisciplinary design” (ISO, 1999).

Human-Computer Interaction (HCI): “A discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them” (Hewett et al., 2009).

User Centered Design (UCD): “‘A broad term to describe design processes in which end-users influence how a design takes shape. It is both a broad philosophy and variety of methods. There is a spectrum of ways in which users

are involved in UCD but the important concept is that users are involved one way or another" (Abras, Maloney-Krichmar, & Preece, 2004).

User Experience Design (UXD): An overarching term for the "practices of information architecture, interaction design, information design, interface design – and other related practices, applied user-centered research and iterative design methods collectively employed for the design of digital experiences and products" (Hobbs et al., 2010).

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This paper focuses on the design of information systems products and services. The information systems industry, which drives most of its innovation activities directly through technology, has encountered challenges when creating products and services that match end-user needs and preferences. Driving innovation with a technology-push approach creates the risk that users do not want to use the technology, or the risk that they are not able to use it. A lack of understanding of users' preferences and requirements has been identified as a key contributor to the failure of many innovations. It is for that reason that organisations of all types and sizes have started embracing user-centered approaches as part of their innovation initiatives (Steen, 2011).

In recent times, research on improving user experience has become very popular, with the main focus being in the fields of design and human computer interaction (HCI) (Tek-Jin & Changwon, 2011). This literature review aims to establish the proposed impact of following a UXD approach within the context of information systems development projects, based on previous research.

The first section of this review seeks to determine the benefits or advantages associated with following a UXD approach, by reviewing existing research on the topic.

The second section of this review documents the challenges or disadvantages commonly associated with following a UXD approach, also by reviewing the existing literature.

The literature review concludes with the final research questions that are formulated in the light of the findings of the literature review.

2.2. Definition of topic

User Experience Design (UXD) is an overarching term for the “practices of information architecture, interaction design, information design, interface design and other related practices, applied user-centered research and iterative design methods collectively employed for the design of digital experiences and products” (Hobbs et al., 2010).

According to Iivari and Iivari (2011) user-centeredness in the context of systems development encompasses four main categories: these are user focus, work-centeredness, user involvement and system personalisation. User focus “places the person at the centre, focusing on cognitive factors (such as perception, memory, learning, problem-solving, etc.) as they come into play during people’s interactions with the interface” (Shahar, Goren-Bar, Boatz, & Tahana, 2006, p. 119). It is mainly focused on how one can identify and represent users during the systems development lifecycle. Work centeredness is concerned with how one can conceptualise and represent work; in other words, understand the task and context of the task. It also examines the drivers for change in a particular work domain. User involvement focuses on the need to involve actual users in the design or development process, often in the actual environment in which they would use the product or system being designed (Abras et al., 2004) and aims to address why and how users should be involved in the process (Iivari & Iivari, 2011). System Personalisation refers to how adaptable and adaptive a system is designed to be. Adaptability allows the user to amend or change a system according to his or her own preferences, and adaptivity means that a system automatically adjusts to the needs of the user (Brusilovsky, 1996).

In this report, UXD is regarded as an overarching term covering not only the four categories of user-centered design described above (user focus, work-centeredness, user involvement and system personalisation), but also the specific practices of information architecture, interaction design, information design and interface design; all these are applied through an iterative design approach within the context of information systems development.

2.3. Benefits of using a UXD approach

The first sub-problem is to evaluate whether project team members involved in information systems development, within an information systems consultancy firm in South Africa, obtain the same benefits from using a UXD methodology as those suggested by previous research.

This section aims to identify the benefits attributable to the general field of UXD, and also aims to illustrate the benefits attributed to specific methods within the discipline.

2.3.1 Generalised benefits of a UXD approach

Much has been written about the advantages of following a UXD approach. The author identified the following advantages during the literature review.

According to Abras et al. (2004) and Preece, Rogers and Sharp (2002), the main benefit of a UXD approach is a greater understanding of the psychological, organisational, social and ergonomic factors that influence the usage of information technology. As a result of following such an approach, products are generally more suitable for use not only for their intended purpose but also their environment of use. Products are also generally more effective, efficient and safe.

According to Keinonen (2010), user-centered design has turned to the "experience design" aspect of UXD to create designs that not only meet "must-have" quality criteria, but also please users greatly and create enthusiasm to use the product within them. Design innovation literature creates a link between UXD, the innovation capabilities of organisations, creating new kinds of experiences for users and entry into new market domains; all these issues are of key business importance. Tek-Jin and Changwon (2011) go further by illustrating that through good design, users may be provided with pleasant experiences on top of basic functionality.

Abras et al. (2004) also propose that designers are well placed to meet or exceed user's expectations of a new product. By involving users throughout the

design of a product, their expectations are shaped early on in the design process and it provides them with a sense of ownership as they perceive that their ideas have been incorporated during the design process. Abras et al. found that when users have been involved in the design of a product, they know from an early stage what to expect from that product and they feel that their ideas and suggestions have been taken into account during the design process. Ultimately, this may result in greater customer satisfaction and may facilitate implementation of the product into the user's own environment. Preece et al. (2002) state that following a collaborative approach, as required in UXD, leads to the generation of more creative design solutions to problems, as well as to products that require less redesign throughout the process. It has also been found that when a UXD approach is not followed, the result could be ill-thought out designs. Moreover, whenever there is a mismatch between user expectations and what is delivered, users are likely to be frustrated and may even become angry (Abras et al., 2004; Preece et al., 2002).

UXD has also been shown to create more persuasive designs. This increases the likelihood that users will perform specific targeted behaviour through the use of motivation, recognition of the user's ability and triggers. The persuasion process is also very much improved through iterations of design incorporating feedback received from users, and so future are users more likely to perform the targeted behaviour (Jawdat, Obeidat, & Aljanaby, 2011).

Research at Intel has shown that, in the long run, following a User Experience Design approach means a more productive and efficient experience for end-users (Finstad, Xu, Kapoor, Canakapalli, & Gladding, 2009).

Kujala (2003) conducted various forms of research to determine the benefits of a UXD approach, and added further findings through additional research in conjunction with Kujala, Kauppinen, Lehtola and Kojo (2005). The following benefits were identified by these authors:

- Increased sales: An increase in sales can be expected from a sales system that has been re-engineered using a UXD approach.

- Increased user productivity: Re-engineering a system or process using a UXD approach may reduce the amount of time spent performing specific tasks.

- User satisfaction: User involvement within a UXD approach is a vital component in the creation of useful and usable systems and may also affect user satisfaction positively.

- Improved requirements: User involvement within a UXD approach is related to a greater understanding of user requirements and improved quality of documented requirements.

- Project success: Involving users and customers in a UXD approach as information sources has been linked to project success.

- Decreased training costs: A decrease of around 35% in training costs has been reported, all attributable to following a UXD approach.

- Decreased user support: Both Microsoft and Ford reduced their number of customer support calls significantly after implementing selected components of a UXD approach, including usability testing and iterative design.

- Increased user acceptance and understanding: Designing with the target user groups in mind and involving users in the design process is likely to increase user acceptance and create a greater understanding of the system.

2.3.2 ROI of UXD

Many benefits of UXD relate specifically to Return on Investment (ROI). This is the main concern of most organisations when contemplating any initiative. The expectation is that when adopting a UXD approach, business benefits will be created in the form of increased revenue and / or operational savings (Bailie, 2011).

The cost-benefit ratio of UXD projects has been measured as high as 1:100 (Kujala, 2003). This underlines the findings of Gilb and Finzi (1988), who state that the rule of thumb in many usability-aware organisations is that the cost-benefit ratio for usability is between $1:$10 and $1:$100. Once a system is under development, then correcting a problem costs ten times more than fixing that same problem during design. If the system has been released, it costs a hundred times more than fixing in design.

Nielsen (2002) proposes that an average mid-sized company could obtain a ROI of over 1 000% through employee productivity by improving its intranet design. In an earlier study this writer showed that by following a proper usability engineering methodology, inaccurate software engineering cost estimates could be reduced and as a result cost overruns in software development projects were substantially reduced (Nielsen, 1994).

The existing body of research thus seems to indicate a positive ROI for UXD initiatives.

2.3.3 Benefits or advantages of user involvement

Although user involvement forms an integral part of the overarching UXD approach, the author has found much research specifically focusing on the advantages of user involvement as a specific method that can be applied either within or outside the greater UXD approach.

User involvement, or participatory design, originally started in Scandinavia, where labour unions attempted to provide workers with more democratic control within their work environment (Abras et al., 2004), and pioneered trusting users to provide initiative and design decisions several decades before the user-centered design trend started (Keinonen, 2010). The involvement of actual users in the design process of a product was a natural evolution in the field of user-centered design. It has been found that user involvement results in more effective, efficient and safer products, as well as an increase in the users' acceptance rate of products (Preece et al., 2002).

According to N. Iivari (2011), user involvement is based on the premise that workers have the right to be able to perform their work effectively and efficiently by improving the functionality and usability of the solution; according to this principle,, their involvement in the design process is a key ingredient to ensuring that this right is provided. The optimal improvement is created by combining user involvement in the design process with insights from ethnographic research into users' work practices and environments or contexts (N. Iivari, 2011).

Wikström (1996) states that by having intensive interaction with potential customers and clients of a business, employees are likely to generate new ideas and methods of doing business. Further to this, Magnusson (2003) has illustrated that involving users in this process can provide more innovative design solutions as well as solutions of greater value to other users, when compared to involving only specialist designers.

User involvement clearly has its benefits and should form part of the foundation of a UXD approach.

2.3.4 Benefits or advantages of personas

Personas are fictional representations of target users, representing specific sets of characteristics typically found in specific user groups; in other words they are a hypothetical archetype of actual users (Adlin et al., 2006). Personas have been utilised in the design approaches of many prominent firms, such as Microsoft, SAP and FedEx (Manning, Temkin, & Belanger, 2003).

Research has shown that personas can assist with creating useful and usable designs through an increased focus on users and their goals, improved communication within project teams about users and by making assumptions about these users more concrete and finally, by challenging these assumptions (Cooper, 2004; Grudin & Pruitt, 2002; Miaskiewicz & Kozar, 2011). Furthermore, personas have been credited with assisting design teams in decision making, creating greater empathy for users and increasing engagement within design teams (Adlin et al., 2006; Ma & LeRouge, 2007). By

increasing user focus, personas help to overcome the disconnect between the designers and the users; one of the most common issues in UXD (Miaskiewicz & Kozar, 2011).

Personas assist in narrowing the target user group, and prevent designers from designing for the mythical user group of “everyone”. “Products that satisfy 100% of the needs of a few personas will have a greater chance of success than products that serve 10% of the needs of the all-encompassing ‘everyone’” (Miaskiewicz & Kozar, 2011, p. 427)

2.3.5 Benefits or advantages of usability testing and evaluation

Usability testing entails asking users to perform a representative task within a design solution. This practice has been shown to improve a product or solution’s usability by involving real users, at appropriate times of the project, in order to obtain valuable feedback that could improve the design (Abras et al., 2004).

Usability testing can be beneficial by evaluating user preference as well as performance information, and incorporating this feedback to improve designs (Shrimpton-Smith, Zaman, & Geerts, 2008).

2.3.6 Proposition 1

Following a UXD approach in an information systems development project may result in some of the following benefits:

1. Business benefits:
    a. Increased sales.
    b. Designs are likely to be more persuasive and to lead to targeted actions.
    c. Systems are generally more suitable for use both for their intended purposes and environments of use.

d. Decreased training costs.

e. Decreased user support costs.

f. Positive ROI.

g. Increased levels of innovation.

2. User benefits:

    a. Users may be provided with pleasant experiences on top of basic functionality.

    b. Increased user productivity.

    c. Increased user satisfaction.

    d. Increased user acceptance and understanding.

    e. Improved management of user's expectations of a new system.

3. Information Systems Development Project Team Benefits:

    a. Improved understanding and documentation of business requirements.

    b. Improved project success ratio.

    c. Greater empathy for users.

    d. Improved communication about users within project teams and increased engagement within design teams.

    e. Increased focus on users and their goals.

    f. Improved decision making in the design process.

    g. Defining the target user group more accurately.

2.4. Challenges of using a UXD approach

The second sub-problem is to evaluate whether project team members involved in information systems development, within an information systems consultancy firm in South Africa, face the same challenges when using a UXD methodology as those suggested by previous research.

This section aims to identify the challenges faced in the general field of UXD, and also aims to illustrate challenges that are attributed to specific methods within the discipline.

2.4.1. Challenges and disadvantages of a UXD approach (General)

Despite the many benefits of UXD illustrated in this report, the literature identifies various challenges or disadvantages associated with following a UXD approach. The first major challenge is that UXD may become quite cost intensive due the amount of time needed to perform a proper analysis of the users, the number of design iterations typically required and the range of people needed from different disciplines (Abras et al., 2004). Another shortcoming is that team members from different disciplines such as usability, psychology, sociology and anthropology need to learn the skill of communicating with technical systems developers, and this has cost implications. It may also be difficult to translate some types of data from various UXD activities into actual design concepts (Preece et al., 2002).

Due to the large financial and human resource requirements, management may typically question the ROI of the UXD approach, especially when overall delivery dates are under threat. Despite research proposing a positive ROI for UXD, as illustrated in section 2.3 above, it is not always easy to quantify the ROI specifically attributable to the UXD component of work (Preece et al., 2002).

This leads to one of the most common challenges on UXD projects: a lack of resources. Resources in the form of time, cost and people, are typically

underestimated or not provided for as required. Research has also highlighted a lack of access to or understanding of UXD methodologies and techniques. UXD practitioners typically require information and assistance in selecting suitable methodologies or techniques for specific situations (Kujala et al., 2005).

Finally, one of the benefits of UXD is to create a solution tailored to the needs of specific user groups; however this may actually render the solution useless in terms of general use and could result in a lack of transferability to other clients, rendering such a solution more costly when considering the lack of re-usability (Abras et al., 2004).

2.4.2. Challenges and disadvantages of user involvement

Although user involvement forms an integral part of the overarching UXD approach, the author has found much literature specifically focusing on the challenges of user involvement as a method that can be applied either within or outside the greater UXD approach.

Ensuring that the user's voice is really heard in the design process is seen as a common challenge, especially due to the difficulty of understanding and translating between the "language of the users" and the "language of the developers". In many cases both the users and the intermediaries representing those users feel that they do not have any real impact on the solution being designed. There could be some truth in this perception as user involvement is not typically ranked as a priority in software development projects (N. Iivari, 2011).

A common challenge is the lack of continuous and adequate involvement of the user. Very few companies actually involve customers or users throughout their design or innovation process; this neglect can be attributed to the lack of empirical evidence on the benefits of user involvement. Any such user involvement is typically limited to short stages of the design cycle, such as user acceptance testing or usability testing. These are typically conducted too late in

the process, since research has shown that product development typically fails at the start of the development cycle (De Moor et al., 2010).

Many approaches to user involvement assume co-location with users. This assumption does not always hold true, leading to challenges when conducting observations, interviews, user testing and other techniques at the core of UXD (Greenbaum & Kyng, 1991; Keinonen, 2010).

User involvement typically has a very strong design focus with much emphasis being placed on teamwork between users and designers to deliver future solutions. There has, however, been some recent research suggesting a degree of neglect in performing an explicit analysis of the user's existing environment and work practices when the focus is placed on this type of cooperative design (N. Iivari, 2011).

Keinonen (2010) also highlights the issue that early UXD approaches (such as usability engineering) were created on a foundation of rigid methodologies. This has led to both practitioners and participants having little room for creativity, initiative and pro-activeness. Users may also be exploited by being involved in or affected by the launch of immature products with the hope of obtaining their feedback as early adopters of the product or solution, with the view of improving the product or solution for later releases.

Some arguments have been raised against user involvement. For example it is argued that user involvement does not provide any positive ROI, users are not technically proficient enough to produce true innovations and users cannot clearly articulate their needs. Each of these arguments can be countered by opposing research (Magnusson, 2003). Magnusson adds that users' ideas are often not feasible to implement, and that those ideas should be seen as triggers to a design process, instead of mature concepts ready for implementation.

2.4.3. Challenges and disadvantages of Usability Testing

Usability testing has been shown to be a useful technique for obtaining user feedback in order to improve the design of solutions. It does, however, have its limitations.

Usability testing is typically performed over a very limited time, either in a laboratory or another setting outside the user's true context. The difficulty with this is that, within a different context and under time limitations, it is difficult to gain a true understanding of how a solution will perform over a more realistic time period in the user's actual environment. User testing normally tests only a limited number of features, with a small number of participants. Those features do not represent the full set of functionality for the system and a small number of participants rarely represent the actual user group accurately (Abras et al., 2004).

It is vital that user insights generated from user testing find their way into the development process, but the proper translation and transformation of user insights and requirements into a set of technical requirements is still a challenging task. (De Moor et al., 2010).

2.4.4. Proposition 2

A practitioner following a UXD approach in an information systems development project may face some of the following challenges:

1. Cost factors:
    a. UXD is cost intensive.
    b. There is difficulty in quantifying ROI for UXD projects.
    c. Lack of resources (time, money and people).
2. Skills factors:
    a. Members of typical UXD teams have different backgrounds and this may result in sub-optimal communication within the team.

b. Proper translation and transformation of user insights and requirements into a set of technical requirements is still a challenging task.

3. Addressing user needs:

    a. Solutions tailored to a specific user group may not be re-usable by other user groups.

    b. It is necessary to ensure that the users' voices are really heard in the design process.

    c. Usability testing does not always reflect the impact of the environment and context of use.

    d. Users' ideas are not always feasible to implement.

4. Methodology execution issues:

    a. A lack of co-location between design team and users.

    b. Neglect in performing explicit analysis of the user's existing environment and work practices.

    c. Rigid methodologies leave little room for creativity, initiative and pro-activeness.

    d. Immature products are sometimes launched in order to obtain user feedback. This practice can exploit users.

    e. A lack of continuous and adequate involvement of the user.

2.5. Conclusion of Literature Review

In summary, the literature suggests that there are a number of benefits and challenges when adopting a UXD approach. The propositions below provide a summary of those benefits and challenges of following a UXD approach.

2.5.1. Proposition 1

Following a UXD approach in an information systems development project may results in some of the following benefits:

1. Business benefits:
    a. Increased sales.
    b. Designs are likely to be more persuasive and to lead to targeted actions.
    c. Systems are generally more suitable for use both for their intended purposes and environments of use.
    d. Decreased training costs.
    e. Decreased user support costs.
    f. Positive ROI.
    g. Increased levels of innovation.
2. User benefits:
    a. Users may be provided with pleasant experiences on top of basic functionality.
    b. Increased user productivity.
    c. Increased user satisfaction.
    d. Increased user acceptance and understanding.
    e. Improved management of user's expectations of a new system.
3. Information Systems Development Project Team Benefits:
    a. Improved understanding and documentation of business requirements.

b. Improved project success ratio.

c. Greater empathy for users.

d. Improved communication about users within project teams and increased engagement within design teams.

e. Increased focus on users and their goals.

f. Improved decision making in the design process.

g. Defining the target user group more accurately.

2.5.2. Proposition 2

A practitioner following a UXD approach in an information systems development project may face some of the following challenges:

1. Cost factors:

    a. UXD is cost intensive.

    b. There is difficulty in quantifying ROI for UXD projects.

    c. Lack of resources (time, money and people).

2. Skills factors:

    a. Members of typical UXD teams have different backgrounds and this may result in sub-optimal communication within the team.

    b. Proper translation and transformation of user insights and requirements into a set of technical requirements is still a challenging task.

3. Addressing user needs:

    a. Solutions tailored to a specific user group may not be re-usable by other user groups.

b. It is necessary to ensure that the users' voices are really heard in the design process.

c. Usability testing does not always reflect the impact of the environment and context of use.

d. Users' ideas are not always feasible to implement.

4. Methodology execution issues:

a. A lack of co-location between design team and users.

b. Neglect in performing explicit analysis of the user's existing environment and work practices.

c. Rigid methodologies leave little room for creativity, initiative and proactiveness.

d. Immature products are sometimes launched in order to obtain user feedback. This practice can exploit users.

e. A lack of continuous and adequate involvement of the user.

CHAPTER 3: RESEARCH METHODOLOGY

This section describes the research paradigm and research design that were followed in the study. It also documents the research instrument and the data analysis method used. It describes the population and sample surveyed, the limitations of the study and the validity and reliability factors to be considered.

3.1 Research paradigm

This research was approached from within the qualitative research paradigm. The purpose of qualitative research is to obtain a greater understanding of the topic and not to test hypotheses (Poggenpoel & Myburgh, 2005). Daymon and Holloway (2002) state that qualitative research creates new information and knowledge through the study of how people convey meaning and express themselves. Their approach provides some key assumptions on which qualitative research is built:

- Words: Qualitative research tends to be associated with words as the unit of analysis, rather than numbers.
- Researcher involvement: The researcher is expected to engage closely with the people involved.
- Inductive reasoning leading to deductive reasoning: Qualitative research typically starts with inductive reasoning, which, through a sequential process, informs deductive reasoning.
- Process orientated: The paradigm is aimed at documenting processes that occur over a time period.
- Small-scale: Qualitative research uses very detailed, in-depth, holistic research, usually conducted on a small scale.
- Participative viewpoints: The paradigm seeks to uncover a range of subjective perspectives.

- Flexible: Qualitative research is typically more unstructured, adaptable and spontaneous.

The research explores the benefits and challenges of following a UXD approach. Given the assumptions listed above, a qualitative approach was proposed for the following reasons:

- The literature review has already indicated that it is difficult to quantify the benefits in terms of hard numbers.
- The sample size is small.
- The aim of the research is to discover and explore.
- The proposed research incorporates personal viewpoints and is influenced by the context.
- Semi-structured interviews are proposed for collecting data

The paper is written from an interpretivist philosophical paradigm. Information Systems fall under the interpretivist paradigm if one assumes that our knowledge of reality has been formed through social constructions such as shared meanings, consciousness and language. There are no predefined dependent and independent variables; instead, the aim is to make sense of human complexities as a situation evolves, through the meanings people assign to them. This paradigm is aimed at creating a greater understanding of the context of an information system, and looks at how an information system influences the context, and vice versa (DiCicco-Bloom & Crabtree, 2006; Myers & Avison, 1997).

3.2 Research Design

The methodological approach adopted was that of a case study. The researcher proposed building a case study in which the context of the research problem was analysed in detail.

Poggenpoel and Myburgh (2005) have identified the following obstacles to research success:

- Insufficient preparation before entering the field.
- Lack of structural coherence in the research process.
- Issues with data gathering and data collection.
- Insufficient skills in report writing.

A case study intensively analyses one instance of a person, event or group, specifically considering developmental factors within the specific context of the study (Denzin & Lincoln, 2005). A case study is appropriate when the researcher needs to gain detailed insights into the case and to take the real world context into account (Oates, 2006). Inchley, Currie and Young (2000) also support this statement, and add that case studies usually place a strong emphasis on process and outcome measures. They also state that a researcher may obtain a much clearer grasp of the reason why something happened the way it did, because a case study provides a framework for evaluating events, collecting and analysing data and reporting on the results.

There are also some known pitfalls with case studies. Denzin and Lincoln (2005) have made the following cautionary reminders about using case studies:

- Generalisations cannot be made from individual cases.
- Case studies are more suitable for identifying new hypotheses; in contrast, there are other research methods that are more suitable for hypotheses testing and theory building.

- Case studies typically contain some form of bias toward verification; in other words there is always the risk that the researchers are attempting to confirm their own ideas.

- There is some difficulty in summarising and creating general propositions and theories based on individual case studies.

This list served as a cautionary reminder during the research project.

3.3 Population and sample

3.3.1 Case site

The population sampled in the study were all employees of a leading information systems consulting company based in Johannesburg and Cape Town, South Africa. Some of these employees had been exposed to a UXD methodology either by way of a formal learning intervention, or through on-the-job training or through involvement in projects requiring a UXD approach.

The company was chosen due to its recent adoption of a UXD methodology and the author's involvement in this process; this allowed easy access to much of the vital information required to build the case study.

3.3.2 Sample and sampling method

Sample design in qualitative research tends to be purposive, meaning that small numbers of people with specified and characteristic behaviour or experience are used as a sample, rather than using a random cross section of the population (Walker, 1985).

Thirteen respondents were interviewed during the research process. Most of those respondents were employees who had been formally trained to use the BSG UXD methodology. Other respondents were executives and managers who have an inherent stake in the success or failure of projects that incorporate

a UXD approach. The profiles of the respondents are illustrated in Table 1 below.

Table 1: Profile of respondents

Description of respondent type	Number sampled
Business unit head (Executives)	3
User interface designer (UXD Specialist)	1
Project Manager	1
Lead business consultant	3
Business consultant	4
Client business executive	1

3.4 The research instrument

The research instrument used in the survey was a face-to-face or telephonic interview using a semi-structured prompt list (Appendix A). “The in-depth interview is meant to be a personal and intimate encounter in which open, direct, verbal questions are used to elicit detailed narratives and stories” (DiCicco-Bloom & Crabtree, 2006, p. 317).

Interviews were conducted in a manner aimed at minimising any bias. The open ended interview questions were clearly and concisely written in simple language, with clear instructions. The two major topics investigated were:

- What benefits are associated with following a UXD approach?
- What challenges are typically faced when following a UXD approach?

Respondents were prompted further to provide their perceptions on all benefits and challenges contained in the propositions of the study.

The interview data were also supplemented with documentary evidence obtained at the organisation studied during the research period. This evidence included methodology documentation, project plans and progress reports, and any other relevant documentation.

3.5 Procedure for data collection

The collection of data was facilitated through the use of a semi-structured interview conducted with the interviewees. The interviewees were contacted by email, telephone or in person to schedule an interview at the consulting firm's head office, or via teleconference.

Comprehensive notes were taken during the interview and in-depth probing was also conducted then. The interviews were also recorded in an audio format, in order to ensure accurate data capture.

Documentary evidence was gathered on an ad-hoc basis, as and when meetings were conducted or proposals made within the organisation under scrutiny, or when any activities relating to the implementation of the UXD approach within that organisation were performed.

3.6 Data analysis and interpretation

"Qualitative data analysis ideally occurs concurrently with data collection so that investigators can generate an emerging understanding about research questions, which in turn informs both the sampling and the questions being asked. This iterative process of data collection and analysis eventually leads to a point in the data collection where no new categories or themes emerge. This is referred to as saturation, signalling that data collection is complete" (DiCicco-Bloom & Crabtree, 2006, p. 317).

Content analysis was performed using the following process:

1. Document any evidence on the implementation of the UXD approach within the organisation on an on-going basis.

2. Conduct interviews and collect data.

3. Identify key practices and themes that are common to all interviews. Document all considerations and assumptions. Identify commonalities across interviews and documentary evidence, where applicable.

4. Interrogate linkages between themes and common practices in order to identify critical elements and the inter-relationship between them.

5. Compare and note commonalities and differences of data in order to isolate common themes and identify behavioural patterns.

6. Present the key elements that were found to be most recurring after analysis in the final research report..

7. Compile recommendations based on the consolidation of the analysed data.

Bearing in mind the principles outlined in the research paradigm, the data and key elements were engaged, documented, digested, analysed and, finally, presented in the results and discussion sections of this report.

3.7 Limitations of the study

The following limitations need to be considered:

- The interviews were conducted by the person who also performed the literature review; this may result in bias during the interview and subsequent data capturing.

- The nature of interviews is perceptive; therefore, the reliability of comments made during the interviews may be questionable.

- Because the sample group was deliberately selected, external validity of the findings may be seen as an issue.

3.8 Validity and reliability

This section describes considerations pertaining to the maintenance of internal and external validity and reliability of the research.

3.8.1 External validity

The concept of external validity concerns the issue of whether the conclusion reached through the observation of one specific sample can be generalised to the universe; in other words, it addresses the issue of whether the conclusion drawn from one specific sample can be generalised to other cases (Leedy, 1993).

As a general rule, case studies tend to allow less generalisation towards a larger population (Denzin & Lincoln, 2005). Consequently, the external validity of the proposed study is an area of concern. Yin (2009) states that case studies do not allow for statistical generalisation, but are in fact suitable for analytical generalisation. Statistical generalisation is defined as a generalisation from an observation to a population, whereas analytical generalisation describes generalisation from empirical observations to theory, rather than a population.

The sample used for the case study is seen as a representative sample of employees involved in the technical management of information systems projects in South Africa, which may strengthen the external validity to some extent.

3.8.2 Internal validity

The concept of internal validity concerns the freedom from bias in forming conclusions when analysing the research data. It seeks to ascertain that the changes in the dependent variable are the result of the influence of the independent variable, rather than the result of the manner in which the research was done (Leedy, 1993).

One of the main challenges is to ensure that the findings are genuinely based on analysing all the research data critically, and to avoid the temptation to base findings on only a few strategically chosen examples. This problem is referred to as “anecdotalism” and can be overcome by critical realism, in which a researcher attempts to falsify all initial hunches about the relations between phenomena in their data (Silverman, 2009). Silverman adds that internal

validity can also be improved through ensuring that all data are incorporated into the analysis activity.

Another way to ensure internal validity is to ensure that the research framework for a specific case study was explicitly derived from the literature (Yin, 2009). Every effort was made to use this approach in the study.

An attempt can be made to match empirically the observed patterns with those observed in previous studies in different contexts; here, the aim is to identify relationships between the research data and that of previous research. This has also been shown to increase internal validity (Denzin & Lincoln, 2005).

3.8.3 Reliability

Reliability is defined as the absence of random error, which ensures that subsequent researchers will arrive at the same insights if the study should be repeated using the same process (Denzin & Lincoln, 2005). Silverman notes that a common issue in qualitative studies is that readers have to depend on the researcher's description of what actually occurred. Silverman (2009) and Yin (2009) recommend the following techniques for improving the reliability of interview data, some of which were implemented in this study:

- Recording all interviews and carefully transcribing these recordings.
- Presenting long extracts of data in the research report.
- Including the case study protocol in the research report.
- Reference a case study database, in which interview transcripts and narratives are collected during the study, to allow for future replication studies to access the original study data.

CHAPTER 4: CASE STUDY

4.1 Introduction

This case study documents the creation, piloting and roll-out of a UXD methodology at an information systems consulting firm in South Africa. The case study covers the background of the organisation, the initial plan and the execution of the planned activities. Finally, it describes the current state of UXD within the organisation, after the proposed roll-out.

4.2 Background of the company

Business Systems Group (BSG) Africa started trading in Cape Town, South Africa in 1997, after identifying a gap in the market for services that focused on detailed business analysis within the information systems landscape. Since 2007, BSG has built up a client base consisting of leading South African and European organisations with whom BSG partners to create business benefit through people, process and system innovation. BSG delivers value to its clients through consulting services and software development services. The company has established offices in both Cape Town and Johannesburg in South Africa, as well as London in the United Kingdom.

BSG's IT Professional Services Division offers services ranging from consulting (typically business analysis and advisory services) and software development project and programme management, to software development and training consulting and change management. The Product Division develops a number of information systems and products which are licenced to the market, through a combination of internally focused business consultants and software developers.

4.3 The opportunity

At the end of 2011, BSG's Professional Services Division was being increasingly requested by clients to conduct consulting services in the field of UXD. Their internal research into trends in the industry had also highlighted the growing reputation of UXD. This prompted BSG to start looking at ways of adding UXD to their existing set of skills, and they started this initiative by hiring a few experienced UXD practitioners to lead it.

4.4 The project

In December 2011 BSG initiated a project with the vision of establishing a professional, organised, process-driven UXD operation within BSG. One of the new UXD practitioners was tasked with managing and executing the initiative, with support provided by another UXD practitioner, a senior business strategy consultant, and two senior executives.

The objectives of the project were:

- To improve the BSG business analysis / consulting methodology within the Professional Services Division.
- To add UXD as a specialist consulting skill to BSG's Professional Services offering.
- To improve product design within the Product Division.

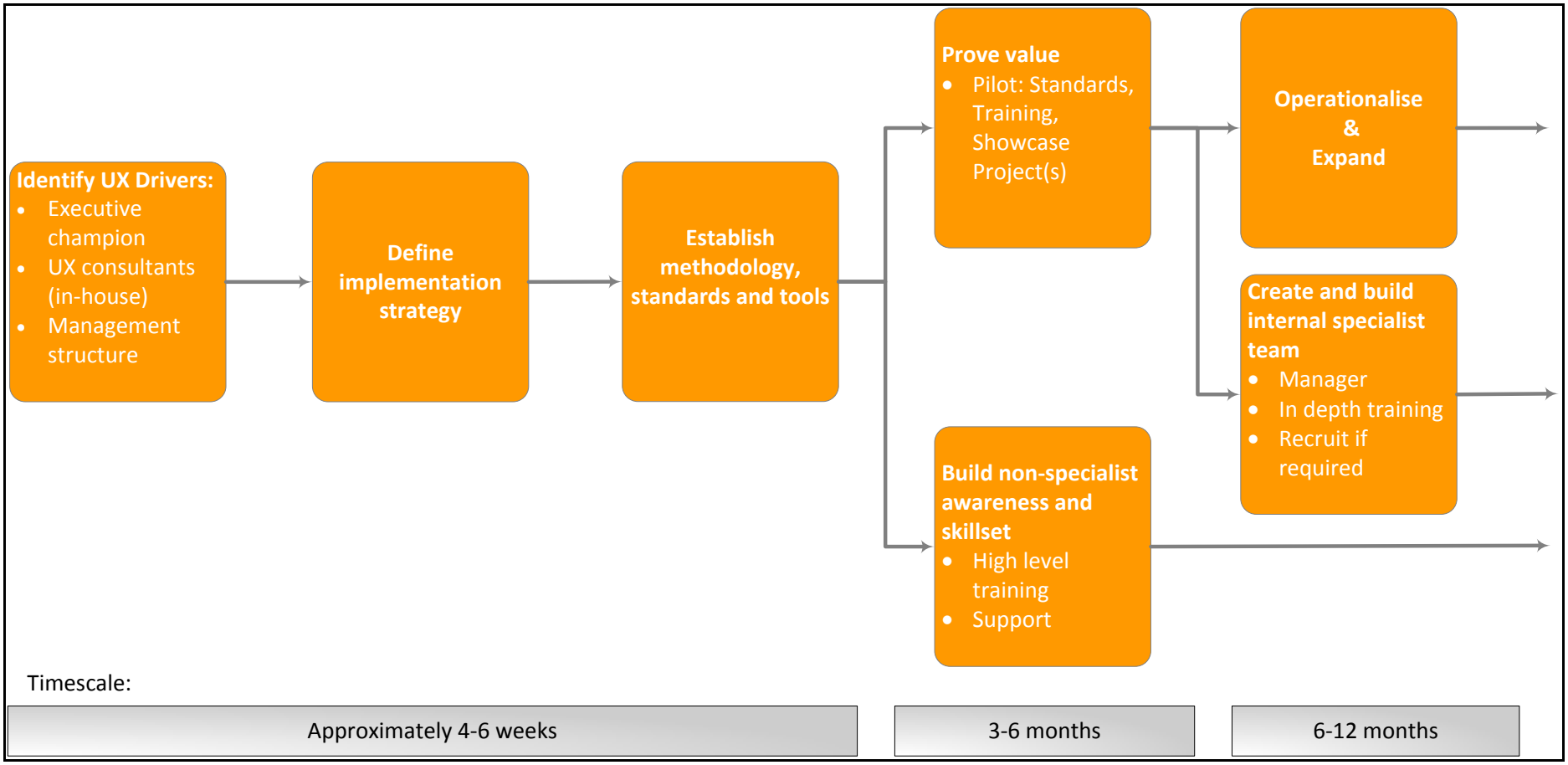

Figure 2: Implementation Plan

Figure 2 illustrates the proposed implementation plan and the timelines of the project. Thus, the project consisted of three phases as described below.

Phase one would take place in the first 4 to 6 weeks and the intention was to:

- Establish the drivers of the project, both from an execution and executive support perspective.
- Define the proposed UXD service offering to be developed.
- Define the implementation strategy.
- Create a UXD methodology, including a set of standards and tools.

After the first phase had been completed, the next 3-6 months would be used to:

- Prove the value of the UXD methodology by piloting it on a project.
- Build awareness around UXD as being a “non-specialist” skillset within BSG’s Professional Services Division in order to improve the set of services to clients. This awareness building would be done by high-level training on the UXD methodology and by on-the-job support from a UXD practitioner.

If the pilot project was a success, the following 6-12 months was envisaged to:

- Operationalise the UXD methodology by rolling it out on more projects
- Create and build an internal specialist UXD team, consisting of a manager and a team of specialists. The intention was that their specialist UXD skillset would be improved by specialised training, and by hiring additional experienced UXD practitioners

The execution of the project was planned to take between 13 and 19 months.

4.5 Execution of the project

Phase 1: Conceptualisation and creation

The project started when a UXD practitioner was assigned to manage the project in December 2011. That UXD practitioner engaged BSG's Head of Strategy and agreed on the proposed objectives of the project, as well as a defined implementation strategy.

Once executive approval had been obtained, the UXD practitioner proceeded to develop a proposed UXD offering for BSG. The proposed offering can be seen in Figure 3 below, and illustrated the set of services that BSG would offer after embedding the BSG UXD methodology successfully in the Professional Services Division. The BSG UXD methodology thus had to address the various components of the proposed offering.

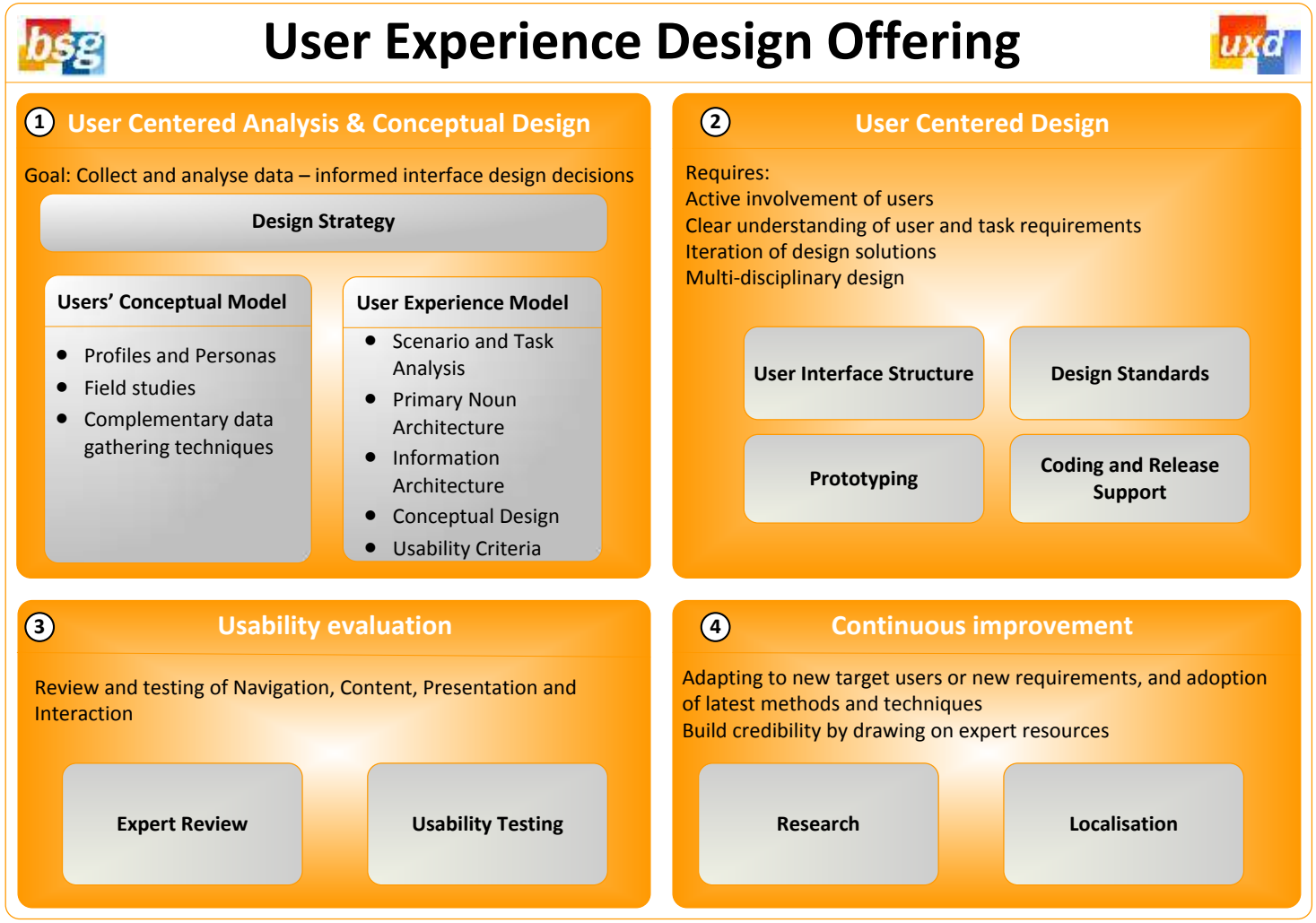

Figure 3: Proposed BSG UXD Offering

The UXD practitioner proceeded to create the methodology, which included a high-level UXD process guideline, as well as detailed guidelines for executing every step of the proposed process. The high level process, illustrated in Figure 4 below, was created to serve as a best practice guideline for the proposed activities to be executed as part of a user-centered design project. It was also a guideline for the proposed sequence of these activities.

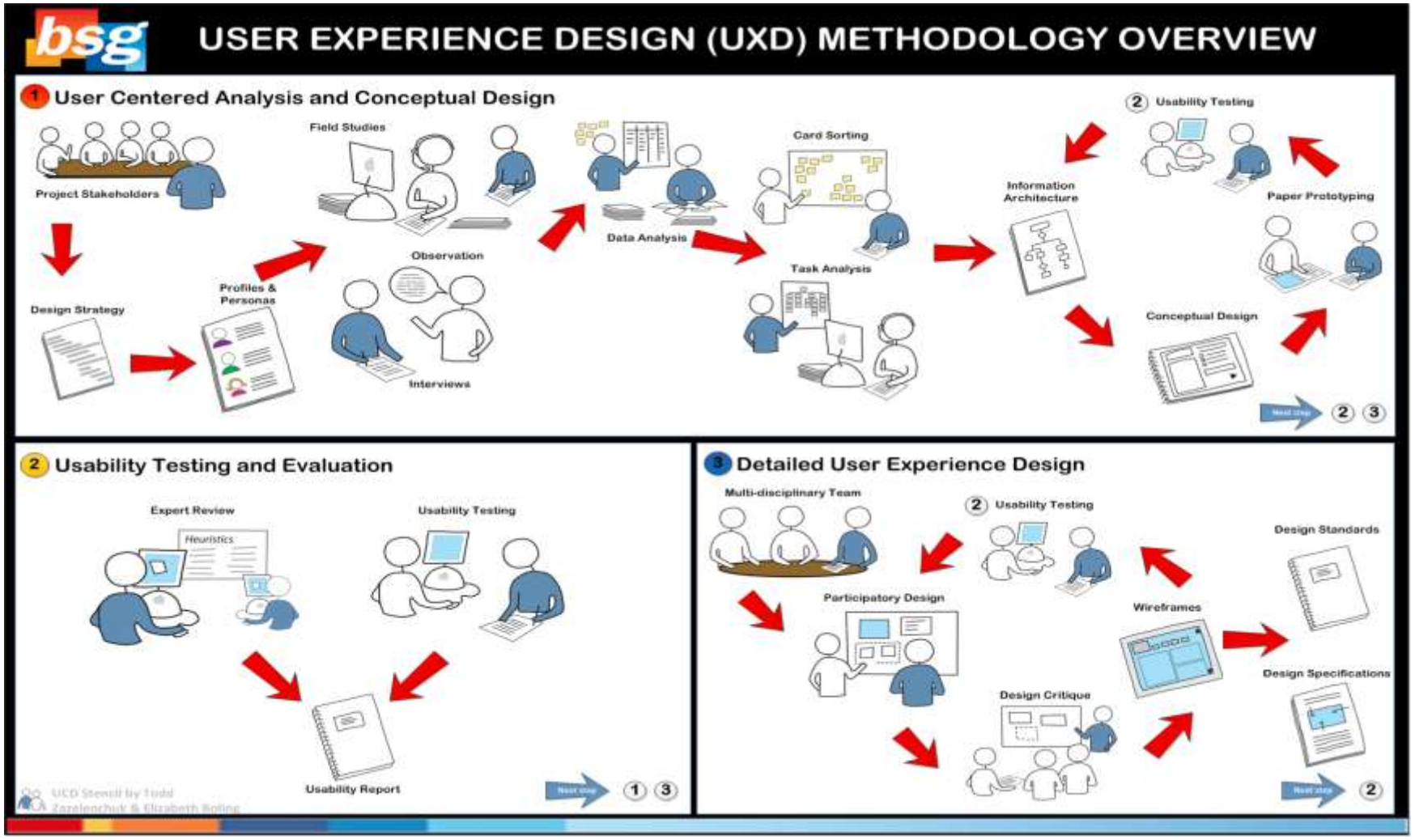

Figure 4: BSG UXD Methodology Overview

A detailed guideline was created for each of the activities that formed part of the BSG UXD methodology and a set of tools and templates was either created internally or sourced externally to assist with the execution of the activities. These artefacts, together with the high-level methodology overview, formed the BSG UXD methodology.

Phase 2: The pilot

Shortly after the completion of the methodology artefacts, BSG won a tender to consult on an information systems implementation project at a leading international financial institution based in South Africa. One of the components of the client's project was to create the conceptual designs for the user interface of the proposed system. The BSG UXD methodology formed part of the tender proposal, and the project thus became the pilot project for the methodology, in accordance with the proposed plan for implementation of the UXD methodology.

The UXD practitioner responsible for the creation of the BSG UXD methodology, a second UXD practitioner, and a business consultant were tasked with creating the conceptual designs for the client project. Both UXD practitioners were experienced in performing the UXD activities in accordance with the methodology, and the business consultant was provided with on-the-job training and coaching on the relevant activities. During a five- month period, the team executed the activities in the BSG UXD methodology, and received very positive feedback on their deliverables. The team faced many challenges during the pilot project, but also experienced many of the proposed benefits of following a UXD approach. Despite the overall client project being terminated for reasons not directly relating to the UXD aspects of the project, the piloting of the BSG UXD methodology was viewed as a great success within BSG. Some insights from the pilot project were also considered and used to fine-tune a selection of the UXD methodology artefacts.

At the same time as the pilot project, some awareness sessions were held within different forums at BSG, to inform potential users of the BSG UXD methodology. At those sessions, people were told about the proposed

methodology, the benefits of following a UXD approach, and the progress of the pilot project. Unfortunately, the demands of the pilot project prevented the team from creating and facilitating any high-level training on the UXD methodology, as proposed by the initial implementation plan.

Phase 3: The roll-out

After the successful pilot project, a decision was taken to roll out the BSG UXD methodology across BSG, and to incorporate it into the service offering of the Professional Services Division.

Operationalising the UXD methodology started with the creation of a two-day UXD training course conducted by the UXD practitioner who created the methodology. The first intake was a group of ten business consultants, most of whom were scheduled to start working on UXD related projects in the near future.

The second part of the roll-out was the official launch of the methodology to the organisation. This consisted of a launch event to communicate the adoption of the UXD methodology to the organisation, as well the publication of the methodology artefacts on BSG's internal knowledge sharing platform. The launch event coincided with World Usability Day on 8 November 2012, and consisted of a presentation at the weekly team meeting in the Johannesburg, Cape Town and London offices on the same day.

4.6 Conclusion

By February 2012, the BSG UXD Methodology has been utilised in over six of BSG's client projects spanning the financial services, retail and healthcare sectors within South Africa; further projects are in the pipeline.

BSG has also subsequently created the role of UXD Specialist as a career path for business consultants who aspire to a career in UXD. There are currently two recognised UXD Specialists at BSG who are working on client and internal projects. Moreover, there is a growing team of business consultants and developers who are developing their UXD skills further through BSG training

interventions, tertiary education, on-the-job training and self-improvement initiatives, such as attending industry conferences and events.

The creation and adoption of the UXD methodology at BSG has been viewed as a successful project within BSG and continues to be supported at an executive level. The methodology itself will continue to evolve through incorporating feedback from projects, as well as through further research in the field of UXD.

CHAPTER 5: PRESENTATION OF RESULTS

5.1 Introduction

This chapter presents the results of the interviews conducted with respondents who were involved in or affected by the events described in the case study. The respondents are profiled and the differences between the planned demographic profile and the actual demographic profile of the respondents are discussed.

The results of the interviews are presented mostly in tabular format, after which certain conclusions are derived from the data presented.

5.2 Results pertaining to Proposition 1

The tables in sections 5.2.1 to 5.2.3 below summarise the results of the interviews conducted as part of the research. Each table indicates the number of respondents who agreed, disagreed or had no opinion on each of the benefits listed in the proposition. The tables also contain a selection of quotes from the interviews, providing some insight into the views of the respondents.

5.2.1 Business benefits of following a UXD approach

Most respondents perceived or experienced business benefits resulting from the adoption of a UXD approach; the benefits were similar to those described in the proposition.

There was overwhelming support for all of the business benefits found in previous studies, although there were some instances of disagreements or caveats to agreement. For example, although most respondents agreed that a positive ROI is a business benefit associated with the adoption of a UXD methodology, many of the respondents felt that the ROI was not tangible. The researcher believes that the respondents were convinced that UXD results in a positive ROI, but that alone does not necessarily translate into a positive ROI for the overall project in all cases.

Many respondents also felt that utilising some “best practice” UXD tools and techniques, as found in the UXD methodology of their company, enabled them to be more creative in looking for solutions on their information systems development projects.

The following table summarises the respondents’ perceptions concerning the business benefits of following a UXD approach. It includes some quotes, to allow the reader to review some of the primary inputs used in the analysis.

Table 2: Respondents' perceptions of the proposed business benefits of following a UXD approach

Benefit	Number Agreed	Number Disagreed	Number without an opinion	Selected respondent quotes
a. Increased sales.	11		2	"Our clients could definitely experience increased sales due to a better user experience." "I have seen many examples of this, such as the million dollar button phenomenon, where adding a simple button to a website can translate into millions of dollars of additional sales."
b. Designs are likely to be more persuasive and lead to targeted actions.	11		2	"Persuasion, emotions and trust are very important considerations when designing."
c. Systems are generally more suitable for use, both for their intended purposes and environment of use.	13			"Better utilisation of systems also helps to achieve the ultimate business outcomes."

Benefit	Number Agreed	Number Disagreed	Number without an opinion	Selected respondent quotes
d. Decreased training costs.	12		1	“This may be true on small, system development focused projects, but on larger change initiatives, working on this assumption could be a risk.”
e. Decreased user support costs.	12	1		“Other variables may contribute to support costs.”
f. Positive ROI.	9	1	3	“A more positive ROI.” “It’s not tangible.” “I have not yet seen a tangible benefit.”

Benefit	Number Agreed	Number Disagreed	Number without an opinion	Selected respondent quotes
g. Increased levels of innovation.	11	2		"Using the methodology leads to identifying real user needs, this leads to innovation." "In my opinion, UXD is not about innovation – it's about meeting the users' needs." "I found using a UXD approach stimulated innovation." "Using all the different tools in the BSG UXD methodology forces you to think outside the box."

5.2.2 User benefits of following a UXD approach

There was unanimous support from the respondents for the user benefits as proposed in the existing literature.

The respondents particularly related to the proposed benefits of increased user acceptance and understanding and improved management of a user's expectations of a new system. After all, most of the respondents had actually experienced these benefits since they started using the company's UXD methodology. These benefits largely stemmed from the activity of user testing and an overall increase of user involvement in the design process.

Despite the overwhelming agreement, there were also some warnings about creating incorrect expectations of a new system if user expectations are not carefully managed during the design process.

The following Table 3 summarises the respondents' perceptions of the user benefits of following a UXD approach, and it includes some quotes, to allow the reader to review some of the primary inputs used in the analysis.

Table 3: Respondents' perceptions on the proposed user benefits of following a UXD approach

Benefit	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
a. Users may be provided with pleasant experiences on top of basic functionality.	12		1	""The look and feel does help."
b. Increased user productivity.	13			"If it is easier to use and aligned to the mental model of the user, the productivity should increase."
c. Increased user satisfaction.	13			"I fully agree."
d. Increased user acceptance and understanding.	13			"I saw this illustrated when I performed usability testing." "The users' involvement in the process helped with this."

Benefit	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
e. Improved management of a user's expectations of a new system.	13			"I agree, but it could be setting the wrong expectations too." "I agree, but it could also be a risk when you create expectations that are greater or different than what users will actually get. You need to manage expectations carefully."

5.2.3 Information systems development project team benefits of following a UXD approach

Again, most respondents indicated their firm agreement with the benefits which, according to the existing literature, project team members may experience when following a UXD approach on an information systems development project.

Most respondents felt that UXD tools such as wireframes and prototypes assisted the project team to improve their understanding of business requirements, because they could confirm requirements using a tangible communication method. The use of these tools also made it easier to communicate the requirements to the development team, in comparison with the traditional use of documentation only. An improvement in the communication about users and their needs was also strongly supported as a benefit.

Although most respondents agreed that a UXD approach may result in an improved project success ratio, many felt that this was difficult to prove, as UXD is rarely applied in isolation in a project environment. One respondent reported that the use of a UXD approach resulted in a successful project and very positive client feedback.

Most respondents also reported feeling greater empathy for the users for whom they were designing, as well as an increased focus on the users and their goals; this was due to the use of personas on their projects, as well as an overall mindset change because of the adoption of a user-centered approach. There was also strong support for the benefit of being able to narrow the target user group more accurately; this was possible by applying user profiling, that was part of the company's UXD methodology.

Respondents also confirmed that their ability to make design decisions during projects improved, due to the use of techniques such as field studies; these techniques gave them greater insights and understanding of users and their

needs. Decision-making tools, such as usability testing, were able to show which design option is better at meeting the users' needs.

Table 4, below, summarises the respondents' perceptions on the benefits for the project team which arise from following a UXD approach. It includes some quotes, to allow the reader to review some of the primary inputs used in the analysis.

Table 4: Respondents' perceptions of the proposed information systems development project team benefits of following a UXD approach

Benefit	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
a. Improved understanding and documentation of business requirements.	11		2	"The methodology helps to translate designs into terms that developers can understand." "I saw this when using a prototype to communicate requirements to the development team recently." "UXD products document a lot of information, which assists other project team members to understand the requirements more easily." "UXD leads to filling many gaps in traditional business requirements."

Benefit	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
b. Improved project success ratio.	9	2	2	“I agree, but this is hard to prove.” “A client shared that they were sceptical about consultants before, and that the UXD approach we followed was a great success and changed their view on BSG.” “There are still other factors to consider.” “UXD has not made a difference to my projects yet.”
c. Greater empathy for users.	13			“Agree 100%.” “You get to understand exactly what a day in the life of a user is like through doing profiles and personas.” “I experienced much greater empathy for users after conducting usability testing with real users.”

Benefit	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
d. Improved communication about users within project teams and increased engagement within design teams.	10	1	2	"A lot of the UXD methodology tools are communication tools." "It is very important to take the rest of the project team on the journey with you and make the data accessible." "This worked really well in our agile team approach, where all the teams collaborated based on feedback of what the users would like." "Using a prototype increased the engagement in my team between business stakeholders, business analysts, UX designers and the development team); it brought us closer together to talk about designs and solutions." "Using the tools generates conversations and questions – questioning everything one does, and then discuss it." "Putting our wireframes on the wall gave a view to the entire team and we got their input more quickly." "You can have good communication without following a UXD methodology."

Benefit	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
e. Increased focus on users and their goals.	13			“The use of Personas makes this possible; it allows you to keep the user top of mind.” “Personas always gave us a clear view of who we were designing for.”
f. Improved decision making in design process.	11	1	1	“By obtaining proper insights and understanding before the design phase, my normal design effort was cut by 50%.” “Products like wireframes facilitate easier decision making.” “Especially when there is uncertainty between two design options - testing the options with the users assists in decision making.” “Using prototyping and user testing has really made our decision making easier.” “I think the design process is difficult.” “Card sorting exercise and user testing helped us to make quicker decisions when designing the navigation of the system.”

Benefit	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
g. Narrowing the target user group more accurately.	10	2	1	“Not only can you narrow the target group better, but you can design more for their needs.” “Not within my organisation.”

5.2.4 Other identified benefits of following a UXD approach

The following themes outside of the benefits listed in Proposition 1 were also identified during the interview process.

Table 5: Benefits identified outside of Proposition 1

Theme	Respondent quotes
Improved service offering and improved reputation of the consulting firm.	"Sets us apart from other consulting companies." "It creates credibility and we are seen as trusted advisors."
Complementary to the skill of business analysis.	"The business requirements did not cover all the user requirements." "The UXD process looks at a different angle of business; a typical Business Analyst looks at business needs, where UXD looks at user needs."

It is concluded that the benefits listed in Proposition 1 were overwhelmingly supported during the interviews, and that two additional benefits were identified that were not part of the proposition.

5.3 Results pertaining to Proposition 2

The tables in sections 5.3.1 to 5.3.4 below, summarise the results of the interviews conducted as part of the research. Each table indicates the number of respondents who agreed, disagreed or had no opinion on each of the challenges listed in the proposition. The tables also contain a selection of quotes from the interviews, providing some insight into the views of the respondents.

5.3.1 Cost factors as a challenge of following a UXD approach

Although most respondents agreed with the existing literature which states that UXD is cost intensive, many respondents also felt that UXD was less cost intensive than other skills typically required on information systems development projects, such as developers and business analysts. There was also a strong belief in the group of respondents that, despite being cost intensive, UXD provided great value to information systems development projects.

The respondents agreed overwhelmingly that it was difficult to quantify the ROI for UXD, specifically because it was hard to separate UXD from the other elements contributing to the ROI on an information systems project. All respondents were also in absolute agreement that on most UXD projects there tends to be a lack of resources, with the most common challenges being time and budget constraints.

Table 6, below, summarises the respondents' perceptions on the cost factor challenges of following a UXD approach, and includes some quotes, to allow the reader to review some of the primary inputs used in the analysis.

Table 6: Respondents' perceptions of cost factors as a challenge of using a UXD approach

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
a. UXD is cost intensive.	9	3	1	"It may be true in the short term, but the cost is worth it in the long run." "UXD is more cost intensive than designing something badly. There is a perceived high cost, because its value is not realised." "It is actually not expensive when compared to the cost of skills such as front-end developers, but there is a perception that it is expensive." "UXD reduces cost overall." "There is a low availability of UXD specialists, thus a high cost."

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
b. Difficulty in quantifying ROI for UXD projects.	12	1		"You would need to conduct a perfect experiment to quantify the ROI." "We know in principle that it adds value, but it is difficult to quantify in many cases." "A better view of this is that the end result is typically better when UXD is performed." "In some cases it is easy to quantify it, for example when measuring conversion rates on e-commerce sites."
c. Lack of resources (time, money and people).	13			"Always!" "General problem in IT projects." "Timelines are our biggest challenge." "In my experience on my last project, we experienced a lack of skilled UXD people on the project, and we were pushed for time."

5.3.2 Skills factors as a challenge of following a UXD approach

There were diverging views on the proposed challenge of sub-optimal communication within project teams caused by the diverse backgrounds of typical UXD team members. Although just over half the respondents agreed that this was indeed a challenge, many respondents felt that the different backgrounds of team members provided the team with a range of alternative views and could lead to more innovation within the team.

Most respondents agreed with the proposition in the existing literature that the proper translation of user insights and requirements into a set of technical requirements was still a challenging task. However, many respondents felt that a skilled and experienced UXD practitioner should not encounter this issue as it was a question of having the necessary skill.

Table 7, below, summarises the respondents' perceptions of the skill factor challenges of following a UXD approach. It includes some quotes, to allow the reader to review some of the primary inputs used in the analysis.

Table 7: Respondents' perceptions of skills factors as a challenge of using a UXD approach

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
a. Members of typical UXD teams have different backgrounds and this may result in sub-optimal communication within the team.	7	5	1	"I disagree because I feel it works better when people have different backgrounds; each brings a different angle." "I actually see this as a strength: it allows you to obtain a diversity of views and could result in more innovation." "Different people bring different angles to the UXD process: the varied backgrounds and mandates actually complement each other in the process of designing a better user experience."

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
b. Proper translation and transformation of user insights and requirements into a set of technical requirements is still a challenging task.	11	1	1	“Even if a need is identified through the use of UXD, it is sometimes hard to know what will solve the need.” “I agree, but it does make it easier when a UXD methodology is followed.” “Not more so than a typical information systems development project.” “The challenge for me is accurately reflecting the insights in the design solutions.” “Also depends on the skill level of the designer.” “I disagree: wireframes actually make it a lot easier to translate and communicate requirements.” “It’s a skill thing: good UXD resources should be able to do this well.” “It is a challenge, because the developers are not typically part of the process.”

5.3.3 Addressing user needs as a challenge of following a UXD approach

Most respondents agreed with the proposition that solutions tailored to a specific user group may not be re-usable by other user groups. There was a perception that this challenge could be overcome by applying some user-group agnostic design principles.

There was strong support by the respondents for the proposition that it is difficult to ensure that users' voices are properly heard in the design process. Many respondents shared examples of projects where client stakeholders and respected project team members clearly opposed meeting the end user's needs in order to promote other business objectives.

Most respondents agreed that it was difficult to reflect the impact of the environment and context of use when performing usability testing. However, they still felt that usability testing was a vital component of the UXD methodology and that it did provide a positive impact, despite this shortcoming.

There was unanimous agreement by the respondents that users' ideas are not always easy to implement. The respondents' experience was that users were always keen to provide input and ideas, even when not requested to.

Table 8, below, summarises the respondents' perceptions of the challenge of addressing user needs when following a UXD approach. It includes some quotes, to allow the reader to review some of the primary inputs used in the analysis.

Table 8: Respondents' perceptions of addressing user needs as a challenge of using a UXD approach

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
a. Solutions tailored to a specific user group may not be re-usable by other user groups.	10	3		"You should consider other potential user groups in your designs." "Proper UXD won't result in this." "Sometimes you want it to be very specific." "One should always try to incorporate basic design principles, even though it is focused on a specific group, the experience should still be relatively positive for other user groups."

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
b. Ensuring that the users' voices are really heard in the design process.	10	3		"This can be overcome by taking the entire project team on the UXD journey with you." "It depends on the personality of the UXD practitioner." "You always have stronger people's views dominating in a project environment." "I recently worked with a UX designer who did not really think about user needs and he was very defensive about his designs." "Ensuring that users' voices are heard is the whole point of UXD." "We have a tendency to move toward comfort zones in what we currently know and think works well: not what users actually think and need." "We experience a lot of decisions made by our business stakeholders where users are not considered."

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
c. Usability testing does not always reflect the impact of the environment and context of use.	11	2		"I don't see this as a challenge, as usability testing provides a lot of value, despite having this challenge." "If done correctly, it should not be a challenge, but it is difficult to simulate an environment and context." "A good example of this would be a system which is political in nature." "Paper based testing cannot simulate any of that." "We have enough mechanisms to simulate the environment and context."
d. Users' ideas are not always feasible to implement.	12	1		"It's the UXD team's responsibility to make ideas more tangible, if applicable."

5.3.4 Methodology execution issues as a challenge of following a UXD approach

Most respondents confirmed that they were rarely co-located with users as part of the design process. They also confirmed a lack of continuous and adequate involvement of the user in their typical project environment.

Many respondents agreed with the proposition that a typical challenge found in UXD projects is insufficient attention paid to performing an explicit analysis of the user's existing environment and work practices. There was some disagreement on this issue, although both groups of respondents seemed to feel that this challenge was something which was typically faced when the UXD methodology was not being followed.

Most of the respondents disagreed with the proposition in the existing literature to the effect that rigid UXD methodologies leave little room for creativity, initiative and pro-activeness. Most respondents actually perceived the opposite to be true in the case of their organisation's methodology and felt that the methodology in use actually resulted in the very outcomes that, according to the proposition, are not possible because of rigid methodologies.

There was little support for the proposition that a common challenge in the field of UXD is that user exploitation occurs when companies launch immature products in order to obtain user feedback. Most respondents were not able to relate to this challenge and had not experienced this challenge before.

Table 9, below, summarises the respondents' perceptions of the methodology execution issues typically encountered when following a UXD approach. It includes some quotes, to allow the reader to review some of the primary inputs used in the analysis.

Table 9: Respondents' perceptions of methodology execution issues as a challenge of using a UXD approach

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
a. Lack of co-location between design team and users.	10	1	2	"This is similar to following an Agile process." "It is essential to have co-location to ensure success." "I disagree, because users should only be brought in occasionally, for example, in user testing. Otherwise it could lead to scope creep because of constant user input on requirements."

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
b. Neglect in performing explicit analysis of the user's existing environment and work practices.	8	4	1	""It depends on how you set up your project: if done right, this should not be a problem." "Conducting field studies allows you to understand the environment and context of use." "Due to constraints we were not able to spend a lot of time doing this on my current project." "I did not experience this as we approached the project correctly." "If UXD is done correctly, this should always be done."

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
c. Rigid methodologies leave little room for creativity, initiative and pro-activeness.	4	9		"I believe the use of the methodology adapts to the situation at hand." "I disagree, based on my experience with the BSG UXD methodology." "A lot less rigid than most SDLC (systems development lifecycle) methodologies." "I disagree 100%: the BSG methodology is a guide, more than a rigid methodology." "The BSG UXD methodology is open to innovating." "There is space for creativity in each step of our UXD methodology." "I experienced the UXD methodology as rigid because I was not exposed to it before: maybe rigidity is good for less experienced people."

Challenge	Number Agreed	Number Disagreed	Number without opinion	Selected respondent quotes
d. Immature products are sometimes launched in order to obtain user feedback. This practice can exploit users.	4	1	7	“It does not resonate with me, but it can probably be a challenge.” “This is not a UXD methodology specific problem.” “I don’t agree with doing this, but can see why it would be used.”
e. Lack of continuous and adequate involvement of the user.	10	2	1	“I have not experienced this.” “I did not experience this in our project.” “This was the case in my current project, and in most projects I can think of.”

5.3.5 Other identified challenges of following a UXD approach

The following themes outside of the challenges listed in Proposition 2 were also identified during the interview process:

Table 10: Challenges identified outside of Proposition 2

Theme	Respondent quotes
Obtaining buy-in from project sponsors.	"No buy-in for us to perform user testing." "A lot of people still struggle to see the value in UXD work." "You always have to convince people of the value of UXD; some people don't see the value that it can bring."
Involvement in the design process could lead to bias in administering user testing or reporting the results.	"It was difficult for me to stay neutral during usability testing, because I was part of the design team."
Misinterpretation or incorrect perception of the field of UXD.	"Even my internal team of business analysts and developers still think that UXD is only about graphic design." "I had a lack of awareness of UXD, and my view was that I knew what UXD was because I did a module on Human / Computer Interaction at university."

It is concluded that the challenges listed in Proposition 2 were mostly supported during the interviews. However, two of the challenges in that proposition were not strongly supported, and one of those challenges was generally disputed by the respondents. There were also three additional challenges, indicated in Table 10, that were identified and that did not form part of the proposition.

CHAPTER 6: DISCUSSION OF THE RESULTS

6.1 Introduction

This chapter discusses the results of the study and addresses those findings that both support and contradict the current literature, as stated in the propositions. Some findings that were not identified in the literature survey are also discussed in this report. The discussion is further enhanced by possible explanations and logical arguments where appropriate.

6.2 Discussion pertaining to Proposition 1

The results of the interviews clearly supported the benefits of following a UXD approach as proposed by the literature surveyed. The results pertaining to each of those proposed benefits are discussed below.

6.2.1 Business Benefits

The findings of the study supported the conclusion of Kujala (2003) and of Kujala, Kauppinen, Lehtola and Kojo (2005), that an increase in sales can be expected from a sales system that has been re-engineered using a UXD approach.

Jawdat, Obeidat, and Aljanaby's (2011) proposition, that designs are likely to be more persuasive and lead to targeted actions, was also strongly supported by the views of the respondents in the study.

There was unanimous support from the respondents for the belief that, when using a UXD approach in an information systems development project, systems are generally more suitable for use not only for their intended purpose but also for their environment of use; this view was stated by Abras et al. (2004) and Preece et al. (2002).

There was clear alignment between the findings of the study and the views of Kujala (2003) and Kujala, Kauppinen, Lehtola and Kojo (2005), who proposed the benefits of lower training costs and lower user support costs as a result of following a UXD approach.

The study illustrated clear support for Bailie's (2011) proposition that through adopting a UXD approach, business benefits will be created in the form of either increased revenue or operational savings. However, many of the respondents were concerned about quantifying the ROI. This concern supports the proposal that the difficulty in quantifying the ROI for UXD initiatives is one of the key challenges in the field, as described in Proposition 2 below.

The respondents were mostly in agreement with Wikström (1996) and Magnusson's (2003) findings that by following a user-centered approach, increased levels of innovation could be expected. A key insight gained from the interviews was that some of the respondents felt that the tools and techniques that form part of a UXD approach assisted them to be more creative.

6.2.2 User Benefits

The respondents were in agreement with Tek-Jin and Changwon (2011) who found that, by following a UXD approach, users may be provided with pleasant experiences on top of basic functionality.

The findings of the study support the proposition that designing with the target user groups in mind and involving users in the design process are likely to increase user acceptance and also create a greater understanding of the system. There was good support for the view that increased user productivity and increased user satisfaction result when a UXD approach is followed; this view was originally stated by Kujala (2003) and Kujala, Kauppinen, Lehtola and Kojo (2005).

Abras et al. (2004) proposed that designers can better manage users' expectations of a new product by following a user-centered approach. This viewpoint is supported by the findings of the study.

6.2.3 Information Systems Development Project Team benefits

The results of this study support the views of Kujala (2003) and Kauppinen, Lehtola and Kojo (2005), who proposed the benefits of an improved understanding and documentation of business requirements as well as an improved project success ratio, when a UXD approach is employed.

The respondents supported Ma and LeRouge's (2007) proposed benefit of greater empathy for users, as well as Cooper's (2004) view that following a UXD approach resulted in an increased focus on users and their goals.

Improved communication between users within project teams and increased engagement within design teams (Grudin & Pruitt, 2002; Adlin et al., 2006) are two other benefits supported by the results of the study.

The respondents supported the views of Adlin et al. (2006) and Keinonen (2010) who proposed that the use of personas and user involvement may lead to improved decision making; moreover, the respondents added that the use of user testing and conceptual designs result in the same benefit.

Finally, the study results align with the proposed benefit of being able to define the target user group more accurately through the use of personas (Miaskiewicz & Kozar, 2011).

6.2.3 Additional benefits from the study

In addition to the confirmation of all the benefits contained in Proposition 1, the study yielded some additional benefits.

Within the specific context of the case study, there was a perception among some of the respondents that following a UXD approach allowed the consulting firm under scrutiny to improve its service offering and reputation with clients. It could be argued that this is a secondary benefit which arises from the direct benefits of following a UXD approach, as contained in Proposition 1. In view of this claim, this will not be included as an additional benefit in the proposition.

There was consensus amongst the respondents that the UXD skillset was complementary to that of typical business analysis, and that additional value could be added to the task of business analysis by including some of the activities from a UXD approach. Since most of the respondents come from a business analysis background, and had recent exposure to training and execution of a UXD methodology, it could be assumed that their perceptions are accurate.

It can be concluded that the findings of the current literature on the benefits of following a UXD approach are valid within the context of the case study, and that some additional benefits may also apply within the same context.

6.3 Discussion pertaining to Proposition 2

6.3.1 Cost factors

Most of the respondents agreed with the view of Abras et al. (2004), that UXD may become quite cost intensive due the amount of time needed to perform a proper analysis of the users, the number of design iterations typically required and the range of people needed from different disciplines. Nevertheless, many respondents mentioned that the cost is relatively low when compared to other skills typically required in information systems development projects; moreover, there was a strong justification for the cost due to the value that UXD adds to a project.

There was unanimous support from the respondents for the view that it is not always easy to quantify the ROI specifically attributable to the UXD component of work, as proposed by the work of Preece et al. (2002). The respondents confirmed that a lack of resources (time, money and people) is one of the most common issues faced on UXD projects, as pointed out by Kujala et al. (2005). It has to be noted, however, that most respondents felt that this challenge was not unique to UXD projects, but was commonplace in most information systems development projects.

6.3.2 Skill factors

According to Preece et al. (2002), diversity in the backgrounds of the members of typical UXD teams may result in sub-optimal communication within the team. This view was shared by just over half of the respondents, but the others disagreed and argued that diversity would actually improve the overall ability of the team to look at design issues from different angles, and would improve the quality of designs. It can be reasoned that although this proposed benefit seems plausible, it still does not address the issue of sub-optimal communication within the team.

There was strong support for the proposition put forward by De Moor et al. (2010) that proper translation and transformation of user insights and requirements into a set of technical requirements is still a challenging task; nevertheless, many respondents still felt that a suitably skilled UXD practitioner should be able to overcome this challenge.

6.3.3 Challenges in addressing user needs

The results of the study mostly support Abras et al. (2004) in their view that solutions tailored to a specific user group may not be re-usable by other user groups. The challenge of ensuring that the users' voices are properly heard in the design process (N. Iivari, 2011) also resonated strongly with the respondents in the study.

There is a strong alignment between the results of the study and the proposition that usability testing does not always reflect the impact of the environment and context of use (Abras et al., 2004).

Strong support was also provided for Magnusson's (2003) statement that users' ideas are often not feasible to implement, and that these ideas should be seen as triggers to a design process, instead of mature concepts ready for implementation.

6.3.4 Methodology execution issues

The perceptions of the respondents showed strong alignment to Greenbaum and Kyng's (1991) viewpoint that a lack of co-location between the design team and users was commonplace in UXD projects, leading to challenges when conducting observations, interviews, user testing and other techniques at the core of UXD.

Another common challenge was that design teams gave insufficient attention to performing explicit analysis of the user's existing environment and work practices (N. Iivari, 2011). This view was mostly supported by the respondents, although there was also some disagreement evident, pointing to the fact that an explicit analysis of the user's existing environment and work practices is recommended as part of UXD best practice, as found in the UXD methodology of the firm under scrutiny.

A clear majority of respondents strongly disagreed with the challenge proposed by Keinonen (2010) that rigid methodologies leave little room for creativity, initiative and pro-activeness. The key theme that emerged from the interviews was that most respondents felt that the UXD methodology they were using was not restrictive at all, but was a guideline to follow. Respondents stated further that the methodology in use actually stimulated creativity and innovation by forcing them to think through aspects of design that they were not always familiar with.

Some respondents agreed with another challenge proposed by Keinonen (2010) that users may be exploited by being involved in or affected by the launch of immature products with the hope of obtaining the required user feedback from early adopters of the product or solution. However, most respondents felt that this challenge was not relevant to them, as these practices are not employed by the firm under scrutiny.

Finally, the results of the study supported the proposed challenge of a lack of continuous and adequate involvement of the user, as documented by De Moor et al. (2010).

6.3.5 Additional challenges from the study

In addition to showing similarities and differences to the challenges contained in Proposition 2, the study yielded some additional challenges.

Thus, the respondents identified the important challenge of obtaining buy-in from project sponsors for performing UXD activities on projects. They made many remarks about constantly having to advocate the value of UXD. It may be argued that because UXD is a relatively new field, there is not enough awareness in the information systems industry about the benefits that a UXD approach can provide.

The study also highlighted the challenge of a common misperception about the field of UXD. Thus, the study confirmed that some respondents struggled with team members and stakeholders who often thought that graphic design was the only element of UXD. One respondent confirmed that this was her view before being exposed to the UXD methodology within her firm. One could argue, as above, that UXD is a new field and awareness will grow as the field becomes more established.

Another finding was that it may be challenging for people involved in the design process to be completely objective and unbiased when their designs are evaluated through the process of user testing. This is a plausible proposition, and might be substantiated by more in-depth research into the field of user testing.

It can be concluded that the findings of the current literature on the challenges faced when following a UXD approach are mostly valid within the context of the case study, although there were some conflicting findings. There are also some additional challenges outside of Proposition 2 that may be valid within the same context.

6.4 Conclusion

The results of the study have been discussed in this chapter in relation to the propositions posed at the beginning of this report. As a result of the research conducted in this study, each proposition can be reworded as follows:

6.4.1 Proposition 1

Following a UXD approach in an information systems development project may results in some of the following benefits:

1. Business benefits:
    a. Increased sales.
    b. Designs are likely to be more persuasive and to lead to targeted actions.
    c. Systems are generally more suitable for use both for their intended purposes and environments of use.
    d. Decreased training costs.
    e. Decreased user support costs.
    f. Positive ROI.
    g. Increased levels of innovation, specifically through the use of structured UXD methodologies.
2. User benefits:
    a. Users may be provided with pleasant experiences on top of basic functionality.
    b. Increased user productivity.
    c. Increased user satisfaction.
    d. Increased user acceptance and understanding.

e. Improved management of user's expectations of a new system.

3. Information Systems Development Project Team Benefits:

    a. Improved understanding and documentation of business requirements.

    b. Improved project success ratio.

    c. Greater empathy for users.

    d. Improved communication about users within project teams and increased engagement within design teams.

    e. Increased focus on users and their goals.

    f. Improved decision making in the design process.

    g. Defining the target user group more accurately.

    h. Complements traditional business analysis and provides additional value to the information systems development lifecycle.

6.4.2 Proposition 2

A practitioner following a UXD approach in an information systems development project may face some of the following challenges:

1. Cost factors:

    a. UXD is cost intensive

    b. There is difficulty in quantifying ROI for UXD projects.

    c. Lack of resources (time, money and people).

2. Skills factors:

a. Diversity of the backgrounds of typical UXD team members may hold some benefits such as a diversity of ideas, but this may result in sub-optimal communication within the team

b. Proper translation and transformation of user insights and requirements into a set of technical requirements is still a challenging task.

c. It may be challenging for those involved in the design process to stay completely objective and unbiased when their own designs are being tested

3. Addressing user needs:

    a. Solutions tailored to a specific user group may not be re-usable by other user groups.

    b. Need to ensure that the users' voices are really heard in the design process.

    c. Usability testing does not always reflect the impact of the environment and context of use.

    d. Users' ideas are not always feasible to implement.

4. Methodology execution issues:

    a. Lack of co-location between design team and users.

    b. Neglect in performing explicit analysis of the user's existing environment and work practices.

    c. Lack of continuous and adequate involvement of the user.

5. Stakeholder support and understanding:

    a. Lack of buy-in from project sponsors for performing UXD activities on projects.

b. Misperceptions about the field of UXD are commonly held by both project sponsors and team members.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This chapter describes the conclusions of the study, and makes recommendations. This chapter also includes suggestions for further research in the field of UXD, identified throughout the research process described in this report.

7.2 Conclusions of the study

The research has confirmed that there are numerous benefits and challenges when following a UXD approach in an information systems development project. Most of these were identified in previous studies, but this study has introduced some alternatives.

The study found that in addition to the benefits currently documented in previous studies, UXD also complements traditional business analysis and provides additional value to the information systems development lifecycle (SDLC).

The study also found that while most challenges proposed by the existing literature were confirmed, the belief that UXD methodologies were rigid and could constrain innovation, initiative and pro-activeness is not accurate; on the contrary, many respondents felt that following a UXD methodology could stimulate creativity and innovation by forcing project team members to think through aspects of design with which they were not familiar.

Another finding not specifically mentioned in the literature was that a lack of buy-in from project sponsors for performing UXD activities on projects, and misperceptions about the field of UXD commonly held by project sponsors and team members, are typical challenges that a practitioner following a UXD approach in an information systems development project may face.

7.3 Recommendations to management of UXD teams

The management of any team following a UXD approach needs to consider the following three recommendations.

First, it is recommended that the UXD team management must not only understand the proposed benefits that a UXD approach brings, but must also understand the underlying principles and “best practice” elements of a UXD methodology that will ensure that those benefits materialise.

Second, it is recommended that the management of a UXD team must understand the common challenges the team may face, and should aim to avoid running into those challenges. Most of the challenges can be avoided through the use of a “best practice” UXD methodology.

Third, it is recommended that all UXD teams should be provided with and trained on the use of a UXD methodology founded on UXD principles, tools and techniques that have been well researched and documented and accepted as “best practice” within the UXD industry. However, any such methodology should not be too rigidly applied, but should serve as a guideline to the team.

7.4 Recommendations for organisations considering embarking on new information system design projects

Organisations considering whether to embark on new information system design projects need to be aware of the potential benefits and challenges that the inclusion of a UXD approach may bring to their projects, as documented in the discussion section above.

It is recommended that any such organisations should ensure that the UXD team and management appointed to perform any such projects are knowledgeable and experienced in the “best practice” elements of UXD and are following a proven UXD methodology.

It is also recommended that an organisation planning to follow a UXD approach for proposed projects should agree upon success criteria before starting. These criteria should be selected from the proposed benefits identified in this report.

These organisations should also ensure that sufficient executive and stakeholder support is given to any UXD projects undertaken.

7.5 Suggestions for further research

Further research into different UXD methodologies, their effectiveness and levels of rigidity is suggested in order to gain a better understanding of the proposed challenge of rigid UXD methodologies.

It is also suggested that further research be conducted on the barriers to the understanding and acceptance of UXD as an established discipline within the information systems development landscape.

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APPENDIX A:

Interview Guide

Company Name	
Business Unit	
Name of Interviewee	
Job Title	

Interview Questions

1. Please describe your understanding of User Experience Design (UXD).

2. Which tools and techniques from the field of UXD have you used within the context of information systems projects? Describe how each tool or technique was used.

3. What benefits did you experience or effect by using UXD as a discipline – please relate benefits to the overall field of UXD or specific tools and techniques.

4. What challenges did you experience or observe when using a UXD approach? Please relate challenges to the overall field or approach of UXD or to specific tools and techniques.

5. Please state whether you agree, disagree or have no opinion on each of the following proposed benefits of following a UXD approach. Please provide reasons or examples to clarify your views.

Proposed benefits of following a UXD approach	**Agree**	**Disagree**	**No opinion**	**Comments**
1. Business benefits:				
a. Increased sales.				
b. Designs are likely to be more persuasive and lead to targeted actions.				
c. Systems are generally more suitable for use both for its intended purpose and environment of use.				
d. Decreased training costs.				

Proposed benefits of following a UXD approach	Agree	Disagree	No opinion	Comments
e. Decreased user support costs.				
f. Positive ROI.				
g. Increased levels of innovation.				
2. User benefits:				
a. Users may be provided with pleasant experiences on top of basic functionality.				
b. Increased user productivity.				
c. Increased user satisfaction.				

Proposed benefits of following a UXD approach	Agree	Disagree	No opinion	Comments
d. Increased user acceptance and understanding.				
e. Improved management of user's expectations of a new system.				
3. Information Systems Development Project Team Benefits:				
a. Improved understanding and documentation of business requirements.				
b. Improved project success ratio.				
c. Greater empathy for users.				

Proposed benefits of following a UXD approach	Agree	Disagree	No opinion	Comments
d. Improved communication about users within project teams and increased engagement within design teams.				
e. Increased focus on users and their goals.				
f. Improved decision making in design process.				
g. Narrowing the target user group more accurately.				

6. Please state whether you agree, disagree or have no opinion on each of the following proposed challenges of following a UXD approach. Please provide reasons or examples to clarify your views.

Proposed challenges of following a UXD approach	**Agree**	**Disagree**	**No opinion**	**Comments**
1. Cost factors:				
a. UXD is cost intensive.				
b. Difficulty in quantifying ROI for UXD projects.				
c. Lack of resources (time, cost and people).				
2. Skills factors:				
a. Variance in backgrounds of typical UXD teams may result in sub-optimal communication				

Proposed challenges of following a UXD approach	Agree	Disagree	No opinion	Comments
within the team.				
b. Proper translation and transformation of user insights and requirements into a set of technical requirements is still a challenging task.				
3. Addressing user needs:				
a. Solutions tailored to a specific user group may not be re-usable by other user groups.				
b. Ensuring that the user's voices are really heard in the design process.				

Proposed challenges of following a UXD approach	Agree	Disagree	No opinion	Comments
c. Usability testing does not always reflect the impact of the environment and context of use.				
d. Users' ideas are not always feasible to implement.				
4. Methodology execution issues:				
a. Lack of co-location between design team and users.				
b. Neglect in performing explicit analysis of the user's existing environment and work practices.				

Proposed challenges of following a UXD approach	Agree	Disagree	No opinion	Comments
c. Rigid methodologies leave little room for creativity, initiative and proactiveness.				
d. User exploitation when launching immature products in order to obtain users feedback.				
e. Lack of continuous and adequate involvement of the user.				

APPENDIX B

Consistency matrix

The consistency matrix in Table 11, below, illustrates the alignment of the sub-problems, the references used to investigate each sub-problem and the proposition that resulted from the literature reviewed. It also lists the analysis method used to analyse the data.

Table 11: Consistency Matrix

Determine the benefits and challenges typically experienced when following a UXD methodology					
Sub-problem	**Literature Review**	**Propositions**	**Source of data**	**Type of data**	**Analysis**
Determine the benefits typically experienced when following a UXD methodology.	• Abras et al. 2004. • Adlin et al., 2006 • Cooper, 2004. • .Grudin & Pruitt, 2002. • Keinonen (2010), • Kujala. 2003 • Kauppinen, Lehtola and Kojo. 2005. • Nielsen. 2002 • Iivari. 2011. • Manning, Temkin, & Belanger, 2003. • Miaskiewicz & Kozar. 2011. • Preece et al. 2002 • Shrimpton-Smith, Zaman, & Geerts,	Following a UXD approach in an information systems development project may result in some of the following benefits: 1. Business benefits: a. Increased sales. b. Designs are likely to be more persuasive and to lead to targeted actions. c. Systems are generally more suitable for use both for their intended purposes and environments of use. d. Decreased training costs. e. Decreased user support costs. f. Positive ROI. g. Increased levels of innovation. 2. User benefits:	Interview questionnaire questions: 1. Which tools and techniques from the field of UXD have you used within the context of information systems projects? Describe how each tool or technique was used. 2. What benefits did you experience or effect by using UXD as a discipline – please relate benefits to the overall field of UXD or specific tools and techniques.	Qualitative	Analyse data concurrently with data collection.

Determine the benefits and challenges typically experienced when following a UXD methodology					
Sub-problem	**Literature Review**	**Propositions**	**Source of data**	**Type of data**	**Analysis**
	2008	a. Users may be provided with pleasant experiences on top of basic functionality. b. Increased user productivity. c. Increased user satisfaction. d. Increased user acceptance and understanding. e. Improved management of user's expectations of a new system. 3. Information Systems Development Project Team Benefits: a. Improved understanding and documentation of business requirements. b. Improved project success ratio. c. Greater empathy for users. d. Improved communication about users within project teams and increased engagement within design teams.	Other: 1. Documentary evidence		

Determine the benefits and challenges typically experienced when following a UXD methodology					
Sub-problem	**Literature Review**	**Propositions**	**Source of data**	**Type of data**	**Analysis**
		e. Increased focus on users and their goals. f. Improved decision making in the design process. g. Defining the target user group more accurately.			
Determine the challenges typically faced when following a UXD methodology.	• Abras et al. 2004. • De Moor et al. 2010. • Iivari 2011. • Kujala. 2003. • Preece et al. 2002. • Keinonen. 2010. • Magnusson, 2003	A practitioner following a UXD approach in an information systems development project may face some of the following challenges: 1. Cost factors: a. UXD is cost intensive. b. There is difficulty in quantifying ROI for UXD projects. c. Lack of resources (time, money and people). 2. Skills factors: a. Members of typical UXD teams have different backgrounds and this may result in sub-optimal communication within the team.	Interview questionnaire questions: 1. Which tools and techniques from the field of UXD have you used within the context of information systems projects? Describe how each tool or technique was used. 2. What challenges did you experience or observe when using a UXD approach?	Qualitative	Analyse data concurrently with data collection.

Determine the benefits and challenges typically experienced when following a UXD methodology					
Sub-problem	**Literature Review**	**Propositions**	**Source of data**	**Type of data**	**Analysis**
		b. Proper translation and transformation of user insights and requirements into a set of technical requirements is still a challenging task. 3. Addressing user needs: a. Solutions tailored to a specific user group may not be re-usable by other user groups. b. It is necessary to ensure that the users' voices are really heard in the design process. c. Usability testing does not always reflect the impact of the environment and context of use. d. Users' ideas are not always feasible to implement. 4. Methodology execution issues: a. A lack of co-location between design team and users. b. Neglect in performing explicit analysis of the user's existing environment and work practices.	Please relate challenges to the overall field or approach of UXD or to specific tools and techniques. Other: 1. Documentary evidence		

Determine the benefits and challenges typically experienced when following a UXD methodology					
Sub-problem	**Literature Review**	**Propositions**	**Source of data**	**Type of data**	**Analysis**
		c. Rigid methodologies leave little room for creativity, initiative and pro-activeness. d. Immature products are sometimes launched in order to obtain user feedback. This practice can exploit users. e. A lack of continuous and adequate involvement of the use			