TOWARDS A USER EXPERIENCE-BASED ONLINE LEAD GENERATION FRAMEWORK CONTRIBUTING TO BUSINESS VALUE

by

Wynand Beukes

96010399

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Study leader:

Prof H Smuts

Prof A van der Merwe

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ABSTRACT

The digitalisation of business markets ensures a highly dynamic environment that can be difficult to navigate and also increases competitiveness within the market. Additionally, the rise of digitalisation grants (prospective) customers tremendous decision-making power. This makes attracting and retaining customers a cumbersome pursuit. With customers at the centre of any business, they are essential for creating value. Many businesses' value-creating pathways have been fully explored; however, there is a lack of research on applying User eXperience (UX) knowledge to the lead generation process to increase lead conversions and business value. This research study aims to identify the components contributing to a User eXperience-based Online Lead Generation Framework (UXOLF) that can deliver increased business value.

This design science research (DSR) study comprises a six-phase main cycle with three sub-cycles. The first phase of the main cycle, problem identification, used a questionnaire for data collection. The second phase, defining the objectives of a solution, used document analysis as data collection. Design and development, the third phase, has a sub-cycle consisting of three phases with a Participatory Design (PD) session as the data collection method across the sub-cycle. The first version of the UXOLF was created in this phase. The fourth phase of the main cycle has a sub-cycle consisting of four phases. This phase utilised A/B tests to demonstrate the UXOLF, where obstructions are identified, hypotheses formulated, interfaces updated and hypotheses tested. The study evaluated the UXOLF in the fifth phase, consisting of the final sub-cycle with two phases. The evaluation was conducted through the PD iteration, and the researcher made the final changes to the framework in the final development phase. Finally, the sixth phase, namely communication, is enacted through this paper.

The UXOLF created by this research consists of nine concepts and nine design principles as sub-concepts. The main concepts of the UXOLF, in order of appearance, are 1) environment, 2) business strategy, 3) digital transformation strategy, 4) brand awareness, 3) value proposition, 4) user experience design principles (nine principles are presented), 5) communication, 6) online lead generation (with three steps on the process), 7) evaluation and data-driven decision-making, 8) customer and employee experience and 9) business value. The identified concepts underpins a business's ability to effectively implement UX design principles onto their online lead-generating platform.

These concepts are interrelated and should be considered in order of appearance since they require an outside-in perspective. The framework can be regarded as a meta-model that guides thinking and aids businesses in optimising their lead generation process as a value-creating pathway by implementing UX practices.

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1. BACKGROUND

Customers are the lifeblood of any business. The success of a business relies on the revenue it acquires from its customers; hence, there can only be a business if there are customers (Fleming & Weiss, 2015; Lehtinen, 2020). All businesses are searching for ways to grow their loyal customer base, regardless of the types of services or products they offer (Swieczak & Kukowski, 2016; Zumstein et al., 2021). It is essential to reach potential customers successfully to build a customer base.

The customer life cycle typically starts with a customer searching online, often before they contact a business (Omoruyi & Chinomona, 2019). In business-to-business (B2B) markets, 60% of the purchasing process is completed before a salesperson becomes involved, and up to 90% in business-to-customer (B2C) markets (Bondarenko et al., 2019; Koski, 2016). In the automotive industry, around 40% of customers search for product information online before purchasing offline (Banerjee & Bhardwaj, 2019). When personal selling is necessary, i.e., customers have to visit the business to purchase a product, they will spend even more time browsing online to ensure they are not going to waste their time when physically visiting the business (Banerjee & Bhardwaj, 2019a). Customers' tendency to browse online first means most businesses' corporate websites are responsible for gathering leads. As generating and converting leads is the fundamental task of any lead generation site, businesses must fully leverage their websites to procure business (Lehtinen, 2020).

Marketing defines a potential customer or recipient as a 'lead' whose potential indicates a level of interest in the products or services offered. Marketing activities aim to create a valuable customer base by providing the business with quality leads, which are leads with the highest potential of becoming an exchange value generator, i.e., a paying customer. Typically, after quality leads are delivered, the sales team is responsible for converting leads into paying customers. When this is done effectively, it has a significant impact on a business's sales and growth rate (Swieczak & Kukowski, 2016; Sebastian et al., 2017; Lehtinen, 2020).

Lead generation focuses on direct marketing and aims to motivate specific actions. The motivated action can vary from something as simple as clicking a button to visiting a store; the actions the

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marketing team aims to encourage would depend on their attempted goal (Swieczak & Kukowski, 2016). Ultimately, the value expected from the specific business influences the marketer's goal (Zumstein et al., 2021). The value a business gains from the action can vary between a range of factors such as profitability, customer loyalty, brand awareness and several others—and is known as business value (Hughes, 2012; Vial, 2019). When the objective is to motivate users to take action and become a business (sales) lead, lead generation will amount to the expected business value. There is an increase in business trading opportunities with the generation of more leads, which could result in increased sales and revenue (Mosakhani et al., 2012; Bondarenko et al., 2019).

Generating leads can become very expensive, highlighting the importance of focusing on the volume of website traffic required and the conversion rate of leads generated (Swieczak & Kukowski, 2016; Zumstein et al., 2021). To enhance the conversion rate of leads, it is vital for a business to nurture every lead throughout every touchpoint with the business and to continuously optimise and improve these touchpoints (Lehtinen, 2020). With business models using multiple marketing channels and customer touchpoints, it can become challenging to manage and track the customer journey, such as when prospective leads lose or gain interest to continue interacting with the business, either online or offline (Chaffey & Patron, 2012; Behera et al., 2020). However, managing leads online is much easier than managing leads offline, as the business can track leads online using relevant analytical tools and systems (Vial, 2019; Behera et al., 2020).

User eXperience (UX) is essential when examining an online lead generation platform. UX is a relatively new term in information system (IS) research, where the term is encapsulated within customer experience (CX). CX is the "sum of a customer's interactions with a company across all of its touchpoints—including employees, channels, systems, products and services—and the resulting perceptions about the brand" (Nash, Armstrong & Robertson, 2013: 32). UX pertains to engagement with the business through digital channels only (Forlizzi & Battarbee, 2004; Weinman, 2015). UX is a direct driver of business value, and disregarding or ineffectively implementing it can lead to catastrophic damage to the business and hinder its ability to remain relevant in a competitive domain (Puccinelli et al., 2009; Hartson & Pyla, 2019). Successful companies can foster relationships with existing customers and initiate relationships with

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individuals before they become customers. Businesses can form customer relationships in several ways, such as brand awareness (Fleming & Weiss, 2015; Świeczak & Łukowski, 2016; Omoruyi & Chinomona, 2019). Additionally, businesses can form customer relationships by ensuring that any interaction between the individual and the product or business is positive, which is the aim of UX (Lehtinen, 2020).

At this point it is important to note the difference between a user interface (UI) and UX. UI is the tool that facilitates the communication between complex systems and front end users (Cybulski & Tymoteusz, 2020), on the other hand UX is a somewhat elusive term that encompasses the relationship between a customer and a product or business (Hassenzahl & Tractinsky, 2006; Sebastian et al., 2017). This relationship is affected by numerous variables that could foster or end the relationship (Hartson & Pyla, 2019). UX is highly *subjective*, *dynamic*, *holistic* and *complex*, to name a few (Hassenzahl & Tractinsky, 2006; Hartson & Pyla, 2019), meaning that it differs within and between individuals, which complicates the design of an interface to improve UX. A UX practitioner can design for an experience by optimising the many variables influencing the relationship between product and user (Lehtinen, 2020).

A business's success is not solely determined by its ability to attain more customers but also by its ability to retain customers (Fleming & Weiss, 2015; Zumstein et al., 2021). Customers' emotional responses to advertisements and the interfaces they interact with significantly impact a business's ability to gain and retain customers (Song, Ruan & Jeon, 2021). The emotional impact is a characteristic of UX and demonstrates its importance in online lead generation (Hartson & Pyla, 2019). Hence, UX plays an essential role in online lead generation since creating positive interactions over time fosters relationships that will help a business retain customers (Zumstein et al., 2021). Accordingly, customer retention provides repeated value to the business (Priem, 2007).

1.1 PROBLEM STATEMENT

Up to 60% of the purchase experience with business-to-business (B2B) customers occurs online before sales executives get involved; 40% of automotive customers search for information online before deciding to visit a store (Koski, 2016). Nonetheless, businesses are not yet grasping the

importance of converting leads by providing customers with an enjoyable UX—which, ultimately, drives business value.

Even when businesses recognise the importance of UX and investigate ways to implement strategies, they might still be using less effective UX strategies because there is no official UX-based lead generation framework to which they can refer. For some businesses, this might mean following a trial-and-error approach for months or years; for others, it could affect their success detrimentally (Dougherty & Murthy, 2009; Swieczak & Kukowski, 2016).

The traditional lead generation model could be more effective in the digital age as it is highly focused on volume at the top of the sales funnel (Leboff, 2016; Zumstein et al., 2021). This model aims to reach many people, even those less likely to be interested in the business offerings (Leboff, 2016). The focus on volume can become challenging and expensive as the business works on identifying those customers who contribute to the business revenue. It is challenging and costly because the quality of the leads diminishes if the number of leads increases with uninterested users (Lehtinen, 2020; Zumstein et al., 2021), which, in turn, could also cause a decrease in the return on investment (ROI) for the model implemented (Swieczak & Kukowski, 2016; Bondarenko et al., 2019). With the traditional lead generation model, there is a clear distinction between the marketing department generating leads and the sales department converting the prospect leads into paying customers (Leboff, 2016). In the digital age, however, converting leads via online platforms has become essential to businesses (Zumstein et al., 2021). Consequently, there has been an increase in novel lead-generation strategies in recent years (Swieczak & Kukowski, 2016). Implementing these lead-generation strategies can sometimes make the existence of sales departments redundant (Swieczak & Kukowski, 2016; Graesch, Hensel-Börner & Henseler, 2021). The redundancy of sales departments occurs because effective lead generation strategies absorb the sales team's responsibilities as lead generation aims to assist and drive sales (Swieczak & Kukowski, 2016; Behera et al., 2020).

Creating brand awareness and establishing a strong and positive brand to which potential customers can relate are some of the essential marketing activities of any business. A solid and respected brand can be a lead-generation multiplier (Schultz, Doerr & Frederiksen, 2013;

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Swieczak & Kukowski, 2016; Lehtinen, 2020). The reason for this is that brand awareness allows for the creation of a relationship between prospective users and a business, which, in turn, allows for enhanced trust in the business and increases the likelihood that the prospective customer becomes a paying one (Świeczak & Łukowski, 2016; Zhou, Li & Liu, 2010; Lehtinen, 2020). However, increasing visibility or reputation alone is insufficient to motivate potential customers towards a sale (Schultz et al., 2013; Omoruyi & Chinomona, 2019).

Customers spend most of their purchasing journey browsing online first and then decide to either continue or end such a journey and restart it online with a business competitor (Hassenzahl & Tractinsky, 2006; Lehtinen, 2020). Users moving on to competitors results in a wastage of the resources that acquired the lead in the first place, thereby providing competitors with a free lead and the opportunity to convert the user on their platform. Every lost lead is a lost opportunity to reach or exceed revenue goals because there is a clear relationship between a higher number of converted leads and the possible growth of a business (Lehtinen, 2020). For customers to move along the sales cycle and create tangible exchange value for a business (Priem, 2007; Koski, 2016; Vial, 2019), in other words becoming paying customers, website traffic needs to convert into leads (Rucker, 2016; Lehtinen, 2020). When a corporate website fails to convert visitors into leads, the business loses the opportunity not only to cover the marketing costs spent to attract the leads but also to generate profit. When a website fails to act as a conversion engine for online traffic, all other traffic-generating digital marketing efforts would be unsuccessful as the traffic would be deemed worthless (Rucker, 2016; Lehtinen, 2020). One of the main reasons users do not convert into leads or customers online is that their experience did not motivate them to do so (Hassenzahl & Tractinsky, 2006; Song et al., 2021). When a user experiences a positive experience online, it promotes their usage behaviour and, eventually, takes them further through the sales funnel (Swieczak & Kukowski, 2016; Song et al., 2021).

Optimising a corporate website to increase the conversion rate of leads can be done by implementing UX strategies that adhere to customer needs (Lehtinen, 2020). When a website succeeds in providing visitors with a positive UX, they tend to stay on the website longer, ultimately giving the business more time and opportunity to motivate the visitor to take action, thereby converting the person into a paying customer (Vial, 2019; Lehtinen, 2020). With more

leads generated, a business must ensure that it can manage and nurture additional leads to bring about maximum benefits. Lead management includes lead nurturing, which incorporates building relationships with potential customers throughout the customer journey (Zumstein et al., 2021). An average of 96% of leads are not ready to buy immediately; therefore, lead nurturing is essential for any digital business strategy (Bondarenko et al., 2019). Without good management and nurturing of leads, businesses will waste efforts, time and money as leads fall through (Swieczak & Kukowski, 2016; Zumstein et al., 2021).

With the increased use of digital channels as a communication medium and e-commerce platform, UX is expanding as a study topic and becoming essential for creating unique and competitive products (Djamasbi, 2014; Hartson & Pyla, 2019). Many businesses conduct UX or useability studies to enhance their digital interfaces, such as websites, to retain their competitive abilities (Djamasbi, 2014; Pettersson et al., 2018). Businesses that engage in UX research produce commercial value throughout the development life cycle by integrating and eliminating any useability issues that arise after a website has been deployed (Djamasbi, 2014; Kashfi, Feldt & Nilsson, 2019). Sources report that many businesses still need to grasp the impact of UX on online lead generation, or if they do, they do not possess the knowledge or resources to implement effective UX strategies (Forlizzi & Battarbee, 2004; Kashfi et al., 2019).

UX implementation aims to increase the probability that any given user will experience interacting with a product or business positively. Creating a positive user experience impacts business value positively as UX directly drives business value (Hartson & Pyla, 2019). Creating a positive UX will give users a sense of value (Lehtinen, 2020), allowing for a loyal relationship between the two parties (Zumstein et al., 2021). Accordingly, loyal customers will create a continuous stream of revenue or exchange value for the business and and this value, in turn, can be repurposed to create additional value in other parts of the business (Priem, 2007; Vial, 2019).

Any product can reach a vast range of users through the internet across demographics, cultures, genders and many more (Swieczak & Kukowski, 2016; Shneiderman et al., 2018; Lehtinen, 2020). Reaching such a vast range of users, coupled with the elusive nature of UX (Kashfi et al., 2019; Hartson & Pyla, 2019) makes the design for a positive user experience problematic. The difficulty

associated with UX implementation can lead to complete disregard or ineffective implementation (Dougherty & Murthy, 2009; Swieczak & Kukowski, 2016). This study addresses the dearth of literature on the complexity of UX implementation in an online lead generation process. These two business concepts are multifaceted and complex. Despite previous research into these activities in isolation, no research on unifying these activities has been undertaken. The isolated investigation of these activities is insufficient because their combination could produce additional considerations. Therefore, this study aims to simplify the implementation of UX into an online lead-generation platform to drive business value by developing and demonstrating a framework.

1.2 RESEARCH QUESTIONS

The research questions consist of one main and three supplementary research questions. The main research question focused on the components of a UXOLF. The main research question is:

> What are the components of a UX-based online lead generation framework contributing to business value within the automotive field?

The supplementary research questions supporting the main research question are:

> 1) Why is synthesising a user experience online lead generation framework (UXOLF) necessary?
> 2) What effect does UX have on online lead generation?
> 3) What are the challenges in implementing the UXOLF?

The answers to these questions aided the researcher in implementing the DSR strategy by identifying the lack of knowledge extant in the automotive industry, specifically within its information technology (IT) departments. Furthermore, the pursuit of answers to the research questions aided in formulating the UXOLF.

1.3 ABOUT THE CASE ORGANISATION

Since its establishment in 2001, the case organisation has expanded its services throughout South Africa, with more than fifteen branches nationwide. This business found that more people are turning to the second-hand car market, giving cars a longer lifespan in South Africa (five to six

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owners [Venter, 2021]). This longer vehicle lifespan allows the organisation to buy and sell a desirable average of more than ten thousand cars monthly. When selling a vehicle to the organisation, the business requires a customer to complete the online form on its website that generates a unique buy lead tracking number. The online form requires customers to submit details about the vehicle they want to sell and personal details, allowing the business to reach out to them.

Once a customer has applied, the lead is allocated to a team of experts. All applications go through specific processes and checkpoints, ensuring that the price estimate that prospective customers receive is satisfactory. Once the experts decide on an offer, the customer receives the estimated offer through multiple communication channels. At this point, customers either decide to proceed with the process or to end the process. If the customer continues, an organisational buyer schedules an appointment to evaluate and test drive the vehicle. Then, the customer receives a final offer, and if they accept, the organisation helps them with all the paperwork and pays the customer immediately.

This organisation prioritises the digital aspect of their business and constantly develops and improves its corporate website to meet the needs of its customers better. The CXO Advocate of the Year award applauded the business's digital growth in 2020. The organisation is on an ongoing digital transformation journey, making the proposed research highly relevant. The results of the suggested research will add knowledge to the business, enhancing its competitiveness.

In the South African context, competition between automotive dealers is fierce and staying ahead of the competition is vital to the success of these companies. Besides the ongoing digital transformation journey, online lead generation is a crucial differentiator for the organisation under study as the industry leader within the automotive industry. Currently, the organisation receives an average 8-million unique website visitors monthly, thus allowing this study to conduct the research experiment with many users.

Another benefit of utilising the organisation for this study is that its customer base includes a vast array of individuals across various demographics, which limits bias in the results. An individual intending to buy or sell a vehicle is not necessarily part of a niche group of people with unique

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needs and desires. Owning a vehicle is a basic need for most people who can afford it and is not limited to specific genders, races or even interests. Income level, customers' ability to pay for a vehicle or being in a position to sell a vehicle are the main influencing factors and are unavoidable since income is a factor that will always influence customers and their needs.

By utilising the organisation and its platforms, this study determined the effect of UX design on users' experience online, which affects a business's ability to generate online leads and, ultimately, its effect on the entire business. The study achieved this objective by first evaluating customers' behaviour on the business' website, specifically the online lead generation section, in its current state. This was followed by collecting data about how to improve these interactions. After establishing the areas in which improvements are possible, the researcher investigated further to determine how these areas can be adapted to elevate users' experiences. By so doing, the study determined whether the improvement in the online lead form impacted the business as a whole. As a consequence, the study highlights specific areas for businesses to focus on and provides solutions for rectifying them.

1.4 PURPOSE OF THE STUDY

For a business to succeed in the 21st century, it must take a customer-centric approach (Setia, Venkatesh & Joglekar, 2013; Hartson & Pyla, 2019). Implementing quality UX impacts a user's experience online as well as a company's entire brand (Law et al., 2009; Behera et al., 2020). Customers value every interaction with a business, highlighting the importance of every touchpoint a customer has with a business. Often, businesses continuously increase their marketing budgets to reach a larger audience yet do not invest time or capital into nurturing their existing online users through effective UX strategies. Moreover, businesses do not allocate enough of their budget to implementing strategies towards improving their lead conversion rate, even though most businesses have weak online conversion rates.

This study aims to assist businesses within the automotive field or in the B2B domain to succeed in the 21st century by providing them with insight and knowledge about the power of effective UX design. This distinction of the type of business on which this study focuses is essential because lead-life cycles and user retention differ from those of B2C and other business domains.

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Specifically, most South Africans have owned their car for ten years or longer (Staff Writer, 2019), meaning customer retention will take years to realise. The length of customer retention can be too late for some businesses as South Africa has a relatively high competitive index (Alfaro et al., 2012). In the 21st century, most customers originate their customer journeys online, trying to find a business that meets their needs and gains their trust. Specifically, approximately 40% of automotive customers do extensive research to acquire substantial knowledge before any company sales representatives become involved (Banerjee & Bhardwaj, 2019b). Businesses need to grasp the importance of providing these potential customers with a positive user experience online and that customers who find their experiences disagreeable will quickly move on to a competitor.

As the implementation of UX design can become time-consuming and often costly, there exists a need for an affordable and effective solution. This study will highlight the need for an academically published UX framework, proposing an effective solution for businesses (big or small) to incorporate a UX-based online lead generation strategy into their business easily.

This study investigates the impact of UX optimisation on users' online behaviour and its effect on an automotive business' online lead logging ability. The purpose is to discover the balance between increasing budgets to drive lead generation volume and increasing budgets to drive website conversion rate through good UX design.

In closing, this study aims to indicate the importance of UX in generating business value via online lead generation. The goal is to have businesses understand the adverse financial effect of ignoring the implementation of UX design, especially in a highly competitive digital era. This study further strives to take the initial steps towards designing a framework to assist in implementing UX into online lead generation platforms.

1.5 RESEARCH METHODOLOGY AND APPROACH

This section outlines the research methodology for this study, first discussing the research paradigm or philosophy, followed by the research strategy. The research strategy is divided into relevant phases, where the research choice, approach and time horizon are discussed independently.

Research philosophy/paradigm: The study followed a pragmatic approach. Pragmatism is highly focused on individual situations and prefers to treat situations based on the implication specific actions would have. It allows for both qualitative and quantitative data collection and analysis and serves as a middle ground between interpretivism and positivism (Saunders et al., 2009). It allows the researcher to conduct the research as comprehensively as possible while conforming to the philosophy.

Research strategy: Design science research (DSR) is a research strategy concerned with solving real-world problems by creating an artefact (Peffers et al., 2008), which in this study, will be the proposed framework. DSR allows for the iteration of the necessary steps to refine the framework and delivers a comprehensively working framework. The DSR method used for this study is the framework proposed by Peffers et al. (2008), which entails six phases: Problem Identification and Motivation, Objectives of a Solution, Design and Development, Demonstration, Evaluation and Communication. Figure 1 depicts an overview of these phases applied to this research.
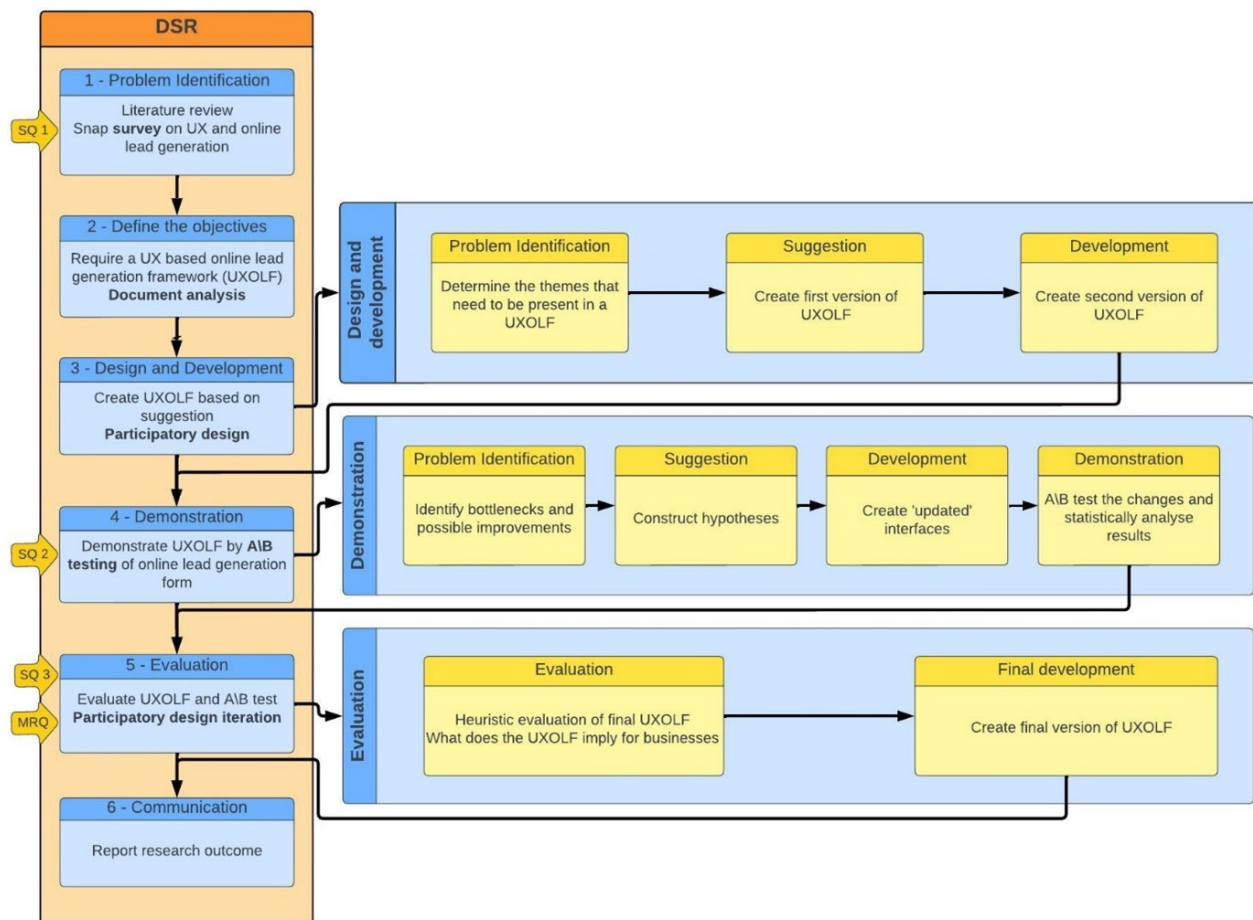
Figure 1. Thesis structure (DSR phases)

- *1 - Problem Identification and Motivation* – This phase followed an inductive approach to research within the qualitative research choice. It had a longitudinal horizon and collected and analysed a questionnaire. *A survey* in the form of a questionnaire was distributed to UX design professionals and quantitatively analysed to ascertain if the identified gap in academic knowledge from Chapters 2 and 3 is also found in practice. The questionnaire consisted of 10 questions with a five-point Likert scale to assess if UX design professionals agree that no clear information is available for UX-based online lead generation, thus deeming this framework necessary. Chapter 5 presents the discussion and results of the questionnaire.

- *2 - Define objectives of a solution* – This phase also followed an inductive approach with a mixed-method research strategy. This phase had a cross-sectional horizon with data collection through document analysis and interpreted through content analysis. *Document*

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analysis was used to find information about user experience and online lead generation. The content analysis yielded quantitative data (Bowen, 2009) and was used to aid in formulating the framework by providing the topic of the discussions that took place during the PD session. Chapter 5 discusses the document analysis and its results.

- *3 - Design and Development* – This phase followed an inductive research approach within the qualitative research choice. This phase had a cross-sectional horizon and participatory design for data collection. *Participatory design (PD)* was undertaken with design professionals to aid in the formation of a working version of the framework, which is the conceptual artefact of this study (Spinuzzi, 2005). The study undertook iterations of the PD after the framework was tested to allow for changes. The researcher analysed and reported the findings of the PD thematically. Chapter 6 discusses PD and its results.

- *4 - Demonstration* – This phase followed a deductive approach and a quantitative research choice. This phase's time horizon was longitudinal, with experiments as the data collection method. **Experiments** were used to test the framework in the case organisation's online lead-generation form. The findings were statistically analysed and used in the iterations of the PD to finalise the framework. The experiment took the form of A/B testing done by the case organisation. A/B tests, also known as split testing, is an experimental method that allows for the simultaneous evaluation of two versions of an interface. The success of the versions are then analysed using a predefined success metric to ascertain the best version of the interface (Optimizely, n.d.). The experiments were conducted on three different servers at the case organisation. The participants were randomly assigned to a server or group by a load balancer, ensuring that each group was adequately represented. The researcher analysed the difference in the probability of success for each group to assess if the framework significantly affected the number of online leads generated by the business. The cornerstones of the framework drove the changes made to each form given to the experimental groups. Chapter 7 presents the discussion and results of the experiments.

- *5 - Evaluation* – This phase followed an inductive research approach with a mixed-method research choice. The time horizon for this phase was also longitudinal, and the data collection in this phase was an iteration of the ***participatory design*** with the same

participants to evaluate the final version of the framework. The researcher executed data triangulation during this phase. ***Triangulation*** is the collection and analysis of data from more than one source type on the same topic (Bowen, 2009) to ensure that the topic under study is examined from every aspect available (Farquhar et al., 2020). Chapter 8 presents the findings of the second iteration of the PD.

- *6 - Communication* – This phase entails the conclusion of the study and reporting on the artefact (framework) created during the DSR, which is accomplished by this paper.

1.6 ASSUMPTIONS

This study touches on various topics, each with several aspects—bringing about certain assumptions. The study assumes that the anonymous users to whom the different versions of the online valuation form are administered have similar intellectual capacities and access to similar technological devices. In addition, the assumption is that every group comprises individuals with similar digital fluency or literacy and that the online form and its UX implementations are the primary determinants of the participants' effectiveness and efficiency in completing the form.

The central assumption of this study is that there will be an impact on the conversion rate of the leads generated due to the UX design implementations. Moreover, the study presupposes that every UX implementation will generate different results and that some implementations will have a more significant impact. For businesses in the 21st century, the assumption is that an academically published UX framework will simplify the process of incorporating UX design into their business strategies, ultimately leading to a higher return on investment.

1.7 LIMITATIONS

The formulated framework focuses on nine specific UX principles found most frequently within the participatory design session; however, several other principles could benefit the overall experience. Although the framework was demonstrated in a business within the automotive industry, the implementation of the framework in other industry sectors will increase its generalisability. The formulated framework was only tested with an online lead-generation platform and did not encompass the nurturing and conversion of the lead. Demonstrating only

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specific parts of the framework indicates the need for the entire framework to be tested to assess its effectiveness.

1.8 DELINEATION/DEMARCATION

The researcher implemented certain boundaries for the study to reach specific goals. UX is a relatively new and elusive term that could make this process somewhat troublesome. Nonetheless, to ensure that the aim of the study was achieved, boundaries had to be set to allow the research to proceed as planned.

The researcher perused UX and lead generation literature to form a firm understanding of its definition, use and importance for a business. These sources were subjected to document analysis, using content analysis to organise the information into themes. These themes formed the outermost boundaries for this study. Apart from the themes discussed above, the implementation of UX elements and online lead generation strategies can vary between situations; therefore, the study set boundaries for implementing the framework.

The study used one specific lead generation form to research the UX design. This form collected the personal and vehicle information of customers who wanted to sell their vehicles. This increased the UX's testing accuracy by excluding unnecessary variables and limiting the variables to the UX factors. Hence, the brand remains the same, and customer needs remain the same, but certain UX elements will vary—ultimately leading to the conclusion.

Experiments, specifically A/B testing, were used to demonstrate the framework. A/B tests require the formulation of hypotheses to guide them. Many hypotheses might arise during the experiments; however, the experiments only included 12 hypotheses for this study. Areas of improvement on the case organisation's online lead generation produced the hypotheses that guided the experiments. As the research and execution of the study progressed, indications for more research arose; however, none of the indications was achievable within the bounds of the study. Section 9.4 reports these as indications for further research.

1.9 SIGNIFICANCE OF THE STUDY

The findings in this study could provide a significant financial benefit to automotive businesses in the 21st century. These benefits could include guiding businesses in the automotive industry in spending their budgets more wisely, as well as helping such businesses to implement more effective lead generation strategies—thereby converting more leads into paying customers.

With the proof provided by the research on the importance of UX and its impact on the conversion rate of leads, businesses might start to value UX and eventually incorporate it to increase profits. UX will become necessary in every online lead generation business model rather than being deemed additional value once the correct framework is in place.

Businesses will realise the importance of allocating budget to UX implementation and soon notice a return on their investments. Such businesses that implement their strategies sooner than their competitors will have a competitive advantage over businesses that do not yet grasp the significance of implementing UX. Customers quickly move on to competitors, and once they find a platform that meets their needs, they tend to remain loyal to it. Thus, postponing UX implementation drives users away and could result in them never returning.

Small businesses often need more resources to invest in testing and growth opportunities, causing them to fall behind in a competitive economy. Therefore, it is not always possible for businesses to invest in UX strategies, which might lead them either not to focus on UX at all or to implement ineffective UX design at a lower cost.

A proven UXOLF could prevent businesses, large or small, from wasting resources on trial-and-error approaches and could assist them in investing where they are bound to gain a return on investment. Although this study only demonstrates the designed framework in a specific business model within an isolated business field (automotive), this study aims to take the initial strides necessary to create a universal UXOLF for any business model and within any business domain.

Businesses fail and close down for numerous reasons, but the biggest reason is often insufficient funds to continue operating the business. Although good UX design is not the only solution for

businesses to succeed and increase profit, it is a highly effective solution capable of guiding a business towards success. Consequently, this study's significance impacts customers, businesses and the economy (Smyth, 2019).

1.10 CONTRIBUTIONS OF THE STUDY

This section presents an overview of this study's contributions. A contribution is the enhancement of existing knowledge or the creation of novel knowledge (Ladik & Stewart, 2008). Research contributions can either make theoretical advances, also known as knowledge contributions to academia or have practical implications, also known as practical contributions to the industry (Ladik & Stewart, 2008). The UXOLF produced by this research delivers both practical and knowledge contributions by combining the UX and lead generation concepts and many other essential business concepts. Section 10.3 provides a comprehensive discussion of the contributions made by this study. Overall, the research process provides businesses within the automotive industry and information systems (IS) academia with a more comprehensive look at the role UX could play in lead generation; furthermore, the combination of UX and lead generation could be conducive to creating business value. The rest of this section will address the knowledge and practical contributions of the study, respectively.

1.10.1 KNOWLEDGE CONTRIBUTIONS

The research highlights the importance of digital transformation as a prerequisite for online lead generation. With the rise of digitalisation, effectively implementing online lead generation could grant businesses a competitive advantage (Nash et al., 2013). The experiments on the case organisation's online lead generation form underline the importance of implementing UX to increase conversion rates and business value. The research also thoroughly explores the various ways business value can be created. Therefore, this research combined the two distinct study fields of UX and lead generation to create additional value-creating pathways. The UXOLF creation process included professionals from various fields, allowing for an all-inclusive examination of UX and lead generation. The use of the PD session in creating the framework also indicates the value that co-creation could deliver to research.

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1.10.2   PRACTICAL CONTRIBUTIONS

The experiments proved that UX could significantly affect lead generation. Additionally, the experiments highlighted areas for improvement for the case organisation and, in most cases, gave it a solution for improving its lead-capturing ability. The framework provides businesses with a thought-guiding metamodel to increase business value through UX and lead generation and highlights other vital considerations. Creating the framework with the help of business executives and design professionals allowed for the common language of the framework and further ensured its overall understandability. This also indicates the importance of the framework's communication concept for fostering collaboration between business domains towards creating business value.

1.11 BRIEF CHAPTER OVERVIEW

This section presents a short overview of the information presented in all ten chapters of this thesis. Figure 2 below outlines the ten chapters and the relevant DSR phase of each chapter, followed by a short description of each chapter.

Figure 2. Thesis chapter overview

- *Chapter 1:* Provides the essential background for this study, along with the problem statement, research questions, purpose of the study, outline of the study's methodology, research assumptions, research limitations and the significance of the study.

- *Chapter 2:* Defines and discusses UX, explains how it fits into a business and explores eight principles to use as guidance when designing for UX.

- *Chapter 3:* Explores lead generation and its importance in a business. The chapter explores all the strategies businesses use to improve lead generation practices and ways to improve them. Chapter 3 further discusses how marketing can improve lead generation and how it contributes to business value.

- *Chapter 4:* Details the methodology used to achieve the aims of this study. It also discusses this study's data collection and analysis, deconstructed into the relevant DSR phases.

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- *Chapter 5:* Discusses the self-administered questionnaire and the results from the questionnaire. This chapter also discusses the document analysis in detail, along with the results thereof.
- *Chapter 6:* Discusses the participatory design with design professionals and reports the results of the thematic analysis of the session recording. This chapter also outlines the first version of UXOLF and outlines and discusses the second version of the UXOLF.
- *Chapter 7:* Details the experiments which took the form of A/B testing and its results.
- *Chapter 8*: Contains the evaluation phase of the DSR and presents a complete discussion of the UXOLF and all its components.
- *Chapter 9*: Provides an overall conclusion to this study by presenting the answers to the research questions, the contributions made by the research, and suggestions for future research.

1.12 CONCLUSION

This chapter dealt with the background for this study to highlight the importance of UX and effective online lead generation platforms in the 21st century that add to business value. UX is still a new concept for most people; therefore, its importance and significance are often unknown. Furthermore, business people who are indeed aware of this concept are nevertheless ill-informed on the degree of power and value that UX brings to a business.

With the broad explanation of these concepts, their background and possible influences on a business' online lead conversion rate, it is evident that these concepts require further awareness. The importance of UX in a business' online lead conversion rate affects the conversion rate and the entire business model; thus, businesses cannot ignore the importance of UX. Many businesses that find their online conversion rate unsatisfying are either unaware or ill-informed about the reason why and may spend more on their marketing strategies to generate more leads in attempting to compensate for the lost leads.

A business cannot simply focus on its operational function without considering the most important factor, the user. Understanding the various motives that drive users, noticing specific behavioural patterns and applying this knowledge to a business strategy differentiates one business model from another. Failing to integrate UX into a business strategy might cost a business its competitive

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advantage. Ultimately, implementing UX becomes mandatory, not optional, for a business to reach its highest success within a business model. This study aims to prove this statement and create a working framework to aid businesses in implementing effective UX elements on their online lead generation platform to elicit business value.

2. USER EXPERIENCE

Figure 3 below outlines the thesis overview with the current chapter highlighted to indicate this its position in the research.
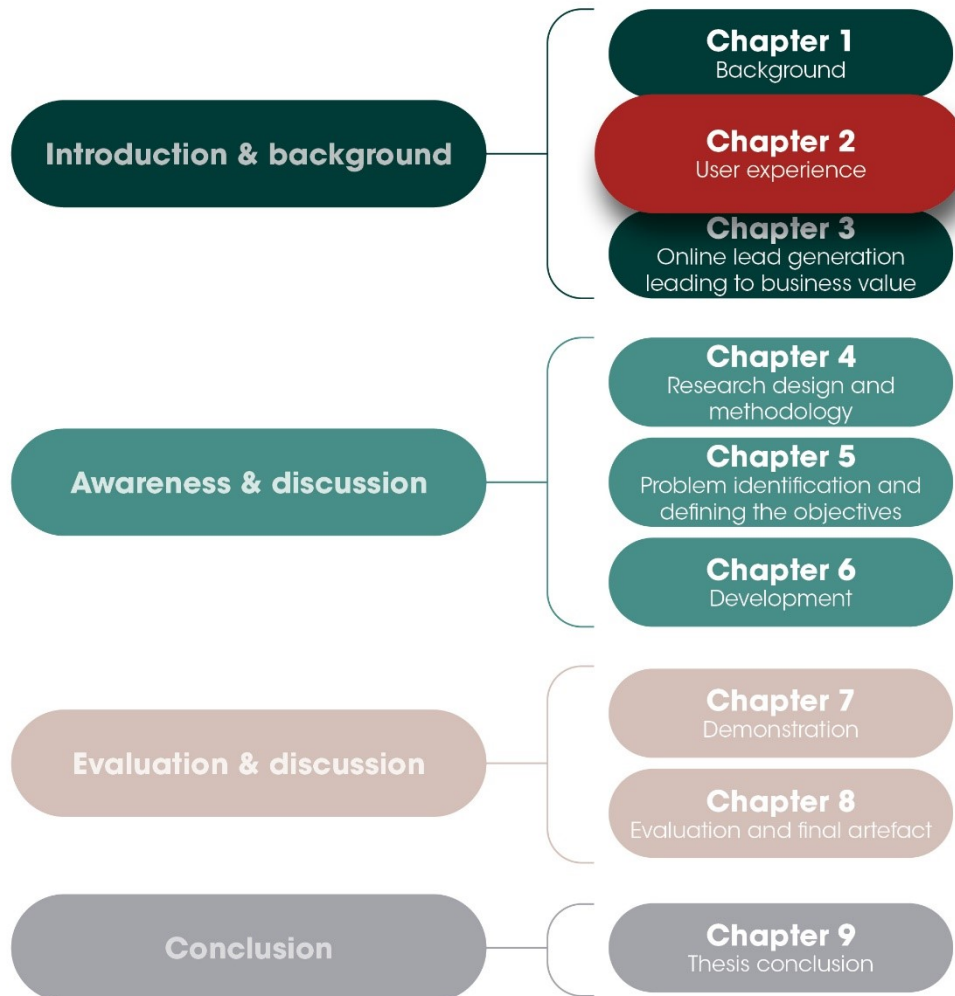
Figure 3. Chapter 2 positioning

2.1 INTRODUCTION

This chapter presents the known definitions of user experience (UX) and how it features in a business. First, a background section will explain where UX fits into a business and why it is crucial to consider. Types of experiences and user needs are discussed next. Then, the chapter discusses UX from multiple sources inasmuch as it is not yet widely agreed upon, followed by a discussion of a list of UX principles. This is followed by possible challenges when implementing UX into a business, and the chapter ends with a conclusion.

2.2 BACKGROUND

This section explains how UX is incorporated into a business and why it would be beneficial to ensure its maximisation within the business. Customer-centric operations are gaining prominence in many businesses (Setia et al., 2013). To ensure that competitive advantage is secured, it would benefit any business to ensure that UX is at the core of their business and strategy. Strategy requires dedication and diligence and should align a business' intent with success rather than expansion, as well as identify and implement distinctive value pathways (Porter, 2001). Woodard et al. (2013) propose three distinct forms of logic. These forms of logic are the driving forces for leading businesses and strategists, which are **positioning**, **leverage** and **opportunism** (Woodard et al., 2013).

Positioning, as a logic, necessitates the identification of an advantageous position for the execution of a strategy. This is done through cost leadership, uniqueness and industry diversification (Woodard et al., 2013). After selecting its positioning, a business should provide customers with a persuasive and powerful value proposal by creating and distributing exceptional services and products that align with the value proposed (Porter, 2001). This logic becomes apparent in light of the conceptual arguments for the function of IT in business practices, such as retail costing and customer relationship management (CRM) (Ives & Learmonth, 1984; Breath & Ives, 1986).

Leverage is the second logic proposed by Woodard et al. (2013). S*ustainable* competitive advantage drives this logic (Woodard et al., 2013). Creating a strategy that prevents competitors from replicating it or the benefits derived from it sets a sustainable competitive advantage apart from any temporary competitive advantage. The control of scarce, meaningful or unique assets and skills is required to achieve sustainability (Barney, 1991). The absence of significant and unique resources and skills within a strategy will cause competitors to emulate that strategy, enabling them to match and, in some cases, surpass its benefits. 'Resource-picking' and 'capability-building' are therefore vital for the achievement of sustainable competitive advantage, and executives should align their focus accordingly (Makadok, 2001: 387). Information system research has explored the commonalities among business and IT competencies and assets to evaluate how investment in IT could enable core competencies and affect business outcomes (Melville, Kraemer & Gurbaxani, 2004; Banker et al., 2006).

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Opportunism is the third logic that Woodard et al. (2013) discuss. This logic argues that competitive advantage is fleeting (D'Aveni, Dagnino & Smith, 2010), indicating this logic's importance. When opportunity windows arise, executives must respond quickly by implementing a competitive strategy, allowing a business to capture the value derivable from this opportunity (Helfat & Raubitschek, 2000). To achieve long-term competitive advantage and improved effectiveness and efficiency, a business must acknowledge the facilitation role of IT in the execution of competitive actions (Piccoli & Ives, 2005; Sambamurthy, Bharadwaj & Grover, 2003). Integrating transformed IT functions into goods, services and business processes brings conventional strategy formation and implementation into question (Woodard et al., 2013). Therefore, the conventional idea of IT delivering merely functional support to a business is outdated (Bharadwaj et al., 2013). Merging traditional business strategy with information technology strategy brings about a whole new concept, namely the digital business strategy (Bharadwaj et al., 2013).

Customers' experience with products, services and processes is becoming an incredibly prominent topic in the international market. A customer can either have a positive, negative or neutral experience with a business when utilising their product(s) or service(s) (Carbone & Haeckel, 1994). According to Nash et al. (2013: 32), customer experience (CX) is defined as the "sum of a customer's interactions with a business across all of its touchpoints—including employees, channels, systems, products, and services—and the resulting perceptions about the brand". Providing customers with a fulfilling experience can increase the meaningfulness of the relationship between the business and that customer (Gebayew et al., 2018), which increases the emotional connection and the probability of customer loyalty (Sebastian et al., 2017). This emotional connection between the two parties is difficult to reverse. Furthermore, customer experience is not shaped merely by isolated events but rather by the collection of events and interactions across all touchpoints; it combines these events' emotional and functional aspects (Forlizzi & Battarbee, 2004).

Businesses continuously seek digital business strategies to exploit technologies to drive CX. Pavlou and Sawy (2010) highlight the importance of CX, where 40% of customers who experience

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poor service stop dealing with that business. Direct and indirect contact and customers' intrinsic and personal reactions to interaction events influence CX. The customer generally initiates direct contact, including buying and consuming services from a business. Indirect contact encompasses accidental meetings between the customer and the business, which includes all representatives of a business and can take the form of word-of-mouth, publicity and others' review of the company (Meyer & Schwager, 2007).

Improving CX is achievable if a consistent experience can be delivered at all customer touchpoints across various channels (Frow & Payne, 2007). Nash et al. (2013) provide four reasons why businesses should focus on effortless and positive CX as a business differentiator:

1) **Technology changes and information:**

Customers have gained significant decision-making power due to advances in technology like mobile technology and the trouble-free availability of information.

2) **Declining business differentiators:**

The decreasing number of ways to differentiate a business puts CX at the forefront and makes it a go-to-market strategy.

3) **Financial benefits:**

Focusing on CX yields a positive return on investment (ROI) and other financial benefits.

4) **Negative CX:**

Mass and social media can damage business credibility, brand equity and market capitalisation.

A positive CX is facilitated by the capability of a customer to experience an enjoyable, beneficial, meaningful and professional interaction with a business at every possible touchpoint associated with the business. On the other hand, UX facilitates customers' ability to complete their goals and seek information and interaction with a business through only their digital channels. This shows how CX encapsulates UX since UX affects the digital touchpoint of the business, which forms part of the totality of touchpoints that CX entails. Since CX encapsulates UX and CX is a key driver of organisational success and the capacity to thrive in an economically and competitively challenging environment (Grewal, Levy & Kumar, 2009; Mosley, 2007; Puccinelli et al., 2009), UX is also a driver of organisational success.

UX significantly impacts a business, customer satisfaction, loyalty, revenue, traffic and overall brand expression (Nichols & Chesnut, 2014). UX encapsulates all user interaction with a business through a digital channel and the perceived quality of that experience. These digital channels are called digital user interfaces (UI) (Forlizzi & Battarbee, 2004; Law et al., 2009). Online elements influenced by application attributes such as reaction speed, efficiency and UI considerably affect UX (Weinman, 2015).

Figure 4 below portrays CX and UX alignment utilising words most commonly used when defining these concepts.
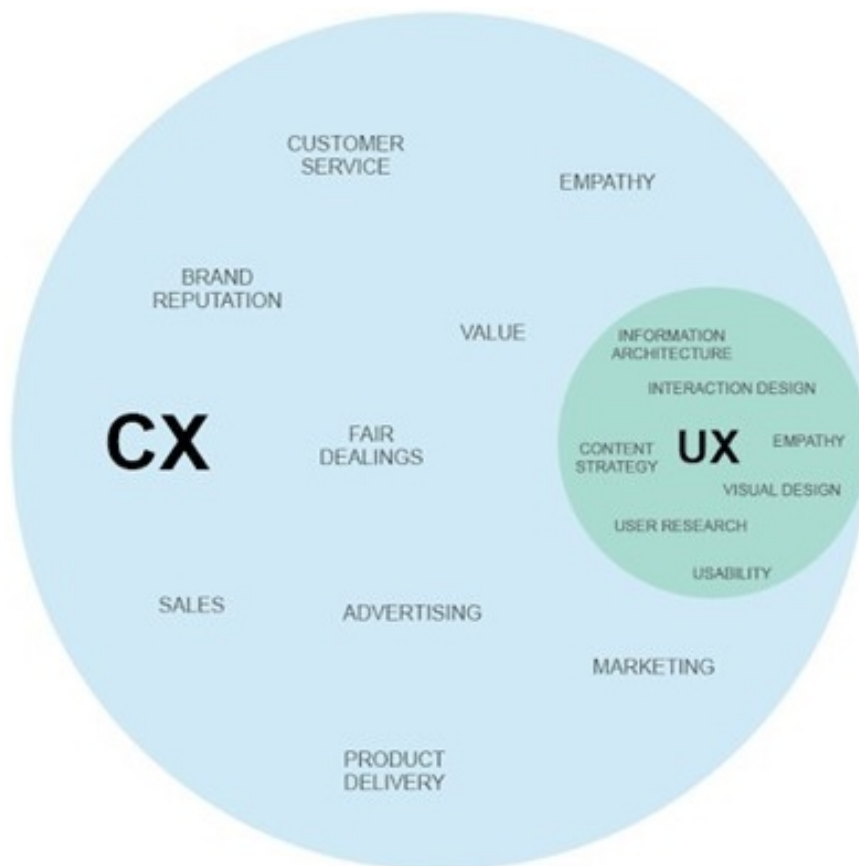
Figure 4. CX and UX alignment (Michael, 2018)

2.3 TYPES OF EXPERIENCES

Forlizzi & Battarbee (2004) advance three ideas of what experience can be. The first is *experience*, which is a continuous event that occurs internally with each individual; the second is *an*

experience, which has a notable commencement and conclusion; and the last one is *co-experience*, which is an experience with others within a social domain (Forlizzi & Battarbee, 2004).

Experience is unique to every individual and is rather cumbersome to plan for; however, *an experience* (discussed above) is easier to plan for as it is a specific event that an individual experiences. In the case of user experience, the specific event will be a user's interaction with the product at hand. This experience event can be manipulated to ensure the most pleasure and ease when interacting with said product. Here 'pleasure' and 'ease' encapsulate all the characteristics of a positive interaction. It is important to note that one cannot create a user experience; one can only create *for* it (Sharp, Preece & Rogers, 2019).

Forlizzi & Battarbee (2004) also advance the idea of co-experience, the experience individuals have of a product together. The phenomenon of co-experience stems from the idea that an individual interacting with a product could influence the experience another has with the same product. This is done by individual A's experience of the product that has been communicated to various people in their lives; therefore, individual B has a preconceived idea of the product before personally experiencing it (Battarbee & Koskinen, 2005). Co-experience is also essential when considering UX, as any experience by an individual occurs in some social domain and can therefore be seen as a subcategory of UX (Battarbee & Koskinen, 2005). No form of experience occurs in complete isolation from any social influence (Forlizzi & Battarbee, 2004) and reiterates the importance of considering co-experience when designing *for* a user interface.

This leads to the emergence of the scaleability of experience, i.e., a collection of isolated experiences that constitute the larger picture of all combined experiences (Forlizzi & Battarbee, 2004: 264). This is important to consider when aiming to foster a long-term relationship with a user. A business achieves this when it creates positive experiences every time the same user interacts with its product, which underlines the user's overall experience and could position the product positively for that individual. Eventually, this perceived positive product fosters a long-term relationship between the individual and the product or business.

A user's experience can be affected by a wide array of variables besides the product and the user's interaction with the product. These variables could include age, gender, ethnicity, education and occupation, to name a few (Sharp et al., 2019). Essentially, designers should submerge themselves in every characteristic of the intended user population of the product or system to help guide the design process. This way, the designer can be sure that each phase of the design process aligns with the users' needs.

2.4 USER NEEDS

The characteristics of the intended user population include but are not limited to demographics, intended use and culture. The literature substantiates that these characteristics affect how a user perceives a product (Vance, Elie-Dit-Cosaque & Straub, 2008; Law et al., 2009) and require a sound understanding to design a successful product or system. Sometimes, a product will be developed for many users, meaning that few of them share the same characteristics, influences or expectations (Sharp et al., 2019). This dynamic user base might make designing the user interface rather cumbersome; however, one should then identify the product's intended use within different population domains to ensure that the product's functionality allows for all the identified needs.

There are at least three groups within which a user's needs may fall: **ecological**, **interaction** and **emotional** needs (Hartson & Pyla, 2019). Figure 5 below depicts a pyramid of these needs. The reason for this depiction is that these needs follow a hierarchy, meaning that the bottommost needs, the ecological needs, must be met first before any of the subsequent needs, like interaction and emotional needs, can be met (Hartson & Pyla, 2019).

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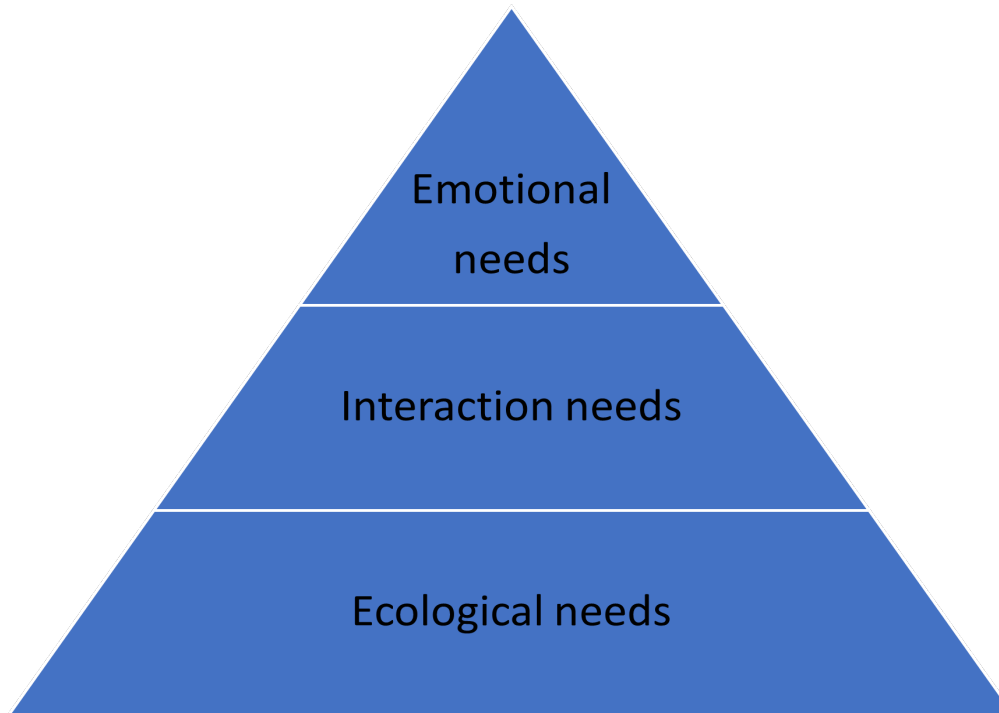
Figure 5. Pyramid of human needs (Hartson & Pyla, 2019)

Ecological needs constitute the entire set of neighbouring parts with which the user and product interact; this can include other users and the network of the product (Hartson & Pyla, 2019).

Interaction needs speak to how a product or system is used to achieve what it set out to do (Hartson & Pyla, 2019). The useability of a product can significantly affect these needs.

Emotional needs are met by designing for a positive emotional impact to elicit feelings such as joy and excitement; meaningfulness is also encapsulated by this level of needs (Hartson & Pyla, 2019). More about its emotional impact and importance is discussed later in this chapter.

2.5   USER EXPERIENCE

This study's central premise is UX and how it should be incorporated into a business's online lead-generation strategy. Having a sound understanding of what experience is, what forms it can take, as well as user needs means that the a more in-depth discussion of UX emerges. Human–computer interaction (HCI) research encompasses UI and UX which is the overarching theory that includes usability (Kosch et al., 2023). UI is the digital tool through which any human user interacts with a software system. HCI aligns more closely with the academic research into the combined use of

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UI and UX to facilitate the communication, while UX focuses on the practical application of user experience theories (Hartson & Pyla, 2019). This study focuses on the UX aspect of HCI and does not cover UI practices or theories. The Experience Research Society website (EXPRESSO, n.d.) lists twenty-seven definitions of UX found across the literature, addressing UX's elusive and complex nature. The researcher used these definitions to create a word cloud, as shown in Figure 6 below. Word clouds provide a visual overview of the most frequently utilised words in a visually appealing manner (Heimerl et al., 2014). The word cloud in Figure 6 was created by inserting the twenty-seven definitions of UX found on EXPRESSO (n.d.) into the *Pro Word Cloud* add-in on Microsoft *Word*.

Leading words in the word cloud are 'use', 'design', 'perception', 'customer', 'usability', 'quality', 'feel', 'convenience', and 'using'.

Figure 6. Word cloud based on the 27 definitions of UX

The ISO (2010) theory of UX includes "... all the users' emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviours, and accomplishments that occur before, during and after use ..." of a system, which this study accepts as theory and definition. The lack of

agreement on UX might cause a designer to grasp at straws during the entire process of product development. This, in turn, could lead to designers favouring practices they find most enjoyable and least troublesome to work with and could lead to convulated parts being disregarded (Hartson & Pyla, 2019). Hassenzahl and Tractinsky (2006) theorises that UX is:

> A consequence of a user's internal state (predispositions, expectations, needs, motivation, mood, etc.), the characteristics of the designed system (e.g., complexity, purpose, usability, functionality, etc.) and the context (or the environment) within which the interaction occurs (e.g., organisational/social setting, meaningfulness of the activity, voluntariness of use, etc.). (Hassenzahl & Tractinsky, 2006)

Multiple theories suggest that UX can be divided into two main categories: pragmatic and hedonic (Bargas-Avila & Hornbæk, 2011; Kashfi et al., 2019; Hassenzahl, 2008). Most data from the literature focuses mainly on the pragmatic category of UX, which is the "task-oriented view of interactive products" (Bargas-Avila & Hornbæk, 2011). The hedonic part of UX is the focus on the emotional aspect of an experience when interacting with a graphical user interface (GUI), i.e., the psychological aspects of the interaction, like how reminiscent and invigorating the user finds the interaction (Sharp et al., 2019; Pettersson et al., 2018). The hedonic part of UX stems from hedonistic psychology (Battarbee & Koskinen, 2005), which believes people's motivations are to avoid unpleasantries and seek out pleasantries (Leach, 2019). Although there is a recent uprising in UX awareness, most of the data available focuses on the pragmatic category of UX and leaves the fundamental characteristics of the hedonic category relatively untouched and disregarded (Kashfi et al., 2019). The disregard for hedonic UX can lead to catastrophic damage to a business. The main reason for incorporating UX in design is lost without consideration and design for both pragmatic and hedonic categories.

"Emotion is at the heart of any human experience and an essential component of user-product interactions and user experience" (Forlizzi & Battarbee, 2004: 264). This indicates the importance of considering the hedonic part, not just the pragmatic one. It also supports the argument that Chung, Sampaio & Leite (2009: 363) bring forward that "a system's utility is determined by both

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its functionality and its nonfunctional characteristics ...". Figure 7 below portrays Hartson and Pyla's (2019) explanation of UX, which also aligns with the definitions of UX above.
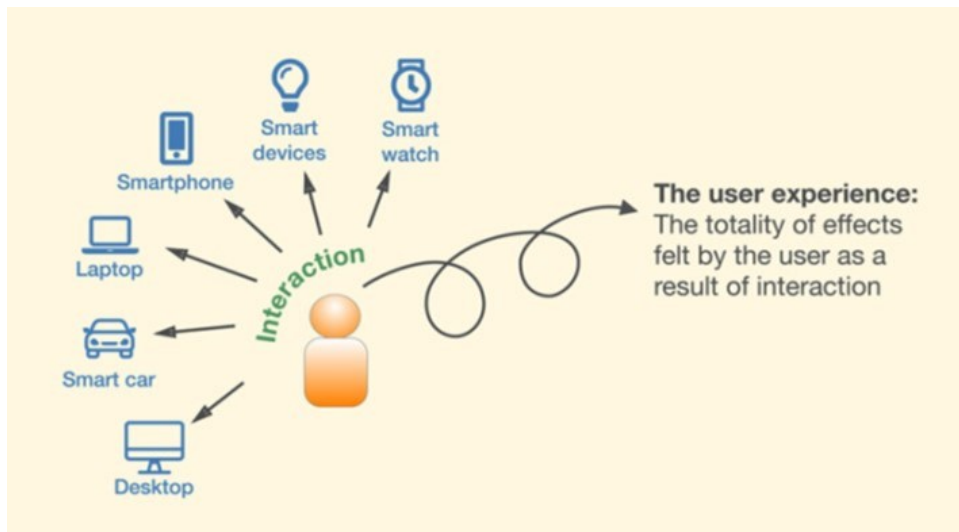
Figure 7. User experience (Hartson & Pyla, 2019)

Hartson and Pyla (2019) deconstruct UX into four basic principles: *useability*, *usefulness, emotional impact* and *meaningfulness*. Further, *ease-of-use*, *user performance and productivity*, *efficiency*, *error avoidance*, *learnability* and *retainability, effectiveness, safety* and sometimes, *meaningfulness* are all aspects of useability (Hartson & Pyla, 2019). Many UX principles are interrelated (Sharp et al., 2019). The reason useability sometimes encapsulates meaningfulness becomes apparent in Section 2.6. Usefulness is how helpful, beneficial and effective a product is (Hartson & Pyla, 2019). The emotional impact describes different emotional responses to a product: *joy*, *fun*, *excitement*, *enticement*, *engagement*, *aesthetics*, *curiosity*, *pleasure* and many more (Hartson & Pyla, 2019). Meaningfulness denotes the ability of a product to add value to a person's life, thereby fostering a relationship between the product and the person (Hartson & Pyla, 2019). Meaningfulness is also the "emotional impact within long-term usage" (Hartson & Pyla, 2019: 53).

UX is highly subjective and dynamic, originating in a user's intrinsic and emotional responses at distinct interaction points with a product, service or object (Hassenzahl, 2008). Hassenzahl and Tractinsky (2006) posit that UX can be broken down into three facets: beyond the instrumental, emotional and affect, and experiential. Figure 8 exemplifies the facets of UX. UX comprises every

aspect of a digital experience, of which physical, sensory, cognitive, emotional and aesthetic experiences are some (Hassenzahl & Tractinsky, 2006).
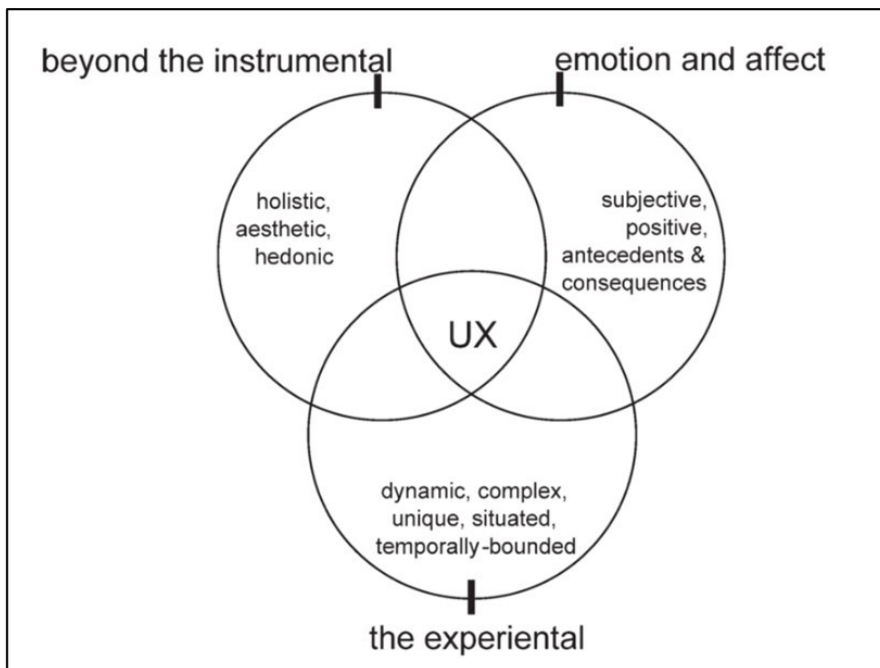
Figure 8. Facets of UX (Hassenzahl & Tractinsky, 2006)

"There's no longer any real distinction between business strategy and the design of the user experience", according to the VP of IBM (Hartson & Pyla, 2019: 7). This speaks to the importance of designing for user experience and keeping the user and their needs in mind during the entirety of the design process (Hassenzahl, 2008). This ensures that the product meets their needs and enriches their lives (Hartson & Pyla, 2019). During the UX design process, a designer must ensure five affordances: cognitive, physical, sensory, functional and emotional (Hartson & Pyla, 2019). Table 1 below lists these five affordances.

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Table 1. UX Affordances (Adapted from Hartson & Pyla, 2019)

Affordance type	Description
Cognitive affordance	Design features that help users with their cognitive actions: thinking, deciding, learning, remembering and knowing about things.
Physical affordance	Design features that help users with their physical actions: clicking, touching, pointing, gesturing and moving things.
Sensory affordance	Design features that help users with their sensory actions: seeing, hearing, and feeling (and tasting and smelling) things.
Functional affordance	Design features that help users employ a product or system to accomplish work (i.e., the usefulness of a system function).
Emotional affordance	Design features that add emotional impact to the user experience and help users appreciate and enjoy the interaction.

UX becomes evermore complex with further exploration. Since the definition of UX is elusive, deciding where to start when designing a new product or adapting an already extant UI is difficult. Pareto's principle might prove beneficial in this situation. Pareto's principle/law or the 80/20 principle applied to IT shows that 80% of functionality is only utilised by 20% of users, meaning that the broader population utilises only 20% of the functions (Sobaca Limited, 2010). Determining what that 20% of functions is, allows the design team to concentrate and prioritise improvements to those functions, as the vast majority of their extant users utilise these functions. Focusing on these functions does not mean disregarding the other 80% of functions. These functions should remain if they are not hindering the use of others but should not be the focus when aiming to improve a product, thereby allowing for improved interaction for all users. This is true since the 20% of users who use most of the functions available will still benefit from improving 20% of the total functions (Sobaca Limited, 2010).

Designing for UX specifically applied to 20% of functions will prove more straightforward than attempting to improve all of the functions and should still result in a positive UX for most extant users because, essentially, Pareto's principle should be applied to get "more for less" (Sobaca Limited, 2010: 14), i.e., the design can attract more users with a positive UX for less work on the available functionalities.

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2.6 UX DESIGN PRINCIPLES

When it comes to UX design, many principles which should be considered to gain the most benefit from its implementation are available. From these, some experts have distilled key principles. Shneiderman et al. (2018) have narrowed down some of these principles and labelled them the eight golden rules of interface design. A discussion of the eight golden rules of interface design follows in subsequent sections. These principles will require adaptation according to each environment. They might have limitations but they provide a good starting point for UX designers (Shneiderman et al., 2018).

2.6.1 STRIVE FOR CONSISTENCY

"Consistency builds the brand promise and bolsters customer satisfaction" (Berman, 2012: 22). The quotation above confirms that consistency is essential in UX design. Inconsistency in elements such as the positioning of buttons or colours slows users down by 5–10%, and changes to terminology slow users down by 20–25% (Shneiderman et al., 2018). According to Shneiderman et al. (2018), consistent sequences of actions should be applied to similar situations. Identical terminology should be used throughout a platform, especially in prompts, menus and help screens. The same applies to the consistent use of colour, capitalisation and fonts (Shneiderman et al., 2018).

Inconsistencies across a product will increase a user's short-term memory load and could confuse a user (Grant, 2018). The consistency a designer strives for allows for *learnability* at the user's end, allowing each individual to fully engage with the product and the processes required to achieve a goal using the product (Sharp et al., 2019). *Learnability* will be positively impacted by consistency across the business and industry. The user's ability to learn how a product works and manoeuvre through the systems surrounding it allows them to emerge and engage more authentically with the product (Hartson & Pyla, 2019). Consistency allowing for learnability is also intertwined with the seventh principle: keeping the user in control. This principle is interlinked with the last principle because when users learn how to utilise a product, their self-efficacy increases, thereby affecting their perceived control (Zhou et al., 2010). In the same way, consistency increases the useability of a product (Nichols & Chesnut, 2014).

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2.6.2 SEEK UNIVERSAL USEABILITY

It is both beneficial and critical to recognise diverse users' needs and design for plasticity, allowing for the transformation of content (Shneiderman et al., 2018). There should be room for transformation for all users, from beginners to experts, people of various ages, people with disabilities, international variations and technological diversity. Adding features for beginners, such as explanations and features for experts that help them work through the process faster, takes the experience to the next level and improves the perceived quality of the interface design (Shneiderman et al., 2018).

Useability and UX are often used interchangeably (Sauer, Sonderegger & Schmutz, 2020); however, useability is merely one of the principles encapsulated by UX (Hartson & Pyla, 2019). Useability, in turn, encapsulates *ease-of-use*, *user performance*, *efficiency*, *error avoidance*, *learnability* and *retainability* (Hartson & Pyla, 2019). Useability is highly objective, whereas UX is highly subjective (Vermeeren et al., 2010), meaning a designer can guarantee good useability but merely increase the probability of yielding a positive UX. The goal is not to "reinvent the wheel" (Grant, 2018: 366) but rather to create a unique product that is differentiated from other products while keeping the functionality as simplistic and universal as possible.

Providing the user with a useable product will also affect their perception of its aesthetics because of what Minge & Thüring (2018) call the *pragmatic halo effect*. The pragmatic halo effect means that if a user finds a product useable, they will perceive it as visually appealing (Minge & Thüring, 2018). The scholars also discuss the idea of the *hedonic halo effect,* which usually occurs before any direct interaction. The hedonic halo effect implies that a user will perceive a product as more useable if they find it visually appealing (Minge & Thüring, 2018). However, this is not a solution to increase the product's useability since the hedonic halo effect is only observed before any direct interaction with the product occurs. "While bad usability can break a good product, good usability is insufficient to create a good experience" (Kuniavsky, 2010: 14). Again, this indicates the importance of understanding that useability is a principle of UX but that it covers merely a fraction of what UX encapsulates.

2.6.3   OFFER INFORMATIVE FEEDBACK

Shneiderman et al. (2018) argue for generating interface feedback for every user action. They further argue that the feedback should adapt according to the importance of the action. The response can be modest for smaller and more frequent actions, whereas more extensive and infrequent actions can have a more substantial response.

Providing the user with informative feedback can also minimise errors during use and allows for a higher retainability. Retainability refers to a user's ability to remember how the product or system works (Hartson & Pyla, 2019). It is increased by informative feedback as it allows users to learn what is required of them. Informative feedback can be given by indicating the field a user needs to correct or complete, which also minimises errors (Grant, 2018). The system can also give the user tips at specific points (Grant, 2018). Providing a user with informative feedback along with consistency can assist them in learning what the product or system might require of them and could eliminate future errors by the same user.

2.6.4   DESIGN DIALOGS TO YIELD CLOSURE

According to Shneiderman et al. (2018), action sequences should be divided into smaller units with a commencement, middle and conclusion. Allowing users to see the end of an action will increase their willingness to complete that action (Ariely & Carmon, 2003). By adding a completion signal, a user can be prompted towards closure (Shneiderman et al., 2018). Once a user receives closure at the end of a group of actions, they should experience a sense of triumph, relief and an indicator to prepare for the next group of actions (Shneiderman et al., 2018). This sense of accomplishment created by the closure can increase the product's meaningfulness to the user (Hartson & Pyla, 2019).

Meaningfulness is a self-explanatory idea that deals with how a product can add meaning to a user's life (Hartson & Pyla, 2019). Creating a product with high meaningfulness would mean that a user is more likely to create and foster a long-term relationship with the product or the business responsible for the product. Fostering this relationship will ensure an extended user life cycle, meaning that each user is more likely to use the product repeatedly and is more likely to trust other

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products from the same business. This ultimately results in a higher return on investment (ROI) for the product and increased retention (Hartson & Pyla, 2019).

2.6.5 PREVENT ERRORS

A user interface should be designed wherever possible so that users cannot make serious errors (Shneiderman et al., 2018). Minor adjustments, for example, greying out menu items that are not appropriate or not allowing alphabetical characters in numeric entry fields, make a big difference when trying to prevent user error. If a customer makes an error, the user should be offered straightforward, productive and specific guidelines to recover from the error (Shneiderman et al., 2018).

Errors can hinder a user's productivity and might discourage them (Shneiderman et al., 2018). This disrupts the flow of the user's actions and adds to their cognitive load (Hartson & Pyla, 2019). Preventing errors can be achieved by offering informative feedback, as discussed above. Although a designer wants to create a product with the least possible errors, they should strive to "be forgiving" (Grant, 2018: 174). This means that the allowance of characters in a field might be necessary for the correct spelling of a name or that someone might have a number from a different area that does not match the number of characters required in the field of the product (Grant, 2018). Hence, the designer must create a product that minimises space for error although eliminating these spaces is impossible; therefore, the principle discussed in Section 2.6.6 below becomes very important.

2.6.6 PERMIT EASY REVERSAL OF ACTIONS

Reversible actions should be available wherever possible as this feature alleviates anxiety and encourages the exploration of unfamiliar options (Shneiderman et al., 2018). The levels of reversibility can range from a single step in a data-entry activity or a whole series of operations such as a name–address block entry. (Shneiderman et al., 2018).

Ensuring that users can backtrack and change the necessary information further assures user control and reduces short-term memory load. It allows the user to remain in control of the information they input into the product, and it allows them to move on to subsequent sections

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without concerns about the completed sections. Therefore, allowing for this minimises the short-term memory load and keeps the user in control, both of which are principles discussed in more detail below in Section 2.6.7. Keeping the user in control will allow them to learn more about the product and increase its meaningfulness (Grant, 2018; Hartson & Pyla, 2019).

2.6.7   KEEP USERS IN CONTROL

Users, especially experienced users, strongly desire to feel like they are in charge of the interface and that it responds to their actions (Shneiderman et al., 2018). According to Shneiderman et al. (2018), users do not want surprises or changes in expected behaviour and easily become annoyed when they cannot produce the desired result. The learnability of an interface has a tremendous effect on this principle as it can foster self-efficacy within a user, which, in turn, elicits a feeling of perceived control (Zhou et al., 2010).

The emotional impact is another essential factor to consider at this stage. The interface's emotional impact on a user also influences the user's perceived control (Hartson & Pyla, 2019). The interface should be created in a way that the positive emotional interaction leads to the user feeling satisfied with the functional aspects, like the useability, and with the feelings left over after the interaction. This is important because any experience is something a user undergoes internally; the interaction must leave positive emotions such as *joy*, *pleasure*, *fun*, *appeal*, *delight* and *coolness,* to name a few (Hartson & Pyla, 2019). The aesthetics of a product plays a significant role in a user's emotional impact and should be designed to elicit the abovementioned emotions within the user (Norman, 2002).

2.6.8   REDUCE SHORT-TERM MEMORY LOAD

Because humans have a limited ability for information processing in short-term memory, designers need to avoid interfaces in which users must recall content from one display to another (Shneiderman et al., 2018). Using colour combinations on the opposite end of the colour spectrum might cause an increased mental load on the user and sometimes make it impossible to read any information (Shneiderman et al., 2018). Colour can be very beneficial to any product but can also damage the user experience if it is not implemented correctly. The design team should use colour in a way that can aid in information relaying, add to the product's aesthetics, draw attention to

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something dull, or indicate errors (Shneiderman et al., 2018). How these colours are used can either overwhelm users or aid them in achieving their task; therefore, the design team's job is to ensure that the colours achieve the goal they are meant to. Research about the target user population will assist in achieving this.

Short-term memory lasts between 30 seconds and two minutes (Hartson & Pyla, 2019). It allows a person to absorb the information required for an immediate task at hand, which, unless it is transcribed to long-term memory, would be lost after the completion of the task or, in some cases, immediately after it has been used for its specific purpose (Hartson & Pyla, 2019). The average person can retain seven (±2) items in their short-term memory at a time (Miller, 1994). This means a product should not require a user to complete subtasks before they have reached the end of the original initiated task. This can result in overload and possibly even disregarding information necessary to complete the intended task. This load can be minimised through a default setting, where an interface has default characteristics that can be changed if needed (Grant, 2018), allowing the user to stay with the default if it results in their end goal. The default can be recognised by identifying a typical user journey (Grant, 2018). Another way in which this load can be minimised is by hierarchal organisation and chunking, which allows a user to comprehend the path required for their actions more fully (Chapman et al., 2016).

2.7 CHALLENGES OF IMPLEMENTING EFFECTIVE USER EXPERIENCE

The UX field is consistently growing and developing, and businesses are starting to realise the impact it can have on a business. However, the process of implementing UX can become time-consuming and costly. The bigger the project, the more resources are required and the more critical it becomes for UX design to deliver an ROI (Canziba, 2018).

Even though useability is mandatory for any application, small businesses often fall behind because of limited resources (Wiley & Getto, 2015). There also seems to be a common problem within the literature regarding the interchangeable application of useability and UX (Sauer et al., 2020). This can lead to implementing incorrect strategies and naming them UX strategies (Kashfi et al., 2019). Developing a UX strategy requires several resources, including UX teams, useability testing software and developers (Wiley & Getto, 2015). UX design is a multidisciplinary practice,

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with several components such as information architecture, content strategy, interaction design, useability and visual design integrated into the field (Nichols & Chesnut, 2014).

Wiley and Getto (2015) argue that although some businesses may have limited resources, limited knowledge regarding effective design workflows is more of an issue than limited resources. With limited academic and approved UX publications, specifically the absence of an existing UX framework, businesses face many challenges when planning to implement an effective UX strategy.

With UX implementation, it is important to incorporate good UX design from the beginning of a project to avoid wasting money and time (Canziba, 2018). Having to implement good UX from the beginning of a project with limited resources and knowledge may lead many businesses to not focus on its implementation. Businesses aiming to focus on UX design later in the process, or not at all, might find it challenging to succeed in the competitive digital era (Canziba, 2018).

Still, it remains true that UX is highly subjective, meaning that the overall experience is mostly individual (Kashfi et al., 2019). A business can consider specific characteristics to improve the likelihood of providing most users with a positive experience, but none can be applied to yield a universally positive experience (Kashfi et al., 2019). This can prove challenging, and the only way to eliminate this is by determining the characteristics that are most likely to provide the intended user population with a positive experience rather than just implementing characteristics that would benefit the business and not necessarily the targeted users.

One way a designer can ensure that the process aligns with users' needs by including users in the process. Users can provide an external view and suggest possible improvements to the product (Sharp et al., 2019). The degree of user involvement would have to be adapted for each situation and must be determined before the commencement of the development process. If users are involved from the start of the product design process, unwanted communication issues might arise (Sharp et al., 2019). Prototyping is a way to circumvent any issues that may arise because of problems with communication channels. It involves the creation of a working version of a product that aligns with the proposed product and allows users to interact with the product before its launch,

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thereby creating space for feedback and suggestions for improvement (Sharp et al., 2019). Prototyping can take the shape of a low-fidelity prototype, which does not necessarily represent the proposed product fully but allows an understanding of what the product has to offer. It can also resemble high-fidelity prototyping, representing the product more closely. Utilising prototyping during the design process allows for user involvement and eliminates the communication problem with full-time user involvement.

UX is also very dynamic, meaning that it is in a constant state of change (Kashfi et al., 2019). This might prove challenging because the design of the UX would have to be highly dynamic, as well as its evaluation, all of which can be problematic (Vermeeren et al., 2010). This is, in part, due to limited evaluation methods and the subjective nature of UX, making evaluation cumbersome (Law & Abrahão, 2014; Vermeeren et al., 2010). Accordingly, in cases where UX can be evaluated, it will not always yield reliable results (Kashfi et al., 2019).

Another challenge with UX implementation falls within the domain of employees. Management needs to make a decision on whether a single individual will be responsible for the UX of a project, whether this individual will dictate all decisions regarding UX or if all employees should be more trained in the holistic mindset of UX (Kashfi et al., 2019). Should an organisation decide that some employees across the business will be UX designers, communication channels must always be kept open between them and other team members. If communication does not occur in a way that the UX practitioner, as well as other members of the team benefit, a power struggle will ensue and could cause catastrophic damage to the project, the team or both (Kashfi et al., 2019).

Ensuring UX employees are involved in the process is vital and should not be an addition after the fact. This can be done by ensuring that UX is a part of every plane during the design process. These planes are the surface plane (visible part of the product), the skeleton plane (dictates arrangements of elements), the structure plane (the abstract idea of product functionality), the scope plane (functionality) and the strategy plane (user needs and developer needs) (Garrett, 2011).

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2.8 CONCLUSION

To conclude, a customer's experience with a business directly impacts their purchase behaviour. Businesses that rely on loyal, paying customers to generate a profit must adopt a user-centric business approach to succeed.

CX and UX are requisite fields for businesses in the 21st century to incorporate into their business strategies, preferably prioritising them. Because there is limited academically published content highlighting the importance of UX, many businesses are only beginning to grasp its potential impact. Customers often interact with a business through various touchpoints during their journey. In the digital era, these touchpoints are increasingly online, highlighting the importance of users' interactions with businesses online.

When a user interacts with a business online, their experience could either motivate them to continue their customer journey—eventually converting into paying customers, or drive them away and into the hands of a competitor. With businesses increasing their online presence, users are spoilt for choice and can quickly move on from one competitor to another until their needs are met. For this reason, businesses should value every interaction with a customer and provide users with seamless and enjoyable interactions.

With UX integrating a wide variety of components and utilising several resources, implementation within a business strategy can become time-consuming and costly. This often leads businesses to ignore UX design as an important success driver or to implement ineffective UX design strategies because of limited knowledge and resources or the confusing nature of UX in the literature. For businesses, ignoring UX design can have a significantly negative effect.

The absence of an academically published UX framework poses an opportunity and a possible solution for businesses facing the challenges of limited resources and knowledge. A trusted and tested UX framework can guide businesses in the right direction, helping them follow the appropriate steps, which then elevates the users' experience with their website as well as CX and, ultimately, business value. This will lead to businesses gaining longer user life cycles and better returns on investment, placing them in a better financial position.

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3. ONLINE LEAD GENERATION LEADING TO BUSINESS VALUE

This chapter focuses on online lead generation and how it creates business value by analysing relevant topics and existing research. The first section provides an introduction to clarify the place for lead generation in a business, and a section on business value follows. The subsequent sections discuss other important factors to consider alongside lead generation, i.e., digital transformation and digital marketing. The fifth section discusses *online* lead generation, after which a conclusion follows. Figure 9 below outlines the overall chapter layout, with the current chapter highlighted to indicate its position in the research.
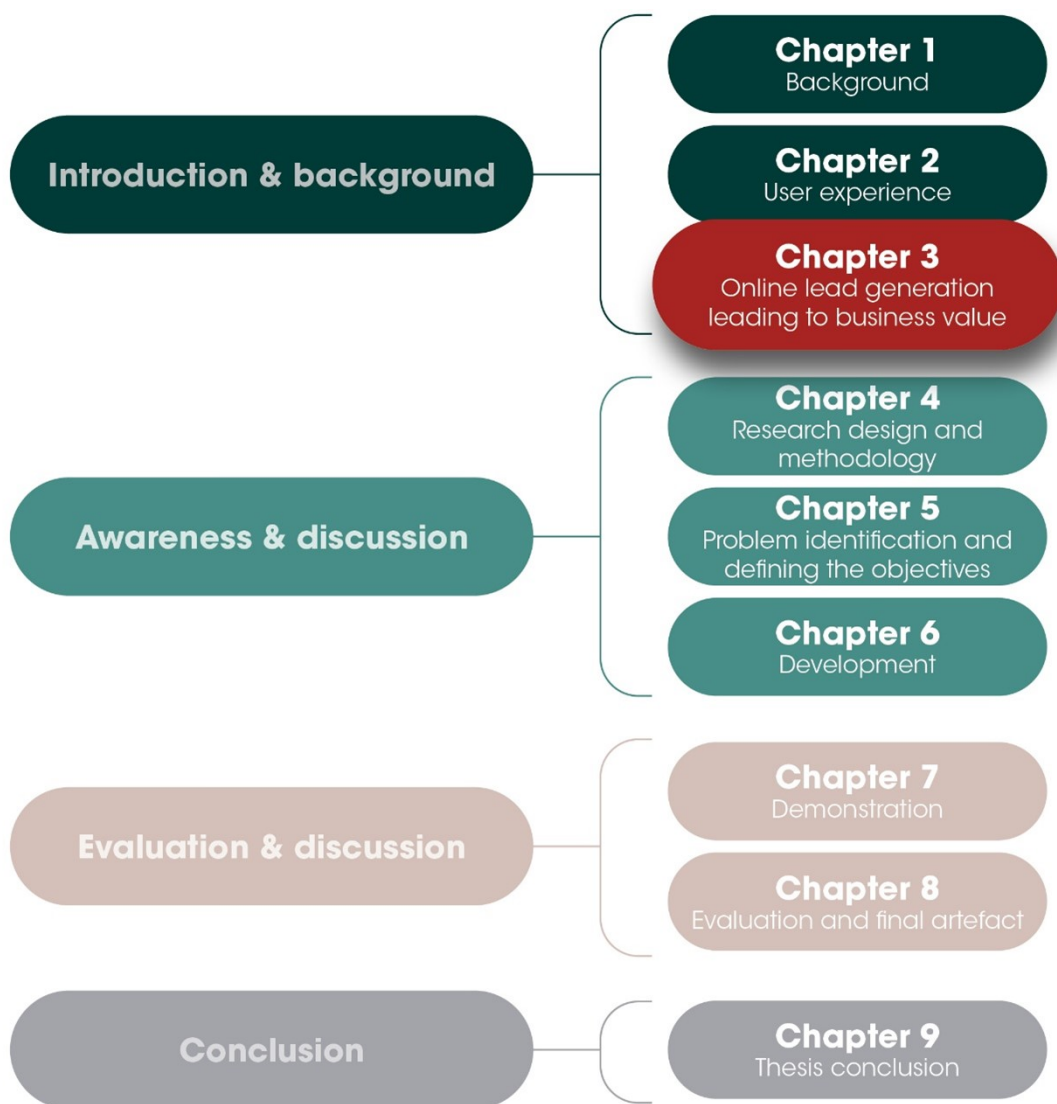
Figure 9. Chapter 3 positioning

3.1 INTRODUCTION

Lead generation is the process of providing information to a potential customer or target market about the business. The initial goal is to trigger the person's interest; the end goal of this process is to convert the interested customer into a paying customer (Bondarenko et al., 2019). The primary goal of the lead generation process is to maximise the customer life cycle (Brock, 2019). Figure 10 below depicts a typical lead life cycle, i.e., the typical path an individual would follow from being a stranger to entering the lead nurturing phase.
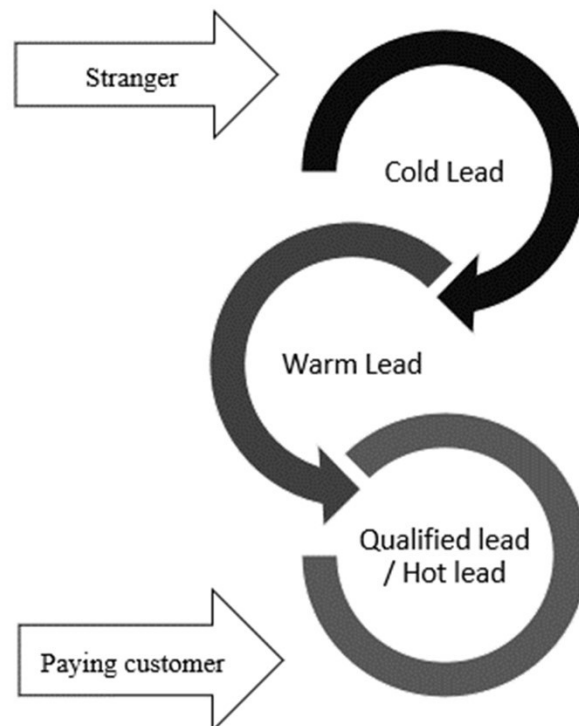
Figure 10. Lead life cycle (Adapted from Brock, 2019; Bondarenko et al., 2019)

Cold leads are individuals who have just become aware of the business but do not know much about it. Warm leads are individuals who have shown interest in the business, and qualified leads/hot leads are interested in the products or services the business offers and might become paying customers (Brock, 2019; Bondarenko et al., 2019). In this study, individuals who clicked on the case organisation's website were the cold leads; warm leads were redirected to a specific page. Individuals who complete the form were classified as hot leads, providing personal and contact information for lead nurturing.

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Industries are constantly changing and evolving, congruent with the changes in customer behaviour (Berman, 2012). As technology develops and introduces obstacles and opportunities to businesses, they must remain competitive and relevant in the 21st century (El Sawy et al., 2010). Businesses should focus on improving their operations and structures and how, when and where to communicate with their clients. Since consumers often spend much time online, businesses focus most of their marketing strategies on reaching their audiences through online platforms (Lusch & Vargo, 2014). When targeting potential customers online, it is important to carefully consider every possible touchpoint a customer could encounter, as every touchpoint will influence the customer's journey, either positively or negatively (Koski, 2016). As most businesses attempt to guide their potential customers to their websites for more information, they should carefully consider their corporate websites and recognise their important role in the sales funnel (Koski, 2016).

Many businesses use their corporate websites as their primary lead-generation tool. However, some do not yet grasp the importance and value of developing a website to create a positive and convenient experience for visitors online (Lehtinen, 2020). This issue is also encountered within the domain of social media lead generation, where a social media platform for a business is insufficient and needs special attention to create a more unceremonious engagement between the business and potential customers (Bondarenko et al., 2019).

The lack of comprehension regarding the importance of effectively implementing a user-friendly lead generation platform may lead to decreased ROI (Bondarenko et al., 2019). This means that the time and financial investment into creating this interface is ultimately wasted as it does not result in the realisation of a paying customer. The possibility of receiving an ROI can be increased with effective lead generation strategies by identifying individuals who fall within the target population of the product or service, i.e., identifying cold leads. The incorporation of UX into lead generation strategies increases the probability of its success and thereby the probability of receiving a higher ROI. More about the need to incorporate UX into lead generation is discussed later in this Chapter.

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Should an organisation add meaning to a user's life, a relationship can be fostered, increasing the likelihood that said user would become a loyal customer (Hartson & Pyla, 2019). Furthermore, customers are easier to retain than attract (Budac, 2008), which is true for both effort and financial aspects. The retention of customers is also important since the cost of retention is five times lower than acquiring new customers (Zhou et al., 2010). Loyal customers create repeated revenue, eclipsing the ROI of the lead generation strategy used to attract that customer in the first place (Budac, 2008). These loyal customers are also more likely to refer new potential customers to the businesses they trust (word-of-mouth advertising) and could lead to possible revenue-generating customers (Reichheld & Schefter, 2000).

The need for key performance indicators (KPIs) to be measured and reviewed is instrumental in better understanding the effectiveness of the lead generation process. KPIs can be defined as specific indicators that deal with certain aspects that are important to the present day as well as the subsequent success of the business (Parmenter, 2010). KPIs are subjective and differ within and between businesses. The goal of a project or business dictates the scope of its KPIs. The subjective nature of KPIs adds to the entirety of this problem as there are a variety of indicators that could be measured and a wide array of methods with which to achieve this (Zumstein et al., 2021). This leads to more significant complications in this process and, consequently, confusion within businesses without the expertise to implement, nurture and analyse the systems needed for an increase in turnover (Zumstein et al., 2021). Despite complications with identifying and measuring KPIs, it remains essential to do so because it enables businesses to track the success or identify the failure of lead generation strategies. Many businesses rely on lead generation to generate sales opportunities and create business value. When lead generation is implemented and maintained successfully, and visitors online convert into customers, businesses obtain value and can successfully build and grow their business value.

3.2 BUSINESS VALUE

"Business value is created through examining the business environment and market spaces to ascertain opportunities and challenges" (Rainey, 2015: 195).

Businesses in the 21st century that depend on online leads to generate sales should focus their resources on enhancing their lead-generation strategies to create business value. To generate value,

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business owners need to understand their value drivers and which areas to focus on to build and grow a more valuable business. The value a customer or user can create for a business is two-fold: They can create use value, the "subjective valuation of consumption benefits by a customer", or exchange value, the monetary value a customer brings to a business (Priem, 2007: 220).

For customers to be valuable assets of a business, customers first need to value the business' offerings (Priem, 2007). Offerings refer to the output of the value creation system and aim to solve customers' problems and satisfy their needs (Pekuri, Pekuri & Haapasalo, 2013), i.e., a product or service. This highlights the importance of targeted marketing strategies and ensuring that the recipients of marketing messages would find them valuable and worth further action.

Successful companies create value by ensuring that everything they do differentiates them from their competition (Pekuri et al., 2013). This strategy creates much value for businesses as the perception exists that the specific business and its offerings are not replaceable. With the successful creation of this perception, customers become intrigued. If their expectations were met, a business would soon be able to generate good leads to create a stable and loyal customer base. This aligns with the 'digital dilemma' that Fenwick (2016) describes, which states that perceived value will decrease if a customer's expectations exceed their experience. Accordingly, perceived value will increase if a customer's experience exceeds their expectations (Fenwick, 2016). The digital dilemma is discussed in more detail in Section 3.3.

In many businesses, revenue generation is vital for a successful business model and measures its ability to translate its value proposition into revenue streams and cover costs (Pekuri et al., 2013). Exchange value refers to the actual amount a customer pays and represents revenue to a value system (Priem, 2007). Healthy revenue generation is important to justify businesses' spending on generating leads (Pekuri et al., 2013; Priem, 2007).

The terms *creating value* and *capturing value* reflect two fundamental functions that all businesses should perform to remain viable over an extended period (Pekuri et al., 2013). When a business focuses on only one function, or neither, it becomes difficult to build, grow and sustain its value. Ensuring that the business model is difficult to imitate; optimal value creation and capturing

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strategies can create a sustainable competitive advantage (Pekuri et al., 2013). Sustainable competitive advantage is achieved when the processes and strategies are difficult for competitors to imitate while remaining achievable over time (Barney, 1991). This means that current needs are met and do not hinder the subsequent success of people or the environment (Rainey, 2015).

Relationships can create value for a business in four ways; jointness, balanced initiative, interacted value and socio-cognitive construction (Haas, Snehota & Corsaro, 2012). *Jointness* can create value by ensuring that all resources and involved parties are linked; *balanced initiative* states that all involved parties have the capabilities to spearhead processes that lead to value production (Haas et al., 2012). *Interacted value* is created by continued steams of communication between the involved parties to create solutions to problems and, ultimately, value. *Socio-cognitive construction* states that value is phenomenological, i.e., subjective, as opposed to objective (Haas et al., 2012). The idea of socio-cognitive construction aligns with Priem (2007: 222) who states that "a product or service that remains unconsumed is without value—that is, products and services are not value laden".

Business value can be created and improved by effective online lead-generation strategies because online lead-generation strategies help foster a relationship between the business and the customer, which is a value-creating medium (Vial, 2019; Zumstein et al., 2021). When online lead-generation strategies are effective, they deliver warm leads that could be nurtured into hot leads and, eventually, create loyal customers who view the business as irreplaceable. However, for lead generation to add value to a business strategy, it is also important to focus on the conversion rate of leads (Swieczak & Kukowski, 2016; Zumstein et al., 2021).

3.3 DIGITAL TRANSFORMATION

In the 1990s, a shift began from transactional to relationship management (Light, 2003). Companies started to focus on methods to retain customers rather than just selling their products to any customer (Ahn, Kim & Han et al., 2003; Blattberg & Deighton, 1996). Retaining customers leads to the growth of value within the customer base. The shift to the customer has been eased by the advances in the IT field that stimulated many innovations in business and marketing (Ahn et al., 2003). The ongoing development of technology has led to a digital revolution affecting how

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society operates (Chanias, 2017). Customers' behaviour is changing, leaving businesses having to undertake digital transformations continuously and develop their business models to adjust and adhere to changing customer needs and expectations in the 21st century (Berman, 2012).

Digital transformation (DT) requires businesses to combine information technology (IT) with their products and services to gain and sustain a competitive advantage (El Sawy et al., 2010). DT not only deals with the digitalisation of said products or services but also incorporates a wide array of changes within the business, leading to an adapted business model (Chanias, 2017) Due to digital transformation, many digital products are available to users. For a business to match the pace of technology development and the amplified competitiveness in the market, it must develop its business model with digital transformation in mind (Woodard et al., 2013). Businesses that can successfully implement digital transformation are 26% more likely to be profitable than their competitors that do not conform (Schwertner, 2017).

Customers use digital channels such as mobile, desktop and interactive tools to become experts on products or services. Information and relative merits about these products or services influence consumers' trust in what and where to purchase (Berman, 2012). Businesses are embarking on digital transformation strategies (DTSs) to gain competitive differentiation through adapting business models and rethinking what customers value most. This is achieved by readjusting the focus to the continuation of transformation in every business domain to ensure that no malalignments occur between these domains, which can ultimately be equally detrimental to the business not conforming with DT (Vial, 2019; Schwertner, 2017).

DT can only be successfully implemented if accompanied by a sound strategy and capable leadership (Schwertner, 2017). The meteoric development of innovative technology and changes within the extant infrastructure demands an effective DTS but also decreases the longevity of each strategy (Mahmood, Khan & Khan et al., 2019). Each strategy must be reviewed continuously and adapted to align with technological advances (Ebert & Duarte, 2018). The harsh reality is that 70% of DTSs fail to achieve the desired goal (Bucy et al., 2016).

According to Herbert (2017), digital transformation concerns a business's ability to react continuously to and utilise new digital technologies. Digital transformation enables businesses to break down barriers by removing outdated constraints and logic and leveraging technology to create new revenue streams, drive down cost, enhance UX and, consequently, CX.

Businesses are becoming increasingly aware of customer-side operations as these channels were highlighted by merging IT and business strategy, leading to the synthesis of a digital business strategy (Setia, Venkatesh & Joglekar et al., 2013; Vial, 2019). The importance of customer-side operations becomes apparent for various reasons, including but not limited to the rapid advances in innovation. Innovations cause repeated discontinuities, diminished product life span, an increase in business globalisation, complexity and the constantly evolving needs of customers (Setia et al., 2013). The importance of these consequences has been further highlighted by sources reporting that up to 40% of users with a negative experience with any touchpoint of a business will cease conducting business with them entirely (Dougherty & Murthy, 2009; Pavlou & Sawy, 2010). This realisation of the importance of customer-side operations leaves various pathways to enhance UX.

By leveraging technologies and exposing more digital products to consumers, businesses face the digital dilemma. Fenwick (2016) provides a straightforward equation of the digital dilemma, as depicted in Figure 11 below.
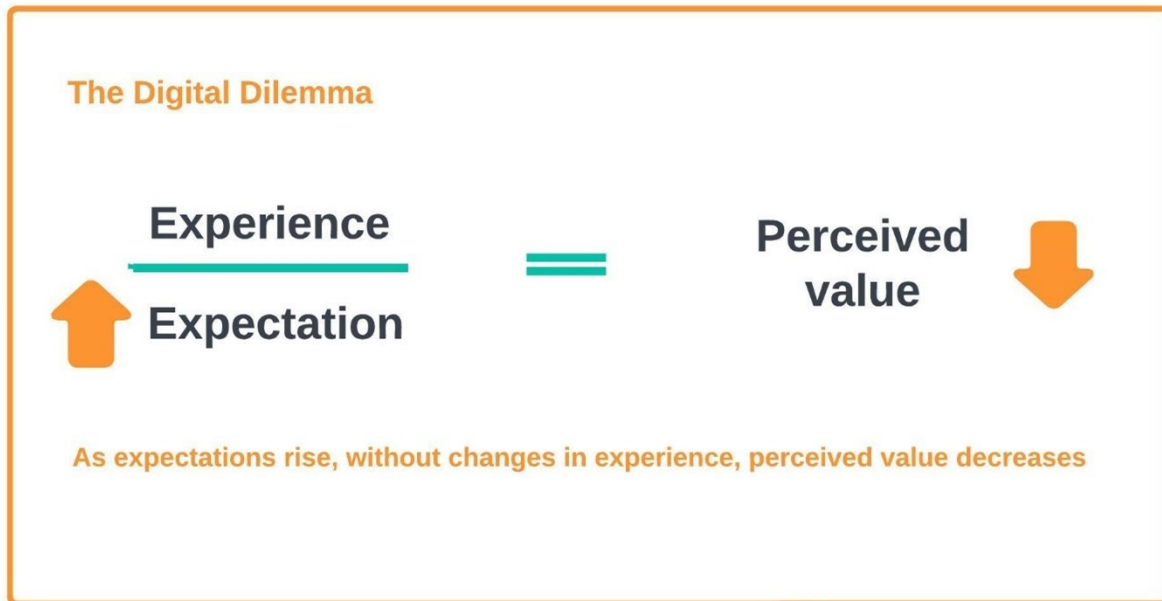
Figure 11. The digital equation (Fenwick, 2016)

This equation proposes that a customer's perceived value of a product or business is directly related to how well the product or business can meet the customer's expectations (Fenwick, 2016). This means that if the experience customers receive is worse than their expectations, it will leave them disappointed and will cause a diminished perceived value. This is also true for cases where the experience exceeds the customer's expectations, when the customer will be satisfied and, in turn, will lead to a higher perceived value of the product or business. This increase in perceived value will increase the probability of acquiring present and future revenue from that customer (Fenwick, 2016).

The digitalisation of many aspects of life leaves businesses with no choice but to undergo digital transformation. However, this is easier said than done, as only 30% of DTSs are effectively implemented (Bucy et al., 2016). If a business were to adjust its strategy based on the digital dilemma (Fenwick, 2016), i.e., ensuring that expectations are met and even exceeded to ensure that the perceived value of the business is positively impacted, the application of an effective DTS is achievable.

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3.3.1 CHALLENGES IN DIGITAL BUSINESS STRATEGY

Numerous challenges with a digital business strategy can arise on multiple levels (Bharadwaj et al., 2013). Such challenges require executives to absorb and embrace the changes necessary to prevail. These changes include acquiring novel capacities and abilities and identifying new value-creating pathways. They also require a profound comprehension of the digital world's ramifications for market transparency. One serious challenge that may arise is difficulties with the broader ecological system, which increases the likelihood of cyber threats to businesses (Legner et al., 2017). Overcoming this challenge requires new forms of digital collaboration, processes and infrastructures (Legner et al., 2017).

The challenge with digital business models does not merely reside in recognising new and developing technologies but instead in the aptitude to use these technologies and increase business value. The most significant challenge is the aptitude to use these technologies while having the ability to re-adjust alignment with technological advancements that occur rapidly (Mahmood et al., 2019). However, this can be problematic without a complete shift in all business domains. This complete shift would allow for a solid foundation upon which to build a fast-paced strategy to supply the rise in demand for digitalisation (Sebastian et al., 2017).

The lack of knowledge regarding technological advancement results in fear of use and, ultimately, the refusal of use by management and employees, leading to the outcome of failed transformation (Mahmood et al., 2019). There could also be a clash between ongoing projects and those required for the transformation (Kashfi et al., 2019). This stresses that education is also a significant part of the DT process (Gebayew et al., 2018). To counteract this refusal from certain business domains, a zealous and powerful manager with ample knowledge of transformation processes should spearhead the process (Matt, Hess & Benlian et al., 2015). This individual should also be able to constantly adjust and add to their skill set to align with the technological changes (Matt et al., 2015).

The tremendous number of internal considerations for a business during the transformation process could also cause customer disregard. This would exclude a critical part of the business and deem the strategy ineffective if it is not structured in a way that places the customer as the driving force

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of the business. Every strategy should always be aligned with the customers and their needs to be successful (Schwertner, 2017).

These are some of the biggest challenges a business may encounter during the transformation process. Depending on the business and situation, other challenges might arise during the process, but with a capable manager spearheading the process, solutions are more accessible.

3.4 DIGITAL MARKETING

"The way a site is designed and marketed has a large impact on the type of customer it attracts" (Reichheld & Schefter, 2000: 110).

The rise of technology and its incorporation into businesses allows them to unlock new operating methods, like digital marketing (Vassileva, 2017). Traditional marketing methods are being adapted to become more digitally oriented and suitable to the needs of consumers in the 21st century (Vassileva, 2017). One of the essential marketing factors is communication, as marketing intends to communicate and get a specific message across to a particular target market (Keller, 2009). To effectively communicate with consumers, marketing activities should occur where customers are most likely to be found and influenced (Lusch & Vargo, 2014). If a business can reach its target audience and communicate the intended message through marketing strategies; it will be able to lead its audience to its online platforms.

The internet provides numerous advantages to consumers and provides various opportunities for businesses. Consumers can now easily find products and services online, compare their findings and then make informed decisions about selecting one product or another (Berman, 2012). Businesses are also in a position to analyse and track their consumers' behaviour and habits online more efficiently (Berman, 2012). This allows businesses to reach their consumers more easily online and improve their marketing strategies' targeting. Digital marketing allows consumers to find products and services quickly and conveniently, ultimately accelerating purchasing.

Several online marketing techniques are available for acquiring customers, including search engine optimisation (SEO), search engine advertisements, email marketing, social network marketing and

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many more (Durmaz & Efendioglu, 2016; Swieczak & Kukowski, 2016; Rothman, 2014). SEO allows consumers to find what they want more easily when searching for something specific online. SEO implementations allow a webpage to rank at the top of a search engine, making it easier for consumers to find online. Search engine advertisements, also known as pay-per-click (PPC), is the process where businesses pay search engines a certain fee when their advertisements are clicked, and users are directed to their pages. Search engine marketing (SEM) also uses PPC (Durmaz & Efendioglu, 2016). With email marketing, customers are contacted via email and provided with information about a product or service, often leading them to a business' website for more information. Correspondingly, social network marketing attracts customers to related websites using social media tools (Durmaz & Efendioglu, 2016).

Familiarisation with the intricate detail of each strategy is required to decide on the most appropriate strategy (Durmaz & Efendioglu, 2016). These details should include the benefits of the strategy, the price of implementing said strategy, and possible challenges associated with the strategy (Durmaz & Efendioglu, 2016). Sometimes the possible benefits of a strategy do not justify the cost of implementing the strategy. This could mean that a different strategy would better suit the business. Companies can also apply multiple strategies at the same time to produce the desired quantity and quality of leads for the business; indeed, the utilisation of more than one strategy could increase the number of potential customers reached, which could result in better outcomes (Swieczak & Kukowski, 2016).

If a strategy is implemented, it is important to continuously assess its performance to ensure that it can progress towards meeting the goal and to ensure that it remains cost-effective (Swieczak & Kukowski, 2016). When multiple strategies are utilised, comparisons should determine the most efficient and effective strategy (Swieczak & Kukowski, 2016). Strategies that are effective now might not be effective in the future (Swieczak & Kukowski, 2016). Continuous evaluation of the strategies to ensure that the business always utilises the most effective strategies remains vital (Swieczak & Kukowski, 2016).

With digital transformation and consumers' everchanging needs, marketing strategies focus on meeting consumer needs as quickly and effectively as possible. Most businesses adjust their

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marketing strategies according to their target market's changing needs, ultimately increasing online competition between businesses (Vassileva, 2017). If every business had undergone DT to align their business strategy more closely with their users, the competitive advantage just from having transformed would be lost (Porter, 2001). This enhances the importance of optimising marketing strategies for customers to sustain a competitive advantage in the market (Durmaz & Efendioglu, 2016). Customers are an essential part of any business strategy, and businesses should adapt their strategies accordingly, especially their marketing strategy (Koski, 2016).

Still, it remains critical for businesses to find ways to direct people to their digital platforms in today's mostly digital world. Without traffic being directed to a business's website, there is no chance of converting leads into paying customers, which is essential to any business. There are numerous ways in which digital marketing can be achieved; therefore, a business should do a risk–benefit analysis when choosing which strategy would best suit them while still delivering high-quality leads (Swieczak & Kukowski, 2016).

3.5 ONLINE LEADS

In digital marketing, the corporate website of a business is one of the most important online channels (Lehtinen, 2020). Marketers have complete control over the corporate website, such as the design and optimisation, and can make changes without external restrictions. Even though websites can be used for numerous purposes, lead generation has become one of the most common purposes in the 21st century (Lehtinen, 2020).

Lead generation is often used as a primary marketing practice and can be seen all over the internet (Lehtinen, 2020). In 2016, 83% of companies used some form of internet lead generation tactic (Swieczak & Kukowski, 2016), with that number probably approaching 99% currently. Lead generation marketing is directed at people who have identified themselves as candidates who could turn into sales to show that they are interested in buying or learning more about an available product or service (Swieczak & Kukowski, 2016).

Even though the corporate website is perceived to be a powerful tool, most companies do not fully leverage the potential of their lead generation websites and fail to convert potential customers into paying customers (Lehtinen, 2020) or fail to foster existing relationships between customers and

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the business (Fleming & Weiss, 2015). When a user takes action to visit a business' online platforms, the business can potentially generate a lead (Swieczak & Kukowski, 2016).

Because websites have a virtual nature and lack human-to-human interaction, the content and design on-page is responsible for converting website visitors into sales leads (Lehtinen, 2020). A visitor needs as few as fifty milliseconds to judge a website and decide whether or not to stay on the website (Lehtinen, 2020). The way a website is structured and designed is therefore seen as a critical part of generating leads since visitors are constantly one click away from abandoning a website and exiting the sales funnel (Lehtinen, 2020).

Businesses often make significant investments to generate leads; however, when converting (or generating) leads, businesses often fail to meet the demands of the online age (Oldroyd, McElheran & Elkington et al., 2011). When successfully implementing lead generation strategies, it is essential to continuously check and analyse the results to monitor which strategies work best (Swieczak & Kukowski, 2016).

When focusing on converting potential customers into leads, it is vital to consider every possible touchpoint with the business a customer could encounter when moving through the sales funnel. These touchpoints could include email, social media, websites and many more, and when a feeling of trust is created through these touchpoints, a lead could turn into a paying customer (Koski, 2016). All leads go through the *attention*, *interest*, *desire* and *action* (AIDA) curve when they become aware of a business or product (Swieczak & Kukowski, 2016; Song et al., 2021). The attention phase commences when an individual becomes aware of the business or product. The interest phase commences when the individual starts to show interest in what caught their attention in the first phase. The individual enters the desire phase when a business can convince them that the product or business can solve problems for them, leading them to desire it. Desire is hugely affected by the individual's attitude towards the product or business and directly affects an individual's intention to act (Song et al., 2021), moving them into the next phase of the AIDA model, the action phase, within which an individual is on the brink of making the purchase (Song et al., 2021).

Lead nurturing is practised to familiarise potential customers with a business and is often used to help answer their questions and build a trust relationship. As approximately 50% of leads are not ready to make a purchase immediately, lead nurturing becomes essential to turn cold leads into warm leads (Koski, 2016), i.e., converting a somewhat interested individual into an individual ready to buy a product or pay for a service. With the correct content and approach, lead nurturing awakens a purchase need and motivates the user to purchase the product or service (Koski, 2016).

Responding to users' online queries remains crucial, and it is most beneficial to do so within the first hour after the query is logged. This is evident in research by Oldroyd et al. (2011), who find that if a business responds to queries within the first hour, it is seven times more likely to convert that lead than when replying after that initial hour. The reason for this is that all "customer service related to a product [or service] affect the overall UX" (Law et al., 2009: 726), and UX is a direct driver of organisational performance (Grewal et al., 2009; Mosley, 2007; Puccinelli et al., 2009).

Whether adjusting a website's design and content or setting a trusted foundation within every digital touchpoint, the most important aspect remains the user and their online experience with the business. When users find their experience with a business positive and valuable, they are much more likely to become loyal paying customers and thus add value to the business.

3.6 CONCLUSION

The ongoing development of technology and digital strategies affects industries in many ways. Not only are users and customers becoming more demanding, but competition between businesses online is also constantly increasing, leaving customers with endless options and businesses with added pressure. For businesses to thrive or even survive in the 21st century, they need to consider where potential customers are lost during the customer journey and invest resources to prevent that from happening. Businesses should focus on differentiating their online strategies from competitors' strategies and creating a heightened sense of value among users by exceeding their expectations.

Lead generation-oriented businesses from various industries often share more similarities than they realise. A lead is generated and guided towards a website where the user is undergoes an

experience. The experience can either be enjoyable, motivating the user to submit their details online or be unpleasant, which could drive the user into the hands of a competitor. A user, especially in the 21st century, is always just one click away from a competitor. When faced with bad UX, users can easily move on to a site offering similar products or services more compellingly (Nichols & Chesnut, 2014).

Forlizzi and& Battarbee (2004: 264) posit that "emotions shape the gap that exists between people and products in the world". This underlines the importance of emotional impact in information systems (IS). Emotional impact tremendously affects how an individual perceives the information a business provides and, as a result, impacts how and if an individual moves through the stages of the AIDA model (Song et al., 2021). Emotional impact is an important factor of UX (Hartson & Pyla, 2019). This shows how vital UX is during the lead generation process since UX "is a focus on positive emotional outcomes such as joy, fun and pride" (Hassenzahl & Tractinsky, 2006: 93). Positive emotional outcomes cannot be guaranteed. However, a developer can design a context in which specific emotional responses could be expected (Hassenzahl & Tractinsky, 2006). With lead-generation-oriented businesses sharing similarities, the opportunity exists for a UX framework to guide the process and, more importantly, to do so from the beginning. It will directly affect the business value if businesses better incorporate UX strategies onto their websites to enhance lead generation and conversion rates.

Information quality and system quality have a direct effect on UX (Zhou et al., 2010). Creating a visually appealing and positive navigational structure (system quality) by employing UX will increase customer trust in a business (Vance et al., 2008). Trust directly affects a user's intention to use a product or interface, affecting their loyalty to the business and ultimately increasing the business value (Vance et al., 2008). Factors such as culture, country of residence, predictability, reliability, utility and system quality can affect trust (Law et al., 2009; Vance et al., 2008; Zhou et al., 2010). Most of these are covered in the eight golden rules by Shneiderman et al. (2018) and show how important UX is in lead generation and business value.

Fishbein and Ajzen (cited in Vance et al., 2008) formulated the theory of reasoned action (TRA). TRA states that if a user believes in a business or product, they will have a positive attitude towards

it, which, in turn, leads to their intention to buy a product or service. These intentions affect the user's behaviour and eventually lead to them acting on their intentions (Vance et al., 2008). Hence, if a company can align every aspect of its business (including marketing, lead generation, business strategy, etc.) to make users believe in a specific product or the business as a whole, it could increase the likelihood of attracting and converting leads.

The ability to refer to a trusted and tested framework can prevent businesses from wasting resources like time and money (Canziba, 2018). Furthermore, it provides an opportunity for businesses to grow and fully utilise their potential. "In the end, loyalty is not won with technology. It is won through the delivery of a consistently superior customer experience" (Reichheld & Schefter, 2000: 113). This quote highlights the existing lack of literature regarding UX and provides an opportunity for the proposed framework to aid businesses in increasing their value and, consequently, the economy (Smyth, 2019) by implementing effective UX-based online lead generation strategies.

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4. RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

This chapter presents the research design and methodology utilised to address the research problem. The philosophical views, research approach, strategy, choices, time horizon, techniques and data collection and analysis are presented as research concepts and discussed in detail in this chapter. The demarcation of the research concepts forms the basis of the research design and process that will be tracked to answer the study's research questions. Figure 12 below outlines the overall chapter layout with the current chapter highlighted to position it in the research.
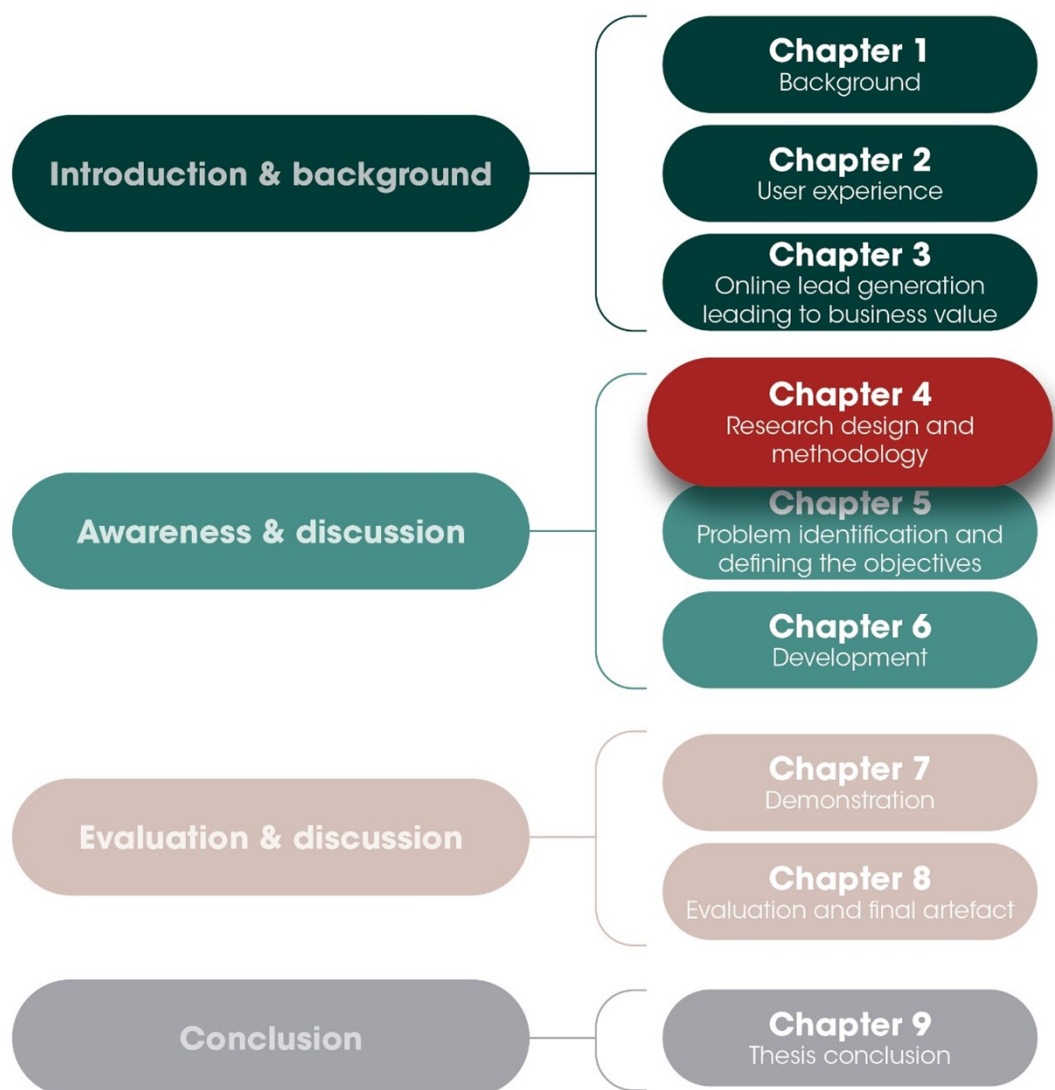
Figure 12. Chapter 4 positioning

4.2 RESEARCH DESIGN

Research design aims to provide a structured and rational way to assist the researcher in understanding and solving the research problem (Terre Blanche, Durrheim &and Painter 2006). In this study, the researcher utilised the 'research onion' developed by Saunders, Lewis and Thornhill (2009) to understand the research design. The following sections discuss the research philosophy, after which the selected research strategy is presented. Section 4.2.3 addresses the research approach, choice, time horizon, data collection and analysis for each phase of the DSR cycle.

4.2.1 RESEARCH PHILOSOPHY

The term *research* relates to the development of knowledge and its nature in a particular field of study (Saunders et al., 2009). The assumptions about the researcher's world perception support the research approach, strategy and techniques employed (Saunders et al., 2009) and what constitutes valid research (Myers, 1997). Saunders et al. (2009) posit that the philosophical view influences the relationship between knowledge and the process of developing knowledge. Ways of thinking or philosophical assumptions guide the research philosophy, ontology, epistemology, methodology and axiology.

Ontology is concerned with the nature of reality. This reality forms the basis of researchers' assumptions about how the world operates and their commitment to particular views (Orlikowski & Baroudi, 1991; Saunders et al., 2009). Ontology consists of two approaches, namely *objectivism* and *subjectivism* (Saunders et al., 2009). The stance of *objectivism* is that social entities exist external to social actors concerned with their existence. In contrast, *subjectivism* declares that social phenomena are created from the perceptions and actions of social actors concerned with their existence.

Epistemology refers to the theory of knowledge and how this knowledge is acquired (Hirschheim, 1985). Epistemology is also concerned with what represents adequate information in an area of research (Orlikowski & Baroudi, 1991; Saunders et al., 2009).

Methodology indicates the theory of how the research will be done (Saunders et al., 2009). This includes the theoretical and philosophical assumptions that might affect the study's design and methods (Saunders et al., 2009).

According to Biedenbach and Jacobsson (2016), **axiology** addresses questions about what is valued and considered desirable or good for humans and society. Saunders et al. (2009) argue that values are the guiding reason for all human action; furthermore, axiology or the researchers' values play a role in all the stages of research and should be carefully considered to produce credible research results (Saunders et al., 2009). These philosophical assumptions are important when deciding on the most suitable philosophy for research. The main research philosophies available are positivism, interpretivism, pragmatism and critical research (Saunders et al., 2009; Olivier, 2009; Vaishnavi & Kuechler, 2004).

Positivism generally assumes that reality is objective and can be described by measurable properties independent of humans (Orlikowski & Baroudi, 1991; Myers & Avison, 2002). Overall, positivists attempt to increase the predictive understanding of a phenomenon by testing a theory. According to positivists, science makes the most transparent ideal of knowledge possible. They also claim that science generates reliable and objective knowledge with a focus on abstraction and generalisation (Cohen et al., 2007).

Interpretivism asserts that reality and the knowledge thereof are social products and that these products cannot be understood independently of the researcher who constructs and makes sense of the reality (Orlikowski & Baroudi, 1991). Interpretive research aims to understand how members of social groups enact their realities and contribute meaning to those realities through their participation in social processes. Interpretive research also uncovers how such members' meanings, intentions and beliefs constitute their social actions.

Pragmatism emphasises matters regarding practice (Mounce, 2000), focuses on problem-solving and prioritises considering every problem and situation individually. Denzin (2012) in Morgan (2014) argue that the meaning of events cannot be discerned before an experience, with a focus on the consequences and meanings of an action or event. William James, a philosopher, presented

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pragmatism as a philosophy of truth, emphasising that a belief's validity is found in its implications for experiences (Mounce, 2000).

Critical research assumes that social reality is historically constituted, produced and reproduced by people. Critical researchers recognise that various forms of social, cultural and political domination inhibit their ability to act to change their social and economic circumstances consciously. In critical research, the researcher evaluates the social reality under investigation (Olivier, 2009).

After basic familiarisation with these research philosophies available, the researcher determined positivism, interpretivism and pragmatism to be the philosophies most likely to fit this study's purpose. Table 2 highlights the ontological, epistemological and other meta-theoretical assumptions to consider when choosing between these research paradigms. The strategies, data collection and analysis techniques most often associated with a research paradigm also guide the researcher when choosing a specific paradigm.

Table 2. Meta-theoretical assumption comparisons between positivism, interpretivism and pragmatism (Author's own)

	Positivism	Interpretivism	Pragmatism
Ontology	Assumes an objective physical and social world independently of humans (Myers & Avison, 2002; Orlikowski & Baroudi, 1991). Measurable properties, independent of the observer, are used to describe reality. External, objective and independent of social actors.	When describing the research, personal biases and assumptions are made explicit (Weber, 2004). The importance of subjective meanings and social-political and symbolic action is emphasised. Humans and their interactions produce and reinforce the social world (Orlikowski & Baroudi, 1991). Socially constructed and subjective.	External, multiple views are chosen to answer research questions best (Saunders et al., 2009).
Epistemology	It is concerned with the empirical testability of theories. This includes verifying or falsifying the theory (Orlikowski & Baroudi, 1991). Only observable phenomena can provide credible data.	Recognises that constructed knowledge reflects, for example, goals, culture, experience and history, i.e., a social construct. Interpretive research in IS aims to understand the relationship between the context of IS, its influence on it, and how it influences the context (Walsham, 2001). It accepts that the artefacts built to understand the world (theories, frameworks, constructs) are socially constructed (Weber, 2004).	Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to help interpret the data (Saunders et al., 2009). It is constructive knowledge not seen as a duplicate of reality (Goldkuhl, 2012).
Research Object	The objects researched have qualities independent of the researcher (Hirschheim, 1985; Orlikowski & Baroudi, 1991).	The qualities ascribed to the objects researched are socially constructed. The research process and the objects researched are intimately related (Weber, 2004).	The objects researched are seen as actions or ways to change the understanding of existence (Saunders et al., 2009). It is tangible and practical (Goldkuhl, 2012).
Methods and data collection techniques most often used	Laboratory experiments, field experiments, and surveys are the preferred research methods. Collects large amounts of empirical data that can be analysed statistically to detect	Uses cases, ethnographic, phenomenographic and ethnomethodological studies as preferred research methods. It allows small sample sizes but in-depth	Mixed or multiple method designs, both quantitative and qualitative (Saunders et al., 2009).

	underlying regularities (Olivier, 2009; Weber, 2004). Highly structured, requires large samples and exact measurement and uses quantitative methods.	investigations and uses qualitative methods (Saunders et al., 2009).	
Theory of Truth	One-to-one mapping exists between research statements and reality (Weber, 2004).	The researcher can never assume a value-neutral stance and is always implicated in the study (Orlikowski & Baroudi, 1991). According to Weber (2004), an interpretive researcher tries to match his preconceptions to his understanding (livid experience) of analysis.	The research questions drive the philosophy (Saunders et al., 2009).
Validity	Strives to collect data that are true measures of reality (Weber, 2004).	They are concerned about whether their claims about the knowledge acquired via research are defensible (Weber, 2004).	It is concerned with data about the present and the application thereof in the future (Goldkuhl, 2012).
Reliability	Believes that research is reliable and that the researcher and other researchers can replicate its results. It is concerned with the idea of replicability (Weber, 2004).	Believes that research is reliable if researchers demonstrate interpretive awareness (Weber, 2004). In other words, it acknowledges the subjectivity interpretivism brings to the research. Concerned with replicability by clearly laying out their research methods and how interpretations were achieved.	Strives to be effective in a real-world setting (Stephen et al., 2016). It concerns solving a problem rather than generalisability (Stephen et al., 2016).

The researcher considered the research questions, objectives and the abovementioned meta-theoretical assumptions when choosing a philosophical perspective that best suited the proposed research. The main objective of this research is to determine the elements that should be included in the user experience-based online lead generation framework (UXOLF). Frameworks are "real or conceptual guides" (Vaishnavi & Kuechler, 2004: 16). The researcher deemed data collection techniques like questionnaires and participatory designs suitable to identify these elements. Ontologically, the research encompasses multiple views to answer the questions satisfactorily. Epistemologically, the study constructed an artefact that contained the identified elements that should be included in a UXOLF.

Pragmatism: The knowledge gained through pragmatism ranges farther than that of positivism (explanations) and interpretivism (understanding); it also entails prescriptive, normative and prospective knowledge (Goldkuhl, 2012). It is highly focused on individual situations and prefers to treat situations based on the implications of certain actions. The frequent linkage between pragmatism and mixed-methods research has heightened an awareness of pragmatism (Morgan, 2014). The researcher determined that the best philosophy for this study was pragmatism. It is a middle ground between interpretivism and positivism (Saunders et al., 2009). Pragmatism aligns with the design science research suggested for this study (Vaishnavi & Kuechler, 2004) as it allows the formation of novel artefacts to solve real problems (Hevner & Chatterjee, 2010). Hence, pragmatism allows the researcher to conduct the research as comprehensively as possible while still conforming to the philosophy.

4.2.2   RESEARCH STRATEGY

Myers (1997) describes a research strategy as a process of moving from a chosen underlying philosophical perspective to research design and data collection. The selected research strategy expresses the meta-theoretical assumptions associated with the chosen perspective's ontology, epistemology and methodology. This section presents the strategy for conducting the current research.

4.2.2.1   DESIGN SCIENCE RESEARCH

Design science research (DSR) is a research strategy that aims to solve real-world problems (Hevner & Chatterjee, 2010). It plays a vital role in creating, applying, evaluating and improving

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IT artefacts (Hevner et al., 2004). According to March and Smith (1995), concrete problems in IT must be conceptualised and represented. DSR in IS research uses artefact design and construction to generate new knowledge and insights into a problem. Hevner et al., March, Park and Ram (2004) suggest a DSR framework for understanding, executing and evaluating DSR in IT, depicted in Figure 13 below.
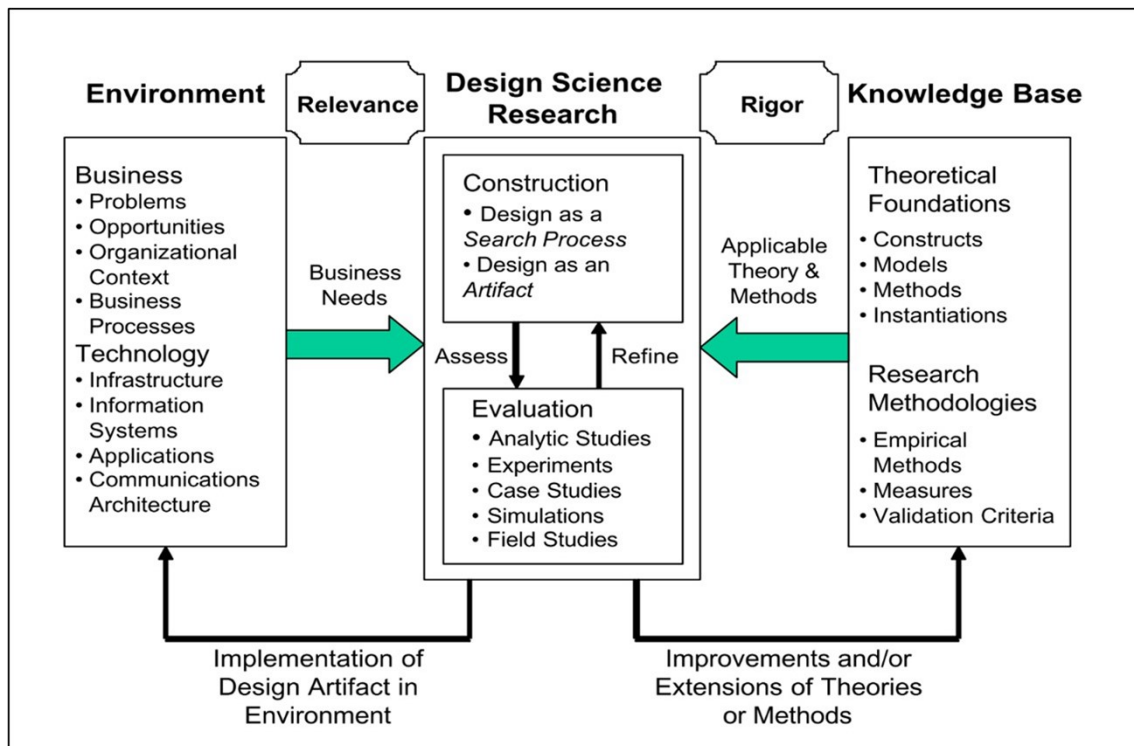
Figure 13. Design science research framework (Hevner et al., 2004)

Figure 13 explains that DSR draws relevance from the business environment and rigour from extant academic knowledge in the artefact creation process. Within the DSR process, the artefact is created and evaluated until deemed satisfactory, after which the artefact feeds back into the business environment and academic knowledge to elicit the implementation of the artefact or improvement of the extant knowledge base.

4.2.2.2   MOTIVATION FOR SELECTING DSR

This study aims to construct, evaluate and test an artefact termed UXOLF. The DSR framework provides a structured, iterative process to capture domain knowledge to create, evaluate and test

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an artefact. The DSR framework addresses two fundamental notions: rigour and relevance (Hevner et al., 2004). Rigour can be achieved by applying existing theories and methods, while relevance ensures input from business needs, opportunities and technology (Hevner et al., 2004). Both these notions are crucial factors for this study. Instead of testing a pre-formulated proposition, DSR, as a qualitative process, allows solutions to emerge during the study.

In DSR, the overarching context is a business problem (Hevner et al., 2004). Kuechler (2009) suggests a framework for theory development around an identified problem or aspect of a problem with a solution as an end goal. The expanding key battleground for global competition is the experiences of customers and employees with digital products and services. The main objective of this study aligns with the identified relevance as input to the DSR.

The researcher applied theoretical foundations and proven research methodologies to ensure rigour in the suggested DSR process. This study utilises the framework by Peffers et al. (2006), as outlined in the paragraph below. The theoretical perspective, literature review, and document analysis formed the knowledge base to address rigour and the suggested research methodologies. To ensure relevance, the researcher undertook a snap survey and the creation of the artefact through participatory design (PD) with industry professionals.

Peffers et al. (2006) suggest a theory development framework that consists of six phases to find a solution to a problem. The first of these phases is *problem identification and motivation*, where the researcher becomes aware of the problem and explains the value of the possible solution. The second phase is *defining the objectives for a solution*, where the researcher provides possible suggestions to solve the problem. In the third phase, *design and development*, the researcher creates or designs their solution (artefact) to the problem. The fourth phase is *demonstration,* where the artefact is demonstrated in action. In the fifth phase, *evaluation*, the researcher examines the efficiency and efficacy of the artefact. *Communication* is the last phase, during which the study contributes findings to a broader body of knowledge. The researcher can return to the previous step(s) to revise and adjust as needed. Figure 14 below provides a summary of these steps. Section 4.2.3 discusses how DSR is applied to this study.
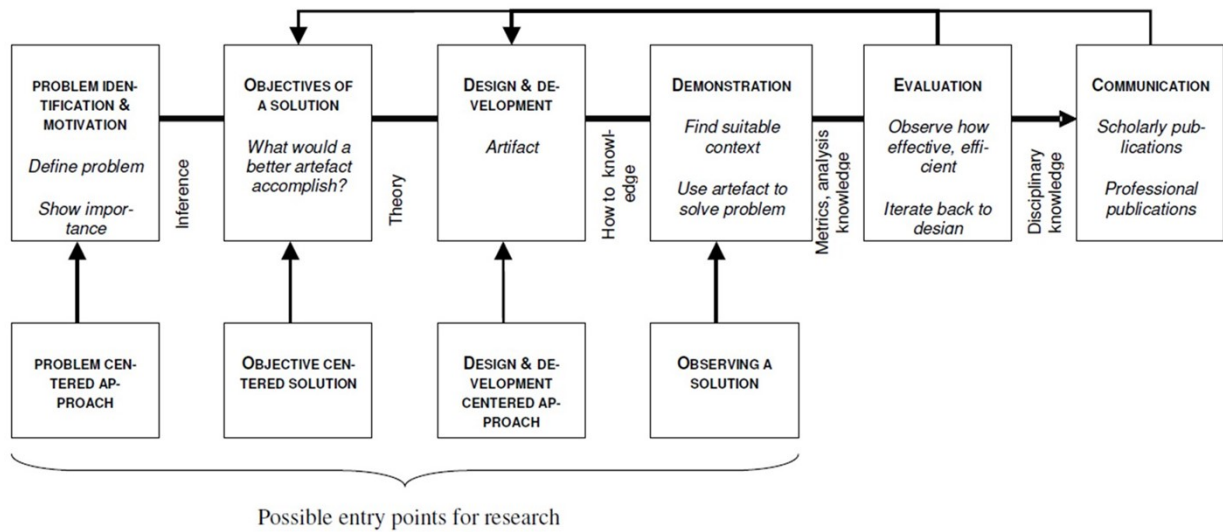
Figure 14. DSR theory development framework (Peffers et al., 2008)

4.2.3   RESEARCH TECHNIQUES AND PROCEDURES

This section presents each phase of the design science research main cycle in detail, which includes the research approach, choice, time horizon and data collection and analysis for each phase independently. Figure 15 illustrates the research phases followed in this study and the research's primary cycle and phases. Since the research outcome would be an artefact in the form of a framework with theoretical and practical value, the study employed DSR based on the Peffers et al. (2008) framework to structure the overall research process. Figure 15 also indicates at which point of the main cycle the research questions will be answered.

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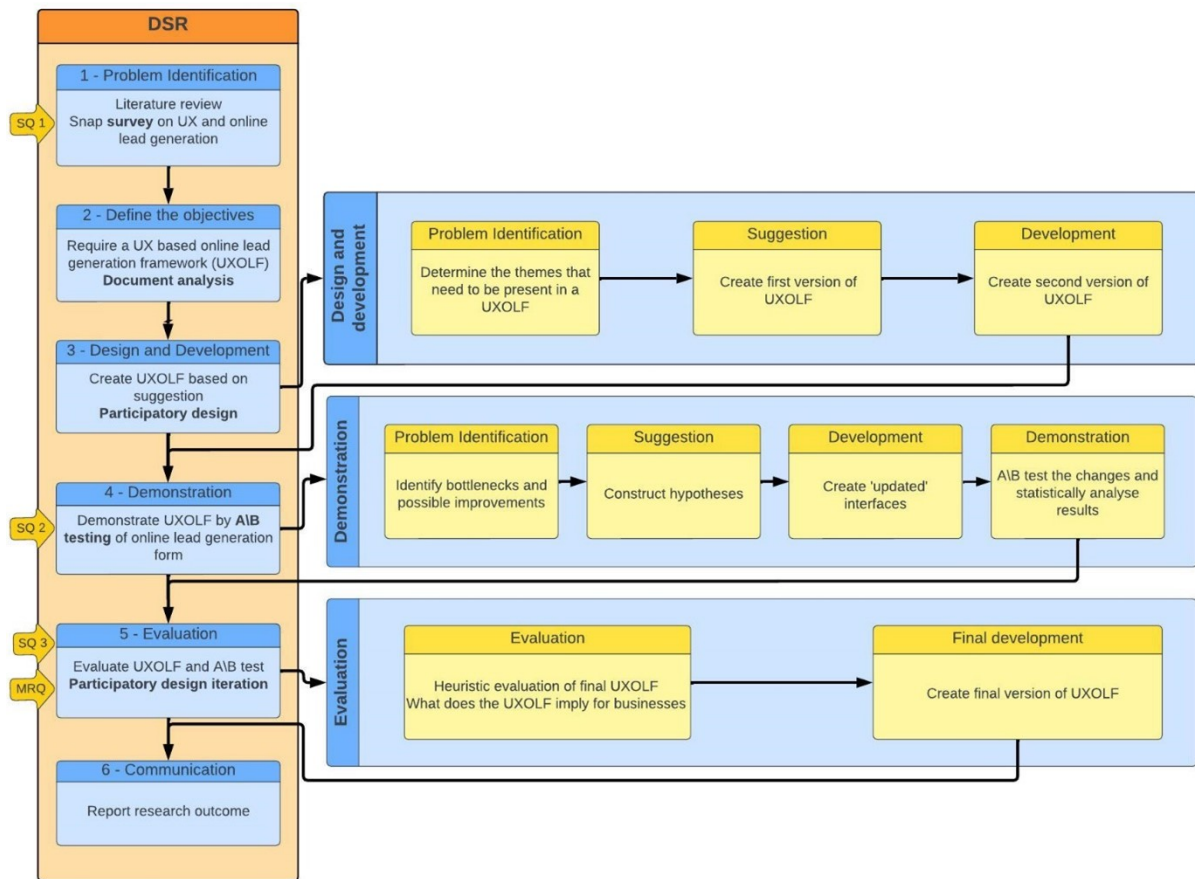
Figure 15. DSR phases in this study (Adapted from Peffers et al., 2008)

This study aims to create a UXOLF that can be used in any business, utilising an online lead generation approach on their websites. Even though the case organisation is an automotive business, mainly focused on buying and selling vehicles, the goal of this research is to test users and study their behavioural changes to certain UX design changes. Additionally, the study intends to apply the framework to businesses that depend on users to submit their details to increase business value. The framework will include factors proven to impact how customers interact with a website, especially lead generation. The sections below will discuss in detail what each phase of the main cycle entails, as depicted in Figure 15.

4.2.3.1 PROBLEM IDENTIFICATION

This phase aims to answer the first supplementary research question (SQ 1): "*Why is the synthesis of a user experience online lead generation framework (UXOLF) necessary?*" Figure 16 displays a snapshot of the problem identification phase.
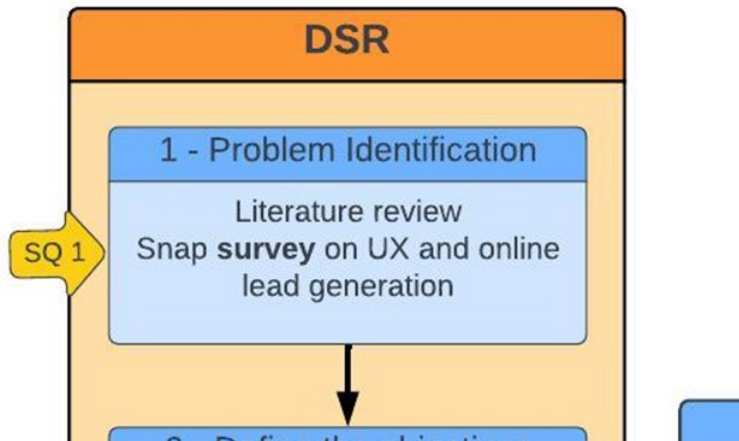
Figure 16. Problem identification phase

4.2.3.1.1 APPROACH

The research choice for this phase was inductive research. In *inductive* research, the researcher collects data to develop a theory as a result of the data analysis (Saunders et al., 2009).

4.2.3.1.2 CHOICE

The choice within this phase is *quantitative* research. Quantitative research focuses on numbers and variables, whereas qualitative research focuses more on individual humans. Quantitative research originated from the natural sciences to study natural phenomena (Myers, 1997). It aims to do exact measurements using observation studies, laboratory experiments, mathematical modelling and survey research. Therefore, quantitative research aligns with this phase's projected data collection method.

4.2.3.1.3 TIME HORIZON

The methods utilised for this phase require data to be collected over time, and thus the most fitting horizon is *longitudinal* (Saunders et al., 2009).

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4.2.3.1.4   DATA COLLECTION AND ANALYSIS:

This phase used a literature review and questionnaire, which is discussed in detail below. A questionnaire is the data collection method most regularly used in surveys; the subsequent sections first discuss the survey strategy, followed by the questionnaire methodology.

SURVEY

Surveys are typically used to acquire information about a specific population; this information allows a researcher to draw conclusions about said population (Calder, 1998). With surveys, the word population relates to the entirety of the population the survey endeavours to evaluate (Sapsford, 2011). The end goal of surveys is to produce population statistics (Fowler, 2009). Surveys can point to knowledge gaps and indicate where more information is required (Punch, 2003). They also allow the researcher to determine if a relationship exists between variables and can allow for a complete understanding of how and why this relationship came to be and then report on it (Punch, 2003).

Surveys are conducted by distributing questionnaires to or conducting interviews with either a sample or an entire population (Calder, 1998). According to Olivier (2009), three aspects make surveys relevant:

1) The intended population is often too large to count; thus, a population sample is used and generalised to the entire population.

2) When dealing with humans in a survey, it is often necessary to utilise a questionnaire to determine the characteristics of the sample population of interest.

3) Surveys can be used not just to determine the status of the population but also to prove theories about the population.

The research question guides the characteristics of the survey; it provides the researcher with an initial list of concepts that require more knowledge and the starting point of the questionnaire (Punch, 2003). Punch (2003) proposes six survey research characteristics that must be considered before commencement. 1) The survey should fit in with the research question; 2) The researcher should decide if a new questionnaire should be developed (self-developed) or whether a ready-made questionnaire can be used; 3) How long should the questionnaire be; 4) How it will be administered; 5) The format of the questions; and 6) Ethical considerations (Punch, 2003). If the

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researcher creates a new questionnaire, they must conduct pilot testing to ensure the questionnaire is comprehensible, time efficient and valid for the research (Punch, 2003). This study considered these characteristics during the questionnaire construction and are discussed in the following paragraphs and ethics section (4.3).

QUESTIONNAIRE

Questionnaires are widely used in research to pinpoint attributes within a specific populace (Díaz-Oreiro et al., 2019). The researcher developed the questionnaire to allow for the questionnaire to be congruent with the research question. It investigated the multiple causal relationships between UX, online lead generation and business value (Punch, 2003). The questionnaire was administered to ascertain if the academic gap in knowledge identified in Chapters two and three could be found in practice. The questionnaire was quantitative and thus yielded numerical data. In addition, the questionnaire was small-scale and cross-sectional. The reason for the small scale of the questionnaire is because the population available for this study was limited (Punch, 2003).

The questionnaire followed a self-administered mode (Sakshaug et al., 2022). After the questionnaire had been compiled it was distributed to a group of UX designers and front-end developers to substantiate the problem statement in Section 1.1. The questionnaire consisted of ten questions with a LIKERT classification format (Gillham, 2008). The response format consisted of a five-point differential scale. This aided participants in deciding more accurately whether or not they agreed with the statement provided, rather than a dichotomous questionnaire's short yes/no answers, while also facilitating greater reliability (Barua, 2013; Lin Xu & On Leung, 2018). The researcher decided on the five-point scale because it allowed for more precise information recovery from each individual without overwhelming them with too many options, which would increase mental stress (Lin Xu & On Leung, 2018). The scale was only labelled at the ends, which research suggests is most effective; it eliminates the possibility of misinterpretation of the words assigned to each point (Lin Xu & On Leung, 2018). It also allowed each participant to psychologically assign their understanding to the three points in the middle.

This questionnaire utilised convenience sampling as a sampling method (Salkind, 2010). This method is acceptable at this level of the study because the questionnaire seeks to validate the problem statement and does not affect the study results (Salkind, 2010). The survey does not aim

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to generalise the findings to the entire design population but rather as a means of data triangulation of the problem statement (Punch, 2003).

Two pilot studies were conducted before the distribution of the final questionnaire to determine if the questions were structured in a comprehensible way. The time taken for each individual to complete the questionnaire was noted to determine an average time taken and establish the time efficiency of the questionnaire, to ensure that the ten-question questionnaire did not take an individual 20 minutes to complete (Punch, 2003). The researcher made changes after both pilot studies; the final questionnaire was only distributed once comprehensibility and effectiveness had been reached. Chapter 5 discusses the pilot studies and final questionnaire thoroughly; a copy of the questionnaire can be seen in APPENDIX B.

Questionnaire participants:
The questions were posed to UX experts and are formulated with the case organisation's application in mind. The findings were in line with the data found in the literature. To the researcher's knowledge, no such framework currently exists. Therefore, this questionnaire can be regarded as an expert review since experts within the design field completed it. The participants completed an informed consent form before commencement and were informed that they had the right to participate or withdraw at any time during the study. The informed consent form was drafted with the least number of words possible; essential information was in bold to ensure that participants could fully comprehend their consent even if they only quickly scanned the form. The consent form can be seen in APPENDIX B. All the participants for this part of the study were professionals within the design domain and were over 18 years of age; therefore, this group did not have vulnerable participants (Pierre, 2018).

4.2.3.2   DEFINE THE OBJECTIVES OF A SOLUTION

Figure 17 displays a snapshot of this phase from the DSR structure of the study. In this phase, a UXOLF for business value was suggested to redress the identified deficiency. The objectives of the framework were identified through document analysis.
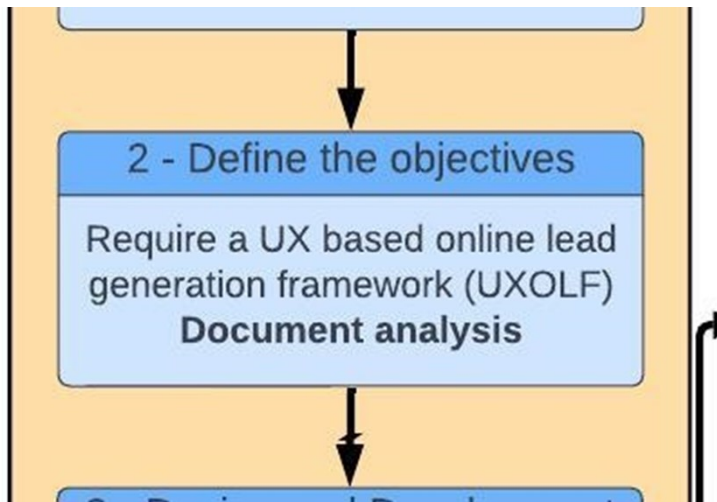
Figure 17. Define the objectives of a solution phase

4.2.3.2.1 APPROACH

The research approach for this phase was *inductive*, which allows for the qualitative approach used within this phase and theory development after the data collection and analysis (Saunders et al., 2009).

4.2.3.2.2 CHOICE

The research strategy choice for this phase was *mixed-method* research. Document analysis required the input of qualitative data and was subjected to content analysis, which yielded quantitative data. Mixed-methods research is undertaken when quantitative and qualitative data collection techniques and analysis procedures are used to answer a research question. A mixed method utilises the strengths of both qualitative and quantitative methods and helps develop a deep understanding of the topic (Venkatesh et al., 2013). Trauth and Jessup (2000) point out that by adopting mixed research method approaches, various benefits can be derived as each method has different assumptions and procedures that could complement one another. When conducting mixed methods research, the data from the qualitative and quantitative approaches can either strengthen the outcome or contradict each other, indicating a void for which more research should be conducted (Venkatesh et al., 2013).

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4.2.3.2.3 TIME HORIZON

The time horizon for this phase was longitudinal since the researcher spent many weeks collecting and analysing the documents. *Longitudinal* research collects and analyses data to assess change (Saunders et al., 2009).

4.2.3.2.4 DATA COLLECTION AND ANALYSIS

This phase used document analysis for data collection, subjected to content analysis, which is discussed in detail below. The reason for incorporating document analysis into the study at hand was due to the fact that document analysis spans further than just that of academic knowledge as it includes newspaper articles, web pages and blogs to name a few (Bowen, 2009), this allowed for an all encompassing view of existsing UX, lead generation and business value knowledge.

DOCUMENT ANALYSIS

Bowen (2009) defines document analysis as a systematic review and evaluation of printed and electronic documents to elicit meaning. This systematic review process aims to gain an understanding of the documents and develop empirical knowledge. These documents contain text and images collected without researchers' intervention.

Although this research project included a literature review from previous studies, document analysis that includes sources such as manuals, background papers, books and brochures, press releases, institutional reports and secondary survey data was used for triangulation. Triangulation is defined as; a way to provide "a confluence of evidence that breed credibility" (Eisner in Bowen, 2009: 28). This allows the researcher to substantiate findings from various sources to lessen the potential biases that could exist in a single study as is suggested for this research project. It allows the researcher to deeply understand the suggested research domain by thoroughly investigating UX and online lead generation. Section 4.2.3.5 discusses triangulation in more detail.

The study employed a combination of keyword and backward searching to select data sources for analysis in this phase of the DSR. Keyword searching is the perusing of databases using an exact word or phrase, which is the keyword (Levy & Ellis, 2006). The keywords used to find documents for this study are *user experience, user experience principles, lead generation, digital transformation, online lead generation* and *business value.* Backward searching is reviewing the

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references of the sources found through keyword searching (Levy & Ellis, 2006). This allows a researcher to look for specific sources from the source's reference list. The backward searching identified other sources that added value to the topic. Document analysis involved finding, selecting, reading, summarising and synthesising data in documents related to online lead generation and UX alignment. Data included, for example, excerpts and quotations that were organised into themes, categories, and case examples through content analysis (Bowen, 2009).

Content analysis:
Content analysis is "the process of organising information into categories related to the central question of the research" (Bowen, 2009: 32). It involves a review of the documents to identify critical texts (Bowen, 2009). It allows for the quantification of qualitative data (Bowen, 2009). Ahuvia (2001) lays out three ways in which content analysis could be done: traditional content analysis, interpretive content analysis and reception-based content analysis.

Traditional content analysis involves a three-step plan: gathering data, coding this data and interpreting the codes—usually done by counting the frequency of each code (Ahuvia, 2001). The researcher must adhere to strict coding rules for good inter-rater reliability. A problem that might arise with this form of content analysis is that the text's natural audience could interpret the meaning of it as something wholly isolated from that of the assigned code (Ahuvia, 2001).

Interpretive content analysis follows the same three-step plan as traditional content analysis; however, it is not as concerned with inter-rater reliability but rather with 'public justifiability' (Ahuvia, 2001: 147). Public justifiability allows a researcher to interpret text and create codes without the requirement of needing another scholar to make the same deductions independently. The researcher must provide a compelling reason for a specific interpretation and why the corresponding code was created for the text (Ahuvia, 2001). This eliminates the extensive interpreter training required in traditional content analysis. This form of content analysis is best suited when achieving inter-rater reliability is cumbersome.

Reception-based content analysis also follows the same three-step plan as traditional content analysis. However, it does not have strict coding rules and is concerned with obtaining interpreters from the texts' target population to perform the coding based on their interpretations of these texts

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(Ahuvia, 2001). Again, this eliminates the need for extensive training of interpreters. However, to draw sound results from the coding, the researcher must use many interpreters if the contents of the text in question are not unanimously agreed upon (Ahuvia, 2001). Reception-based content analysis is most effective when the aim is a better understanding of the reader's interpretation of specific texts (Ahuvia, 2001). Notwithstanding, reception-based content analysis was excluded as a consideration for this study as the aim is not to understand the reader's interpretation of the text. Additionally, the fact that UX is not universally agreed upon means that the requisite number of raters far exceeds the capabilities of this study.

The researcher determined that interpretive content analysis was the most effective technique to use for this study. This form of content analysis was chosen because it allows the researcher to assign codes and create themes without adhering to traditional content analysis's strict rules. Additionally, since user experience was not universally agreed upon by the time the analysis commenced, inter-rater reliability might also have been cumbersome, indicating once again that interpretive content analysis would best suit this study. Chapter 5, Section 5.2 provides the list of codes and themes. The results from the document analysis also served as input into the next phase of the DSR.

4.2.3.3 DESIGN AND DEVELOPMENT

In the development phase, the document analysis outcomes were input into a participatory design session to identify the key themes that should be present in the UXOLF. This aided in the creation of the first version of the framework. Figure 18 below displays a snapshot of this phase.
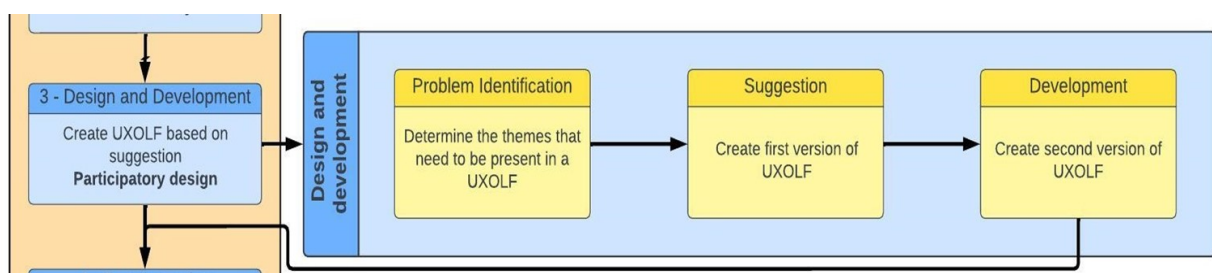
Figure 18. Design and development phase

The researcher used the document analysis results to establish the themes that need to be present in the UXOLF, which is the first sub-phase of this phase. The first version of the UXOLF was created in the participatory design session employed by this phase, which then constitutes the

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suggestion sub-phase. Lastly, after the PD session was thematically analysed, the framework was enriched with additional themes that were comprehensively discussed during the session. This forms the development sub-phase depicted in Figure 18.

4.2.3.3.1 APPROACH

This phase also required an *inductive* research approach as it allowed the researcher to participate in the process and develop a theory during or after the data collection process instead of before (Saunders et al., 2009).

4.2.3.3.2 CHOICE

The researcher chose qualitative research for this phase. Qualitative research usually follows an inductive approach. This allows researchers to form and test hypotheses during data collection and analysis rather than formulating a meaningful hypothesis in advance (Maxwell & Kaplan, 2005). Qualitative researchers do not have enough insight into the perspective and situation of the participants to formulate a hypothesis in advance (Maxwell & Kaplan, 2005). There are two reasons why the flexibility of qualitative research is necessary. First, the processes being studied, evaluation methods, and research stakeholders may change over time, requiring the study to adapt. Second, inductive qualitative data collection is often iterative because the researcher may need to collect and analyse data more than once (Maxwell & Kaplan, 2005).

4.2.3.3.3 TIME HORIZON

This phase required only a cross-sectional time horizon. A *cross-sectional* time horizon takes a snapshot of a situation at a specific time (Saunders et al., 2009). Multiple iterations of this phase occurred over time; however, each iteration remained cross-sectional as it took place on a single day.

4.2.3.3.4 DATA COLLECTION AND ANALYSIS

This phase used participatory design for data collection and analysis, as discussed below.

PARTICIPATORY DESIGN
Participatory design (PD) focuses on creating and fostering tacit knowledge through design partnerships between researchers, designers and participants (Spinuzzi, 2005). Tacit knowledge allows for a quick response or reaction without following an entire thought process from beginning

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to end (Spinuzzi, 2005). In these partnerships, researchers, designers and participants cooperatively design artefacts, workflow and work environments to ensure that all the parties understand the activity.

PD was conducted with experts within the IS field to suggest a framework for maximising online lead generation through improving UX. The methods employed by PD ensure that professionals' interpretations are considered during the research process (Spinuzzi, 2005). According to Bødker and Iversen (2002), user involvement in design needs to be structured, facilitated and interpreted. They also claim that design creates a new practice and changes everyday work practices (Bødker &and Iversen, 2002). An artefact suggestion emerged based on the outcome of the document analysis. There was no preconceived suggestion, thus the need for exploring possible suggestions. The outcome would be a low-fidelity prototype artefact in the form of a UXOLF.

Spinuzzi (2005) suggests three stages of participatory design, all of which were followed during the PD sessions. An explanation and application of each stage are provided below. The three stages are as follows:

    1) Initial exploration
    2) Discovery
    3) Prototyping

During **initial exploration**, designers become familiar with the users' world and their function within a specific context (Spinuzzi, 2005). In the current study, the users were the researcher and the participating design and research professionals. The eventual users of the artefact are also design professionals. This phase utilised the document analysis results to ensure that all the participants understood the context and purpose of the design task.

During **discovery**, the participants (designers and users in this study) understand and prioritise the current situation and begin to visualise future solutions (Spinuzzi, 2005). The goals and values are clarified, and participants agree on the desired outcome. At this is the stage, the researcher suggested cornerstones for the UXOLF, created after the document analysis. These suggestions, in combination with the suggestions from the design professionals, were dissected and discussed

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to ensure that only valuable suggestions form part of the UXOLF. This stage was iterated again in the evaluation phase of the DSR, discussed in Section 4.2.3.5. After this stage of the PD, the problem identification sub-phase depicted in Figure 18 was completed.

The final stage is **prototyping**. During this stage, the designers and users worked to discuss the suggestions established in the discovery phase and finalise the artefact (Spinuzzi, 2005). The designers and users cooperated in building a representation of the UXOLF. Prototyping can take place through a variety of methods; this research used low-fidelity prototyping, i.e., the representations can be a collection of 'sticky' notes, sketches, diagrams and storyboards produced on whiteboards or paper. All prototypes were photographed, and the design session was recorded for later analysis. This stage was also reiterated in the evaluation phase of the DSR, discussed in Section 4.2.3.5. After this stage of the PD, the second sub-phase, suggestion was completed, as depicted in Figure 18.

Spinuzzi (2005) believes that PD has to meet three criteria. These criteria and how this study met them are described as follows:

Criterion 1: Quality of life for workers.

- The PD should improve the life quality of the intended users of the designed artefact (Spinuzzi, 2005).
- The artefact (framework) that this study brings about ensures that the framework's users (chief digital officers and designers or similar positions) can easily implement the UXOLF in their business, ensuring an increased business value.

Criterion 2: Collaborative development.

- Including the eventual user in the process increases the probability of an increased life quality (Spinuzzi, 2005).
- The use of design professionals, the researcher and case organisation management allows for this collaborative development of the artefact.

Criterion 3: Iterative process.

- The iteration of the PD should be done to ensure that tacit knowledge is comprehensively extracted from all participants (Spinuzzi, 2005).

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- The first step of the PD took place only once, but the second and third steps were reiterated once in the evaluation phase of the DSR. (Section 4.2.3.5)

Participants: The participants in the PD were two UX designers, one Chief Digital Officer, two business owners and a researcher. One participant was from the case organisation, while the other works in other companies in the IS industry. They received informed consent forms before the commencement of the PD. These professionals' personal information was not recorded, and complete confidentiality and anonymity were maintained. They were informed about the need to record the sessions and agreed to it.

Analysis: The PD was transcribed, and thematic analyses were executed for the session to enrich the framework. The data was analysed to enrich the framework created in the session. The first version of the framework created in the preliminary session did not include any design principles, however design principles were a large part of the discussion that took place before the framework construction. The inclusion of key principles could not occur during the first construction session as a consensus of the most mentioned principles in practice and academia had not been established, therefore the need for the thematic analysis of the session recording and sticky notes. The analysis allowed for the combination of the document analysis results and the professional expertise of the professionals, thereby consolidating academic and practical knowledge. The methodology for the thematic analysis is discussed in detail below.

Thematic analysis:

Thematic analysis (TA) is an in-depth analysis allowing for familiarisation, coding, identifying themes, iterative refinement and thick descriptions (Bowen, 2009). These identified themes are the objective of this analysis process (Braun & Clarke, 2022). In TA, "the emphasis is on producing rigorous and high-quality analysis" (Clarke & Braun, 2016: 297). One benefit of utilising TA in research is its flexibility in the analysis process (Braun & Clarke, 2006). It provides manageable procedures to assign codes and identify themes in data (Clarke & Braun, 2016). Themes are patterns found within the data and can be identified through inductive (theoretical ideas emerging from the data itself) or deductive (researcher's theoretical ideas imposed on the data) coding (Marks & Yardley, 2004; Braun & Clarke, 2006).

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The reason why TA is an appropriate fit for the PD of this study is that the type of data typically used with TA is researcher-produced (Wheeler, 2022). This indicates that the discussions within the PD fit comfortably into the domains of TA and allowed the researcher to identify the themes that emerged from the data during the analysis. These themes enriched the framework created during the session where the final sub-phase development was completed, as depicted in Figure 18.

There are a variety of ways in which thematic analysis can be conducted. Mackieson, Shlonsky and Connolly et al. (2019) proposes Applied TA (ATA), which "provides structure and integrates reflexivity in qualitative research using textual data" (Mackieson et al., 2019: 965). On the other hand Braun and Clarke (2022) proposes the idea of Reflexive TA, which is a six-step process that involves the development of themes from the coding, which is underpinned by the central ideas that emerge from the data. However, after considering the study's needs, the researcher concluded that the applied version of TA would not be beneficial for use in this study. This decision was made because it has been noted that ATA can miss some small detail found in text (Guest et al., 2014). Reflexive or traditional thematic analysis was the chosen method for the thematic analysis done in this study. Braun and Clarke (2006) posits that the process typically follow a six-step process., however the exact process followed for the study at hand was informed by the process suggested by Shukla, Sushil and Sharma et al. (2019), who also promote a six-step process for thematic analysis, namely 1) familiarisation, 2) generating codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) producing a report.

The **first** step, *familiarisation,* requires full submersion within the data available for the phenomenon in question (Shukla et al., 2019). This allowed the researcher to become fully aware of the data at hand before deciding on the data best suited for the analysis. During this study, all data were utilised and researcher-created, including recordings and transcriptions from the conducted PD session.

The **second** step, *generating the initial codes*, begins after the researcher is fully acquainted with the data. During this step, the researcher must create the initial codes that can be seen emerging from the data (Shukla et al., 2019). The coding process describes what the data is about (Gibbs,

2021). Codes are "the smallest units of analysis that capture interesting features of the data (potentially) relevant to the research question" (Clarke & Braun, 2016: 297).

The **third** step, *searching for themes*, follows next. This step required the researcher to interpret the codes established in the previous step to identify possible themes within the data (Shukla et al., 2019; Bowen, 2009). Themes encompass the codes identified in the previous step and give the researcher an organised way to present the analysis findings (Clarke & Braun, 2016). It is important to remember that these themes should capture valuable information that aligns with the research question (Braun & Clarke, 2006).

Step **4**, *reviewing themes,* is next. During this step, the researcher must iteratively evaluate the themes identified in Step 3 (Shukla et al., 2019; Braun & Clarke, 2022). This resulted in the finalisation of the themes found within the data. Both semantic themes (themes drawn from only spoken or written data) and latent themes (themes drawn from the deeper meaning of spoken or written data) were identified during the analysis (Braun & Clarke, 2006).

Step **5** is *defining and naming the themes*. This step assisted the researcher in better organising the codes identified and finalised in the preceding steps; this was done by iteratively reviewing the themes to group them (Shukla et al., 2019). Sub-themes were found within the already identified main themes; these can be incredibly beneficial if the main themes are intricate (Braun & Clarke, 2006). It is important to name the themes in a way in which the meaning and definition of the themes become apparent from just the name (Braun & Clarke, 2006).

Step **6**, the last step in the TA process, is *producing a report*. In this step, the researcher communicates the findings from the analysis, including inconsistencies and similarities within and across the themes (Shukla et al., 2019). The goal is to ensure that the readers are convinced of the themes and their importance in the data; it is also the researcher's job to ensure that the reader understands each theme and how they fit into the data (Braun & Clarke, 2006).

The iteration of the *discovery* and *prototyping* phases was conducted during the evaluation phase of the study. This iteration took place to evaluate how coherent the framework is, i.e., discussions

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to evaluate if this framework covers the identified gaps and to determine if any changes had to be made before communicating the study's findings.

The reasons for conducting the framework with professionals outside the case organisation were twofold: first, to move to a higher level of abstraction; second, to increase objectivity. The goal was to present the professionals with the suggested framework and obtain their feedback on, for example, its completeness and ease of implementation. This process was designed to increase the objectivity of the artefact created and move to a higher level of abstraction (i.e., to make the framework useful in a context outside the case organisation). After completing all PD sessions, the findings were written down and can be seen in Chapters 5 and 8. It was also used as a means of triangulation in the evaluation phase of the DSR, discussed in Section 4.2.3.5.

4.2.3.4   DEMONSTRATION

The demonstration phase demonstrates the artefact in action. During this study, the framework was demonstrated through experiments done by the case organisation. The results of these tests were retrieved from the case organisation and statistically analysed, allowing the researcher to make inferences about the effectiveness of the applied framework. At the end of this phase, the second supplementary question (SQ 2) was answered: *"What effect does UX have on online lead generation?"* Figure 19 displays a snapshot of this phase.
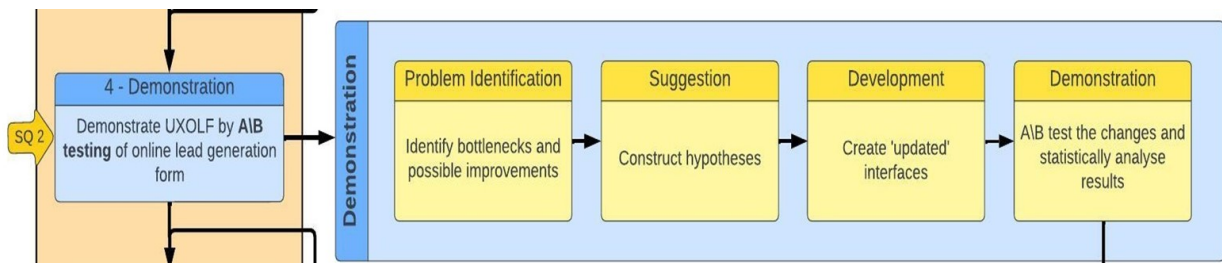
Figure 19. Demonstration phase

4.2.3.4.1   APPROACH

This phase of the DSR utilised deductive research, allowing for the quantitative approach required for this phase. A *deductive* research approach requires the researcher to develop a theory and hypothesis and design a research strategy to test a hypothesis (Saunders et al., 2009).

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4.2.3.4.2   CHOICE

This phase utilised quantitative research, which focuses on numbers and variables, whereas qualitative research focuses more on individuals. Quantitative research originated from the natural sciences in studying natural phenomena (Myers, 1997). It aims to do exact measurements using observation studies, laboratory experiments, mathematical modelling or survey research.

4.2.3.4.3   TIME HORIZON

The time horizon for this phase was longitudinal because it required months for the case organisation to conduct these experiments. *Longitudinal* research collects and analyses data to assess change (Saunders et al., 2009).

4.2.3.4.4   DATA COLLECTION AND ANALYSIS

The data collection for this study was in the form of experiments conducted by the case organisation, where retrospective data was obtained and analysed for this phase of the main cycle. The experiments and how they were set out are discussed in detail below. This section outlines why this way of testing was selected and how the experiments were executed to ensure synchronic reliability. Synchronic reliability, also known as internal reliability, speaks to the extent to which two observations done simultaneously on the same population will yield similar results (Baskerville, Kaul & Storey et al., 2017).

EXPERIMENT

Experiments are strategies that are very often used in research. They are executed to investigate if specific variables (independent variable) influence the phenomenon (dependent variable) being studied (Saunders et al., 2009). This is accomplished by assigning the participants to control and experimental groups. The experimental group had interventions imposed on them; these interventions incurred changes in the independent variable(s) that the researcher wanted to manipulate. The control group was studied in the natural setting of the phenomenon, with no external changes being imposed on this group. This, along with the randomised assignment of participants to groups, was done to ensure a high internal validity to the experiment (Saunders et al., 2009). Validity deals with whether the findings result from the phenomenon measured and not

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because of external factors (Saunders et al., 2009), as well as the precision of recording these measurements (Thorkildsen, 2010). Figure 20 below details the process of a classic experiment.
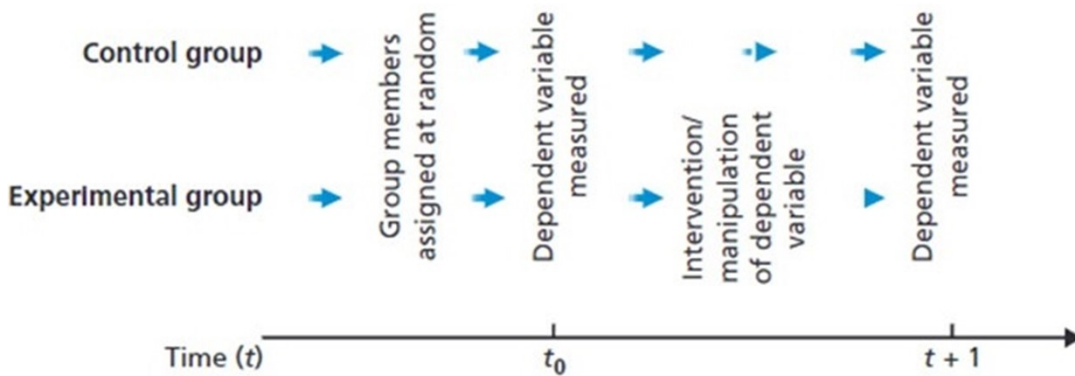
Figure 20. Experiment strategy (Saunders et al., 2009)

The case organisation conducted the experiments, after which the researcher received the results for this study. This step of the data collection process focused on A/B testing on the case organisation's online lead application. A/B tests, also called split tests, allow for comparing two versions of an interface simultaneously to identify the best version (Optimizely, n.d.). By conducting A/B tests, certain aspects are highlighted. These results clarified which aspects make a more significant impact (either positive or negative) on an online lead generation form. A discussion of the A/B tests as applied to this research is presented next.

A/B TESTS APPLIED:
The A/B testing allowed a percentage of individuals who had completed the Sell My Car form on the website to complete the adapted form (experimental group) and the others to complete the original form (control group). The experiments took two different approaches to these tests. The first two and last experiments ran across the three servers in a split of 66.6% for the control group (Group A) and 33.3% for the experimental group (Group B). The rest of the experiments ran at a different split across the servers, allowing two experiments to be run within a given timeframe. The experimental groups (Groups A_1 and A_2) constitute 66.6% of the entire population, with an even split between the groups and the control group (Group B), which constitutes 33.3% of the entire population. The changes made to each form based on UX principles were the independent variable, and the number of leads generated was the dependent variable. APPENDIX C contains the permission letter from the case organisation to conduct the experiments and relay the

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retrospective data to the researcher. The participants in each group were randomly assigned to the different servers by a load balancer, eliminating any bias assignment to specific groups and increasing the experiment's reliability. Reliability deals with the repeatability of the experiment, i.e., if the study is repeated, would it produce the same or statistically equivalent results? (Saunders et al., 2009).

The data retrieved from the case organisation were purely numerical. The data consisted of *the number of participants who had started filling out the Sell My Car form*, *the number of participants who had completed this form, the point at which most individuals dropped off* and the *time taken for those individuals to complete the form*. The results of the A/B test were analysed using a two-sample Z-test. This test can test hypotheses such as H_0: $\rho_{exp} - \rho_{con} = 0$ or H_1: $\rho_{exp} - \rho_{con} \neq 0$, where ρ is the probability of a user clicking a specified button, and the subscript specifies which group the probability forms a part of, $_{con}$ is the control group, and $_{exp}$ is the experimental group (Aslanyan, 2021). The equation for this probability ($\hat{\rho}$) can be seen below, where x is the number of clicks and N is the number of impressions (people who start the form). Note that this equation should be done for both groups separately.

$$\hat{\rho} = \frac{x}{N}$$

The equation to get the pooled probability ($\hat{\rho}_{pooled}$) of success is:

$$\hat{\rho}_{pooled} = \frac{x_{exp} + x_{con}}{N_{exp} + N_{con}}$$

From this pooled probability, one can calculate and estimate pooled variance ($\hat{s}^2{}_{pooled}$), which is:

$$\hat{s}^2{}_{pooled} = \hat{\rho}_{pooled} * \left(1 - \hat{\rho}_{pooled}\right) * \left(\frac{1}{N_{exp}} + \frac{1}{N_{con}}\right)$$

Using this estimate of pooled variance, one can calculate the Standard Error (SE) with the following equation:

$$SE = \sqrt{\hat{s}^2{}_{pooled}}$$

This SE is then inserted into the equation for test statistics (T) which is:

$$T = \frac{\hat{\rho}_{exp} - \hat{\rho}_{con}}{\sqrt{\hat{s}^2{}_{pooled}}}$$

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This statistical analysis allowed the researcher to make inferences about the effectiveness of the proposed framework characteristics. The data was used to create funnels, showing the number of participants who had started and completed the form, thereby visualising the data. Each form had its funnel compared to the control groups in Chapter 7.

The difference between participants who had started the form and those who completed it was compared between the experimental and control groups. If a significant statistical difference was observed in the percentage of participants who dropped off, a conclusion could be made that the implemented form influenced lead generation, whether positively or negatively. This, in turn, allowed the researcher to make inferences on whether the framework characteristics that guided the adaptations to this form would significantly increase lead generation.

To allow the researcher to make these inferences, he had to calculate the confidence interval (CI), which would allow the researcher to have confidence in the results yielded from the statistical analysis. The equation for the CI can be seen below.

$$CI = [(\hat{\rho}_{exp} - \hat{\rho}_{con}) - z_{1-\frac{a}{2}} * SE]$$

In the equation, $z_{1-\frac{a}{2}}$ is the critical value of the test corresponding to the two-sided Z-test with an alpha significance level.

Therefore, this study focused on where customers drop off from an online lead generation form and decide to either exit the application or even the website entirely. This formed the first sub-phase, problem identification, as depicted in Figure 19. The constructed hypotheses form the second sub-phase, the creation of the updated interfaces forms the third phase, and the final phase is the actual experiments, which are all discussed in Chapter 7.

4.2.3.5 EVALUATION

This phase aimed to evaluate the artefact developed in preceding phases. The PD was reiterated here to obtain feedback on the understandability of the framework from design professionals. At the end of this phase, the final supplementary question (SQ 3) was answered: *"What are the challenges in implementing the UXOLF?"*. The main research question (MRQ), *"What are the components of a UX-based online lead generation framework, contributing to business value*

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within the automotive field?" was answered after this phase. Figure 21 below displays a snapshot of this phase.
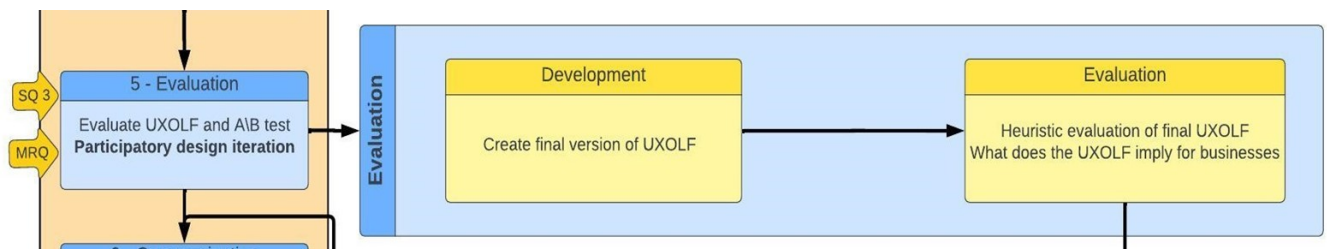
Figure 21. Evaluation phase

4.2.3.5.1 APPROACH

The approach required for this phase was also inductive research, which allowed for theory creation during or after the data collection and the mixed-method research choice for this phase (Saunders et al., 2009).

4.2.3.5.2 CHOICE

The choice for this phase was *mixed-method* research since the quantitative findings from the document analysis and experiments and the qualitative data from the PD of this phase were used. Mixed-methods research is a combination of quantitative and qualitative data collection techniques and data analysis procedures to answer a research question. The mixed-method choice utilises the strengths of both qualitative and quantitative methods and helps develop a deep understanding of the topic (Venkatesh et al., 2013). Trauth and Jessup (2000) point out that by adopting mixed research method approaches, various benefits can be derived since each method has different assumptions and procedures that complement one another. When conducting mixed-methods research, the data from the qualitative and quantitative approaches can either strengthen the outcome or contradict each other, leaving room for more research to be done (Venkatesh et al., 2013).

4.2.3.5.3 TIME HORIZON

A longitudinal time horizon was best suited for this phase. This is because the triangulation of the data and the creation of the final UXOLF took time to complete.

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4.2.3.5.4   DATA COLLECTION AND ANALYSIS

During this phase of the DSR, one last iteration of the PD was executed to ensure that the final version was comprehensive and correct. The findings of the PD, document analysis and experiments were used in this phase for data triangulation, as discussed below.

TRIANGULATION

Triangulation can be achieved in four ways: data triangulation, investigator triangulation, theoretical triangulation and methodological triangulation (Lewis-Beck, Bryman & Futing Liao et al., 2004). Data triangulation is achieved by collecting and analysing data from multiple sources about the same topic (Denzin in Bowen, 2009). This ensures that a phenomenon is captured widely (Farquhar, Michels & Robson et al., 2020). Methodological triangulation is achieved using multiple data collection methods (Lewis-Beck et al., 2004).

Such data could be convergent, complementary or contradictory (Heale & Forbes, 2013). Convergent data will result in consistent deductions, complementary data supplements the deductions made from other data, and contradictory data will yield inconsistent results (Heale & Forbes, 2013). If the triangulation of data yields convergent data, it will substantiate the findings and increase the validity of the deductions. If it yields complementary data, it will highlight other important event characteristics. If it yields contradictory data, it will indicate a discrepancy requiring further investigation or more comprehensive clarification of the phenomenon (Heale & Forbes, 2013). In this study, data triangulation was executed using document analysis, experiments and PD findings. This ensured that the phenomenon of the UXOLF was deconstructed into its contributing concepts and comprehensively discussed, allowing for a higher internal validity for the study.

4.2.3.6   COMMUNICATION

The research is concluded during this phase by reporting on the theoretical and practical (artefact) outcomes of the research study, which is attained by this paper. Figure 22 displays a snapshot of this phase.
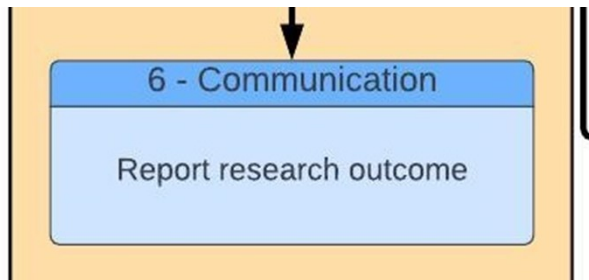
Figure 22. Communication phase

4.2.3.7 SUMMARY

This section discussed the data collection methods employed by this research which were organised according to the phases of the DSR strategy. First, the section discussed the questionnaire, the document analysis in the problem identification and defining the objectives of a solution phase, respectively. Next, the design and development sub-phases with the PD session were discussed. The sub-phases of the demonstration phase with A\B tests followed, and the evaluation phase was discussed with an iteration of the PD and data triangulation. Lastly, the section presented the communication phase.

4.3 ETHICS

The main concern with using human subjects in research is that even with a relatively safe study, they may be at some risk (Woodfield, 2017). The researcher and their team are solely responsible for ensuring that all risks are identified and minimised to create a safe space for each participant (Perrault & Keating, 2018). Therefore, informed consent must be obtained from each participant in the study before the start of the process. The informed consent form is a document that each research team must construct with the outline of their study in mind. The consent form should reiterate that participation is completely voluntary and withdrawal from the study is possible for each participant at any point (Perrault & Keating, 2018). Furthermore, the consent form should outline the study's purpose and how the research team proposes to use any information obtained from each participant (Pierre, 2018).

The researcher must ensure that each participant is made aware of any risk inherent to participating in the study, and they should clearly understand that the choice to participate in the study lies solely with themselves. This means that each participant has the right to withdraw consent before the study's commencement without additional risk to themself. This study used online data collection,

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and the regulations for using said data are very scarce. No agreed-upon framework exists, making setting up a safe environment for the participants more time-consuming and, in some cases, impossible without causing significant damage to the participants and the study (Woodfield, 2017). Ethical clearance was obtained from the Faculty Committee for Research Ethics and Integrity of The University of Pretoria, with the reference number EBIT/229/2022. Thereafter, the data collection and analysis commenced. APPENDIX A contains the ethical clearance letter.

4.4 CONCLUSION

This chapter presented the research design and methodology adopted by this study. The chapter discussed the paradigm (pragmatism), strategy (DSR) and the motivation for the selected strategy. This research study adopted the DSR framework by Peffers et al. (2008); the application of the phases suggested by this model was presented after the motivation. It entailed the breakdown of the research approach, choice, time horizon and data collection and analysis techniques for each phase. The design required for each phase differs due to each phase's different data collection methods. Figure 23 shows an overview of the phases with their relevant data collection. The chapter applied the DSR model to the current research and discussed the ethical considerations.
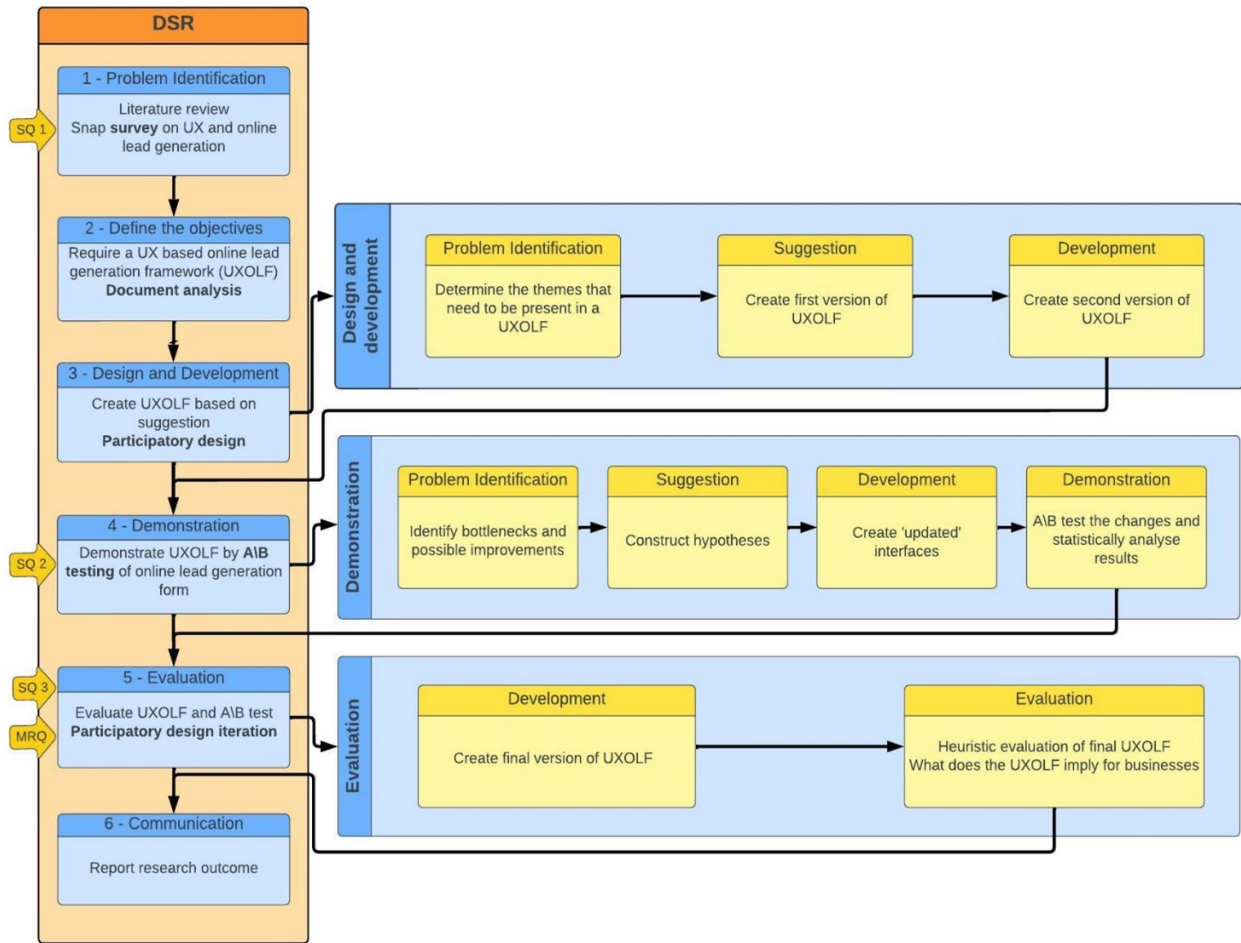
Figure 23. DSR phases in this study (Adapted from Peffers et al., 2008)

5. PROBLEM IDENTIFICATION AND DEFINING THE OBJECTIVES

This chapter details and reports the results of the questionnaire administered during the first phase of the DSR (problem identification) and the document analysis done during the second phase of the DSR (defining objectives of a solution). The reason for combining these two phases into one chapter is that the problem identification phase feeds into the objectives phase. Additionally, these two phases do not have sub-phases and, therefore, do not require independent chapters. The first part of this chapter discusses the questionnaire, and the second part discusses the document analysis. Figure 24 below outlines the overall chapter layout with the current chapter highlighted to position it in the research.
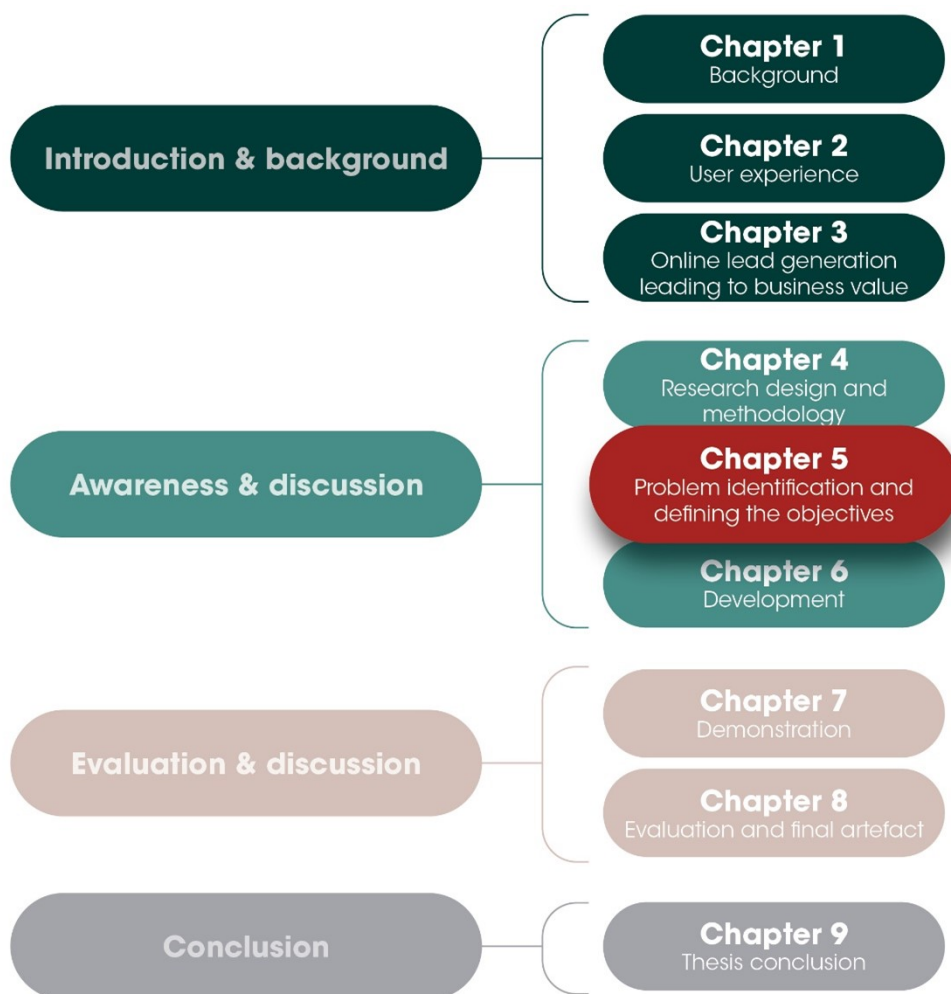
Figure 24. Chapter 5 positioning

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5.1 QUESTIONNAIRE

5.1.1 INTRODUCTION

Questionnaires are generally conducted to collect information about a specific population and draw inferences and conclusions about that population (Calder, 1998). In this study, they take the form of self-administered questionnaires, i.e., a link was sent to prospective participants who completed it independently. The questionnaire consisted of 10 questions explicitly formulated to elicit commentary from design professionals about UX and lead generation and their contribution to business value (Gillham, 2008).

The questions were formulated to ascertain if the deficits in academic knowledge identified in Chapters 2 and 3 were also present in practice. The questionnaire was not the main data collection method of the Problem Identification phase but was rather used as a supporting tool to substantiate the problem. Since no framework was found in academia that consolidates UX theories and lead generation strategies in a way that it is engrained in every aspect of a business the questionnaire was conducted to acertain the value of such a framework in practice. The aim of the questionnaire was to show that the fields that are sufficiently examined independently in academia can in practice overlap and benefit one another. Additionally, the questionnaire set out to show that design professionals are able to sufficiently implement UX

The questions in the questionnaire can be seen in Table 7. The possible answers to each question were arranged on a five-point Likert scale; the label on five was 'strongly agree', and on one, 'strongly disagree'. No labels were assigned to the values of 2–4 to allow individuals to assign their terms of 'neutral' or 'somewhat agree/disagree' to these values.

5.1.2 PILOT STUDIES

Two pilot studies preceded the final questionnaire distributed to UX and UI designers and front-end developers. This section presents and discusses the results obtained from the two pilot studies. The pilot studies were merely conducted to ensure that the time taken for the completion of the questionnaire was not unreasonable and was not distributed to UX professionals.

5.1.2.1 FIRST PILOT

The first pilot study was undertaken by distributing the proposed questionnaire to 10 individuals within the case organisation; the roles these individuals fulfil at the case organisation are not that

of the target population for the final questionnaire. The difference in the population was effected to ensure the general comprehensibility of the questionnaire. The average completion time and the comments spoke to the general comprehensibility of the questionnaire. Table 3 shows the questions for the first pilot study, their relevant IDs and the probe question for comments.

Table 3. First pilot study questions

#	Question
Q1	I know how to adequately adapt an interface to maximise the UX.
Q2	There is an extant framework that provides guidelines to design an interface with UX in mind.
Q3	I would find such [a] framework beneficial.
Q4	I find that UX has an impact on online lead generation.
Q5	My business' lead generation adds to its value.
Q6	I work closely with other departments within my business to maximise lead generation.
Q7	Online lead generation is a priority for me and my business.
Q8	My business has someone in charge of implementing and managing strategies for online lead generation.
Q9	My business adjusts interfaces if the desired goals are not met.
Q10	My business finds lead generation to be an easy way to increase our business value.
Comments	Is there anything you didn't understand or anything that was unclear?

Table 4 below displays the ID for each participant, their start times, completion times, duration and the answers to each question. All participants in this pilot study completed the questionnaire in one day.

Table 4. Results from the first pilot study

ID	Start time	Completion time	Duration
1	9:29:04	9:30:36	0:01:32
2	9:27:04	9:36:23	0:09:19
3	9:45:06	9:50:56	0:05:50
4	9:36:10	9:53:53	0:17:43
5	9:35:59	9:54:16	0:18:17
6	9:55:31	10:04:18	0:08:47
7	10:48:28	10:58:42	0:10:14
8	12:04:46	12:16:00	0:11:14
9	13:00:18	13:28:27	0:28:09
10	13:27:02	13:28:31	0:01:29
Average			0:09:23

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The average time for this questionnaire (completed by non-designers) was nine minutes and 23 seconds, with the shortest time being one minute and 29 seconds and the longest 28 minutes and nine seconds. The average time was calculated without Participant 9's time as it was an outlier by almost 10 minutes.

The probe question for comments was not mandatory, and only one response to the question was received. Participant 8 was the only participant to answer this question, and the comment was as follows:

> *I was not sure whether Question 2 refers to a framework in the business where I work - I assumed it does.*
>
> *Question 7 asks about 'me' and 'my business', but it does not allow me to submit an answer for each entity separately.* (Participant 8)

This comment led to changes in the questions distributed to five design professionals for a second pilot study, which is discussed next.

5.1.2.2   SECOND PILOT

The second pilot study was undertaken with design professionals to establish if the questionnaire was understandable to the intended population. Table 5 shows the questions for the second pilot study.

Table 5. Second pilot study questions

#	Question
Q1	I know how to adequately adapt an interface to maximise the UX.
Q2	I know of an extant framework (not principles) that provides guidelines to design an interface with UX in mind.
Q3	I would find such [a] framework beneficial.
Q4	I find that UX has an impact on online lead generation.
Q5	Online lead generation adds to business value.
Q6	I work closely with other departments within my company to maximise user experience
Q7	Effective online lead generation is a necessity for a lead generation business:
Q8	A company should have someone in charge of implementing and managing strategies for online lead generation.
Q9	A company should adjust its interfaces if the desired goals are not met.

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Q10	Lead generation to be an effective way to increase our business value.

Table 6 presents the results of the second pilot study. This table shows the ID, start time, completion time, duration and the average time taken to complete the questionnaire. All the participants completed the questionnaire over two days.

Table 6. Results from the second pilot study

ID	Start time	Completion time	Duration
1	10:18:05	10:19:21	0:01:16
2	10:18:00	10:20:26	0:02:26
3	10:33:12	10:35:26	0:02:14
4	10:35:28	10:37:12	0:01:44
5	6:57:44	6:59:05	0:01:21
Average			0:01:48

The average time for this questionnaire was one minute and 48 seconds, with the shortest time being one minute and 16 seconds and the longest two minutes and 26 seconds. The average time for the second pilot study was significantly lower than that of the first. The results from both pilot studies were considered, and the questionnaire was restructured before being distributed for final data collection. The next section discusses the changes made to the questionnaire.

5.1.3 QUESTIONNAIRE

This section contains the changes to the questionnaire; the next section describes the results.

Questions 1 and 2 remained the same, with a subheading added to Question 2 to clarify the difference between principles and a framework. A slight rewording of Questions 3 and 4 was done; however, the essence of the question remained the same. Question 5 of the final version of the questionnaire was Question 7 in the pilot questionnaires; however, the question's wording changed slightly. Question 6 in the final questionnaire was Question 8 in the pilot studies. Question 7 was drawn from Question 6 in the pilot studies and formed a question about team and department collaboration. Question 8 was the only new question in the questionnaire and was posed to gather feedback about A/B tests, the proposed experimental method for the current research. The wording for Question 9 changed slightly, but the essence of the question remained the same. Lastly,

Question 10 remained the same. Table 7 below shows the questions and their relevant IDs. APPENDIX B contains the questionnaire and consent form distributed to the participants.

Table 7. Questionnaire questions

#	Question
Q1	I know how to adequately adapt an interface to maximise UX.
Q2	I know of an extant framework (not principles/rules) that provides guidelines to design an interface with UX in mind.
Q3	If you disagree with Question 2, would you find such a framework beneficial for interface design?
Q4	I believe that UX has an impact on online lead generation.
Q5	Effective UX[-]based online lead[-]generation strategies are a necessity for a lead generation business.
Q6	A company should have someone in charge of implementing and managing these strategies for online lead generation.
Q7	Close collaboration between different departments within a company is an integral part of successful UX implementation.
Q8	A/B Testing is an effective way of evaluating changes made to an interface, guided by UX principles.
Q9	A company should adjust its interfaces if the desired online lead generation conversion goals are not met.
Q10	Lead generation is an effective way to increase business value.

5.1.4 RESULTS

Table 8 below displays the results of the questionnaire. The table shows the participant IDs, start times, completion times, duration and the answers to the ten questions for each participant. It also shows the average time and rating for all the questions. The questionnaire link was sent to 20 individuals with UX or UI design and front-end development backgrounds. Eleven of these 20 participants responded to the questionnaire. All the participants completed the questionnaire over two days.

Table 8. Results from questionnaire

ID	Start time	Completion time	Duration	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	8:40:25	8:43:23	0:02:58	5	4	5	5	5	5	5	4	3	5
2	9:03:04	9:04:42	0:01:38	5	1	4	5	5	5	5	4	5	5
3	9:05:12	9:06:14	0:01:02	4	3	3	4	4	4	4	4	4	4
4	13:27:56	13:29:14	0:01:18	3	2	4	4	4	4	4	4	3	5
5	13:29:34	13:31:26	0:01:52	4	5	1	5	5	5	5	5	5	5
6	13:52:06	13:53:54	0:01:48	4	4	5	5	3	3	5	3	3	4
7	14:02:09	14:06:21	0:04:12	3	3	4	4	4	4	4	3	4	4

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8	14:08:46	14:13:08	0:04:22	4	3	4	5	4	3	5	4	3	4
9	15:07:48	15:15:32	0:07:44	5	5	4	5	5	5	5	5	4	5
10	16:10:56	16:19:19	0:08:23	4	4	3	5	5	5	5	4	4	5
11	10:38:31	10:41:12	0:02:41	4	3	4	5	4	4	5	4	4	3
Average			0:03:27	4.1	3.4	4.0	4.7	4.4	4.3	4.7	4.0	3.8	4.5

The average time for the questionnaire was three minutes and 27 seconds, with the shortest time being one minute and two seconds and the longest eight minutes and 23 seconds. The average time for completion was satisfactory for this short questionnaire. The average rating for Question 1 is 4.1; Question 2 is 3.4; Question 3 is 4.0 (without the outlier from Participant 5); Question 4 is 4.7; Question 5 is 4.4; Question 6 is 4.3; Question 7 is 4.7; Question 8 is 4.0; Question 9 is 3.8, and Question 10 is 4.5. The outlier for Question 3 could be attributed to the question, "If you disagree with Question 2, would you find such a framework beneficial for interface design?" This participant strongly agreed with Question 2.

5.1.5   DISCUSSION

Questions 1–4 are highly subjective and cannot be compared to the data found within the research, as primarily subjective opinions drive people to answer the questions the way they did. Questions 5–10 are objective questions and could be compared to the data found within the research. All except one of the objective questions from this questionnaire showed a positive average rating (4 or above), with the only questions not strongly positive being Question 9 (3.8). A reason for this question not being as strongly supported could be that the design professionals who answered the questionnaire do not work at a lead generation business, and they may not have dealt with it in a professional domain.

Question 1's results show that 88% of the professionals that completed the questionnaire feel able to adjust an interface to maximise UX. This fact that design professionals are adequately able to design with UX in mind is not surprising. However, for lead generation businesses where designers are not part of the day to day operations, a framework incorporating UX and lead generation would be beneficial. For question 2, the results showed that 68% of the participants knew of an existing UX framework. These findings do not disprove the need for the UXOLF, as it has been stated in Chapter 3 that the fields of UX and lead generation has been investigated separately but have not

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been combined to create a consolidated framework. Question 3 was only a follow up for the participants that were not aware of an extant UX framework, and showed that 80% of the individuals that were not aware of a UX framework would find such a framework beneficial for their everyday professional life.

Question 4 showed that 94% of UX professionals believe that UX can have an impact on lead generation. This questions brings the fields of UX and lead generation together and the strong opinions of the participants of the survey shows that in practice or at the very least when probed to think about it the field of UX and lead generation can intercept. However, in academia the fields have been studied in isolation and the benefits it can provide to one another is not fully explored. This unexplored relationship between the two fields indicates a need for research like the current study to be done to explore the benefits the UXOLF can deliver.

The results from Question 5 align with what is found within the extant academic research, with Lehtinen (2020: 45) saying that "The experience the visitor has on the website and the overall service quality of this experience is very important for increasing conversions". Additionally, it aligns with Zhou et al. (2010: 940), who posit that "Presenting users with a compelling experience is critical, if they wish to encourage their behavior and loyalty". These quotes and the questionnaire findings indicate the importance of UX in lead generation, as the goal of lead generation is to encourage individuals to perform specific actions and eventually become paying customers, which can become increasingly achievable through UX.

The average answer given by the participants to Question 6 is further substantiated by Swieczak and Kukowski (2016), who state that a strong management plan should accompany the implementation of effective lead-generation strategies. Further, Matt et al. (2015) state that a zealous and strongminded individual should manage a strategy to ensure that goals are met along the way and that the strategy is executed as efficiently and effectively as possible.

Question 7 states that collaboration within a business is vital for successfully implementing UX. Koski (2016) states that effective collaboration between departments within a business can ensure a consistent customer experience. Shneiderman et al. (2018) also state that collaboration will

establish the groundwork for interface design. Additionally, Dhanda and& Shrotryia (2020) argue that collaboration can clearly define a course of action, eliminating any time wasted on duplication of already performed actions (Grubor & Olja, 2018).

Question 8 deals with the effectiveness of A/B testing (also called split testing) in evaluating UX-driven changes to an interface. The average answer to Question 8 of 4.0 shows that most participants agree with the A/B test's effectiveness in evaluating interface changes. This is further substantiated by Kohavi and& Longbotham (2017), who assert that controlled experiments such as A/B testing are a quick and efficient way to test possible changes to an interface.

Question 9 states that changes should be made to interfaces where the intended goals are unmet. With an average rating of 3.8 for this question, the participants agreed to some extent. However, they were mostly neutral in their opinions, with no participant answering below three (neutral) for this question. This answer could be justified by evaluating the interface before the final release, where changes are more easily achievable and less expensive to implement, to minimise and eliminate the chance of not delivering on the intended goals (Shneiderman et al., 2018).

Question 10 deals with lead generation and the possible value-effective strategies it can deliver. The average rating of 4.5 for this question shows that most participants agree that effective lead generation can increase business value. This is further strengthened by Swieczak and& Kukowski (2016), Grubor and& Olja (2018) and Lehtinen (2020), who contend that lead generation has the aim of converting leads into customers, which delivers value to a business in the form of revenue.

In conclusion, most participants indicated they could adequately adapt an interface with UX in mind. This correlates with the results from question 2, which shows that 68% of the participants knew of an existing UX framework. The results from Question 4 shows that 88% of participants believes that UX can have a positive impact on lead generation. To the knowledge of the researcher, no framework combining these two filed exists, indicating a deficiency in the knowledge that this study aims to address. The results from Questions 4 and 5 indicated that UX should be an important consideration for any lead generation business. Question 10 explains how both UX and lead generation are important because they contribute to business value. Question 6

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shows the importance of management in both lead generation and UX strategies to maximise the benefit they could deliver. Question 7 highlights the importance of collaboration between team members to deliver an effective UX-based online lead-generation platform. Question 8 shows that A/B testing is an effective way to evaluate possible UX-based online lead-generation strategies. Question 9 is the only question that was not as agreed upon by the results from this questionnaire, yet the average rating of 3.8 is still relatively high—no answer below three was given.

5.1.6   SUMMARY

Overall, the results from the questionnaire served its primary purpose, which was to strengthen the problem statement of this study. The questionnaire also substantiated the claim that UX is an effective way to maximise lead generation, and the combination of the two has a great potential of increasing business value through various channels.

5.2 DOCUMENT ANALYSIS

This section starts with an introduction and explanation of document analysis and the type of analysis used in the current study; the results from the analysis follow this. After the results, a discussion follows, which is divided into source and theme analysis, ending with a concluding section.

5.2.1 INTRODUCTION

Document analysis allows for systematic qualitative data analysis to yield a more comprehensive understanding and empirical knowledge of the topic (Bowen, 2009). It allows for data to be collected without researcher bias being imposed during the proses. The purpose of document analysis in this study is twofold. First, to establish the cornerstones and themes of discussion for the participatory design sessions, which occur in the main cycle's design and development phase. Second, the analysis was conducted for data triangulation, increasing the results' validity (Heale & Forbes, 2013; Farquhar et al., 2020).

The analysis method utilised is interpretive content analysis. Interpretive content analysis allows the researcher to create codes and themes that do not require additional analysts to identify these same themes independently (Ahuvia, 2001). The reliability of this form of content analysis is preserved through "public justifiability"; this means that if a researcher can explain the thought process behind the analysis and reports it along with the results, the reliability of the analysis remains (Ahuvia, 2001). The researcher executed the analysis by employing the analysis software, *Quirkos* (https://.quirkos.com/). The software allows for themes (Quirks) to be created and data to be coded/assigned to those themes as they appear in the sources. The analysis process followed a three-step method, the first being finding the sources and deciding which ones to include, the second step requires the in-depth analysis of the sources into themes and codes, and the last step is the interpretation of the themes and codes (Drisko & Maschi, 2016).

The sources were found by keyword searching *Google* Search Engine, *Google Scholar* and *WorldCat* (access through the University of Pretoria) for articles and academic papers that contained UX or lead generation keywords. As more important encapsulations emerged through the data, the researcher conducted backwards searching and another round of keyword searching

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to include these sources. Therefore, the sources included topics critical to understanding lead generation and UX, including information about digital transformation, marketing, experience and business value. The abstracts of the obtained sources were analysed to assess if they aligned with the included keywords; this led to the inclusion of 62 sources subjected to content analysis. As there is no universal agreement on what constitutes UX, sources from the start of the century are included, allowing for a more holistic view of the understanding of the topic.

The themes were created as more information about the specific topic emerged from the sources. Most themes are self-explanatory, as their names were chosen to allow for a clear explanation of the content found within them. When higher-level themes emerged, descriptions were assigned to each to aid in the public justifiability of these themes. This chapter's discussion section interprets the themes and codes (Section 5.2.3).

5.2.2   RESULTS

Table 9 lists the sources utilised for document analysis; they appear in alphabetical order, and the source type and the number of quotes found in each source can also be seen in this table. The number of quotes depicts the number assigned to a code and theme during the analysis.

Table 9. Document analysis source summary

Source	Source type	Number of Quotes
Ariely & Carmon, 2003	Book Chapter	23
Bargas-Avila & Hornbæk, 2011	Journal article	15
Battarbee & Koskinen, 2005	Journal article	37
Behera et al., 2020	Peer-reviewed journal article	14
Berman, 2012	Peer-reviewed journal article	27
Bharadwaj et al., 2013	Journal article	27
Bondarenko et al., 2019	Journal article	23
Budac, 2008	Journal article	6
Chanias, 2017	Proceedings paper	12
Dhanda & Shrotryia, 2020	Journal article	28
Dougherty & Murthy, 2009	Peer-reviewed journal article	6
Ebert & Duarte, 2018	Journal article	9
Forlizzi & Battarbee, 2004	Proceedings paper	74
Frow & Payne, 2007	Peer-reviewed journal article	36
Gebayew et al., 2018	Proceedings paper	14
Graesch et al., 2021	Peer-reviewed journal article	6
Grubor & Jaksa, 2018	Journal article	28

Gupta & Nimkar, 2020	Journal article	37
Haas et al., 2012	Peer-reviewed journal article	32
Hartson & Pyla, 2019	Book Chapter	29
Hassenzahl et al., 2013	Journal article	14
Hassenzahl et al., 2021	Journal article	24
Hassenzahl, 2008	Proceedings paper	14
Helfat & Raubitschek, 2000	Journal article	3
Kashfi et al., 2019	Peer-reviewed journal article	26
Koski, 2016	Thesis	53
Kuniavsky, 2010	Book Chapter	23
Lehtinen, 2020	Thesis	121
Light, 2003	Peer-reviewed journal article	5
Luther et al., 2020	Journal article	20
Mahmood et al., 2019	Journal article	14
Minge & Thüring, 2018	Journal article	16
Mosakhani et al., 2012	Peer-reviewed journal article	10
Mosley, 2007	Journal article	24
Norman, 2002	Report	8
Oldroyd et al., 2011	Journal article	1
Pavlou & Sawy, 2010	Journal article	7
Pekuri et al., 2013	Journal article	13
Peters, 2022	Journal article	23
Pettersson et al., 2018	Proceedings paper	8
Piccoli & Ives, 2005	Peer-reviewed journal article	11
Porter, 2001	Peer-reviewed journal article	37
Reichheld & Schefter, 2000	Peer-reviewed journal article	24
Rodriguez & Peterson, 2012	Journal article	44
Santoso & Schrepp, 2019	Journal article	6
Setia et al., 2013	Peer-reviewed journal article	13
Shneiderman et al., 2018 – Chapter 3	Book Chapter	43
Shneiderman et al., 2018 – Chapter 5	Book Chapter	10
Shneiderman et al., 2018 – Chapter 12	Book Chapter	25
Song et al., 2021	Peer-reviewed journal article	11
Swieczak & Kukowski, 2016	Journal article	109
Vance et al., 2008	Peer-reviewed journal article	37
Verhulsdonck & Shalamova, 2020	Journal article	20
Vial, 2019	Peer-reviewed journal article	41
Wang et al., 2020	Conference paper	17
Weinman, 2015	Journal article	4
Wilcox & Sussman, 2014	Journal article	8
Wiley & Getto, 2015	Journal article	2
Woodard et al., 2013	Peer-reviewed journal article	34
Zhou et al., 2010	Peer-reviewed journal article	59
Zumstein et al., 2021	eBook	24

The top five sources in terms of the number of quotes are Lehtinen, 2020 (121), Swieczak and Kukowski, 2016 (109), Forlizzi and Battarbee, 2004 (74), Zhou et al. 2010 (53) and Koski, 2016 (53), with Swieczak and Kukowski having the most significant number of characters in the source. The one source with only one quote (Oldroyd et al., 2011) is understandable as it also has the least number of characters (3246). The number of quotes does not mean that that number of isolated quotes are found within that source. For example, Ariely and Carmon, 2003 do not necessarily have 23 isolated quotes assigned to a specific theme. However, some overlaps occur within the quotes where it forms a part of multiple themes and is counted multiple times.

Table 10 contains the list of themes, in descending order of the number of codes, along with the relevant parent and grandparent themes. Some themes are not assigned to a parent or grandparent theme, either because they are stand-alone concepts that encapsulate multiple other themes or because it is the central theme with child/dependent themes assigned to them. The table also shows the theme's description and the number of codes/quotes assigned to each theme. A total of 63 themes emerged throughout the 62 sources, and 1 500 quotes/codes were assigned between these themes. High-level encapsulation is not included as a theme in Table 9, as it was only used to organise other codes. High-level encapsulation of UX is meaningfulness, usefulness and emotional impact/response.

Table 10. Document analysis theme summary

Theme Title	Parent	Grandparent	Description	Total Codes
UX			How lead generation links to UX	106
Digital transformation			The role it plays in Lead Gen	90
Experience	UX		The importance thereof in UX	67
Business value				61
Digital business strategy/model	Digital transformation		How a business creates, delivers, and captures value	61
Trust	Relationship		The importance of trust to value and ultimately lead gen	60
Emotional impact/response	High-level encapsulation	UX	The effect of emotion on UX and lead generation	55
Lead generation			Process of acquiring and converting leads	46
Brand				46
Loyalty	Trust	Relationship	The effect it has on trust and value creation	43

Marketing	Lead generation		Importance of marketing in lead generation	41
Relationship	UX / Lead generation		The relationship with users/customers and their relationship with the business and products/services	41
ROI/ Financial implications	UX / Lead generation		Return of investment or financial implications of specific strategies	41
Competitive advantage	UX / Lead generation			38
Information/ Content	UX / Lead generation		The importance and considerations surrounding information/content	38
Useability	Principles	UX	UX Principle	36
CO experience	Experience	UX	Experience with others	34
Meaningfulness	High-level encapsulation	UX	How meaningfulness effect lead generation	32
Flow state	Learnability	UX	The importance thereof in UX	29
Relationship value	Business value		The role relationship has in creating business value	29
Keep users in control	Principles	UX	A golden rule by Shneiderman	28
Sustainability	Competitive advantage		The importance of a sustainable advantage	25
User needs/goals	UX			23
CX	UX		Customer experience	21
Strive for consistency	Principles	UX	A golden rule by Shneiderman	20
Process/ How to	Lead generation		The process of lead generation	20
Customer value	Business value		The value it can add to overall business value	19
Social	Marketing	Lead generation	The role of social media in marketing	19
Classification	Lead life cycle	Lead generation	Lead classification	18
Demographics	UX / Lead generation		Its role in lead generation and UX	18
Evaluation	UX		UX evaluation	18
Aesthetics	Useability	Principles		18
Analysis	Lead generation		How lead generation can be analysed	17
AIDA	UX / Lead generation		Attention, interest, desire and action	17
Nurturing/Management	Lead life cycle		Lead nurturing/Management	16
Importance	Lead generation		Lead generation importance	15
Retention	Lead life cycle	Lead generation	Customer retention	15
User/Customer expectations	UX			15

Complexity/ Dynamic	UX		The complexity and dynamic nature of UX	13
Offer informative feedback	Principles	UX	A golden rule by Shneiderman	13
Reduce short-term memory load	Principles	UX	A golden rule by Shneiderman	12
Principles	UX		UX principles	11
Pleasure	UX			11
External influence	UX		External influences of UX	10
Prevent errors	Principles	UX	A golden rule by Shneiderman	10
Lead life cycle	Lead generation		From being a stranger to becoming a paying customer	8
Learnability	UX		The effect thereof on flow state and, ultimately, UX	8
CHOICES	UX / Lead generation		Context, habits, other people, incentives offered, congruence of private goals and public display, emotions, and salience of a design	8
Employee	Lead generation		The importance of employees in LG and DT	7
Importance	UX		Importance of UX	7
KPI	Analysis	Lead generation	Key performance indicators	6
Influences	Lead generation		Ways to maximise lead generation	5
Timing	UX		The timing for UX integration into a product	5
Design dialogues to yield closure	Principles	UX	A golden rule by Shneiderman	5
Management	Lead generation		What effect can management have on lead generation	3
Logic	Digital transformation		The logic of DX	3
B2B	Lead generation		Lead generation in B2B	3
An experience	Experience	UX	Classification of Experience	3
Planes	UX		The planes of UX integration	3
Permit easy reversal of actions	Principles	UX	A golden rule by Shneiderman	3
Layout	UX		Website layout	3
Usefulness	High-level encapsulation	UX	How functional a product/interface is	2
Shared/CO-creation value	Business value		The value created by the business and stakeholders	2
TOTAL NUMBER OF CODES				1500
TOTAL NUMBER OF THEMES				63

Figure 25 portrays a word cloud generated by *Quirkos* using the quotes assigned to the themes. The five words that appear most out of all the quotes are design, marketing, customer, experience and business. This alone emphasises that the design for a positive experience with the customer at the centre is important to any business, specifically lead generation businesses.

Figure 25. Document analysis word cloud

Table 11 shows the ten most prominent words in the word cloud and how many times they appears in the sources.

Table 11. Word cloud prominent words

#	Word	# of appearances
1	Design	1746
2	Marketing	1280
3	Customer	1153
4	Experience	1153
5	Business	1103
6	Digital	1055
7	Research	973
8	User	892
9	Value	876
10	Product	838

5.2.3 DISCUSSION

5.2.3.1 THEME ANALYSIS

Table 12 shows the themes in ascending order of the total number of quotes. The table also shows the source most prominently found within the theme, followed by the number of quotes the source has, the total number of quotes in the theme and a column displaying the percentage of the quotes from that theme found within the most prominent source. More than one source is mentioned because they have an equal number of quotes assigned to the specific theme and some blocks in the percentage column are rendered in colour. Red represents any theme of which 90%–100% of its codes originate from a single source, orange was assigned to themes of which 70%–89.99% of its quotes originate from one source, yellow was assigned to themes of which 50%–69.99% of its quotes originate from one source.

Table 12. Themes and source prominence

Theme	Most prominent source	# of quotes	Total # of quotes	% of total quotes
Usefulness	Hartson & Pyla, 2019; Santoso & Schrepp, 2019	1	2	50
Shared/Co-creation value	Dhanda & Shrotryia, 2020	2	2	100
Management	Swieczak & Kukowski, 2016	3	3	100
Logic	Woodard et al., 2013	3	3	100
B2B	Koski, 2016	3	3	100
An experience	Forlizzi & Battarbee, 2004; Battarbee & Koskinen, 2005; Hassenzahl et al., 2013	1	3	33.33
Planes	Lehtinen, 2020; Kuniavsky, 2010; Wang et al., 2020	1	3	33.33
Permit easy reversal of actions	Shneiderman et al., 2018	2	3	66.67
Layout	Lehtinen, 2020	2	3	66.67
Influences	Wilcox & Sussman, 2014; Vance et al., 2008	2	5	40
Timing	Kashfi et al., 2019	4	5	80
Design dialogues to yield closure	Lehtinen, 2020	3	5	60
KPI	Swieczak & Kukowski, 2016	3	6	50
Employee	Mosley, 2007	4	7	57.14
Importance	Hartson & Pyla, 2019	3	7	42.86
Lead life cycle	Koski, 2016	3	8	37.50

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Learnability	Forlizzi & Battarbee, 2004; Hartson & Pyla, 2019; Shneiderman et al., 2018	2	8	25
CHOICES	Verhulsdonck & Shalamova, 2020	8	8	100
External influence	Verhulsdonck & Shalamova, 2020	3	10	30
Prevent errors	Shneiderman et al., 2018	8	10	80
Principles	Shneiderman et al., 2018	8	11	72.73
Pleasure	Zhou et al., 2010	4	11	36.36
Reduce short-term memory load	Shneiderman et al., 2018	3	12	25
Complexity/ Dynamic	Forlizzi & Battarbee, 2004; Battarbee & Koskinen, 2005; Hassenzahl, 2008; Kashfi et al., 2019; Luther et al., 2020	2	13	15.38
Offer informative feedback	Peters, 2022	4	13	30.77
Importance	Swieczak & Kukowski, 2016	5	15	33.33
Retention	Gupta & Nimkar, 2020	4	15	26.67
User/Customer expectations	Lehtinen, 2020; Wang et al., 2020	3	15	20
Nurturing/Management	Koski, 2016	14	16	87.50
Analysis	Swieczak & Kukowski, 2016	11	17	64.71
AIDA	Swieczak & Kukowski, 2016	8	17	47.06
Classification	Swieczak & Kukowski, 2016	9	18	50
Demographics	Vance et al., 2008	5	18	27.78
Evaluation	Shneiderman et al., 2018	7	18	38.89
Aesthetics	Lehtinen, 2020	6	18	33.33
Customer value	Lehtinen, 2020	4	19	21.05
Social	Rodriguez & Peterson, 2012	5	19	26.32
Strive for consistency	Shneiderman et al., 2018	7	20	35
CX	Frow & Payne, 2007	8	21	38.10
User needs/goals	Hassenzahl et al., 2013; Lehtinen, 2020; Hassenzahl et al., 2021	4	23	17.39
Sustainability	Dhanda & Shrotryia, 2020	11	25	44
Keep users in control	Zhou et al., 2010; Lehtinen, 2020	6	28	21.43
Flow state	Zhou et al., 2010	9	29	31.03
Relationship value	Haas et al., 2012	20	29	68.97
Meaningfulness	Battarbee & Koskinen, 2005; Hartson & Pyla, 2019	5	32	15.63
CO experience	Forlizzi & Battarbee, 2004	9	34	26.47

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Useability	Lehtinen, 2020	7	36	19.44
Competitive advantage	Porter, 2001	13	38	34.21
Information/Content	Lehtinen, 2020	9	38	23.68
Marketing	Swieczak & Kukowski, 2016	7	41	17.07
Relationship	Rodriguez & Peterson, 2012	7	41	17.07
ROI/Financial implications	Swieczak & Kukowski, 2016	13	41	31.71
Loyalty	Reichheld & Schefter, 2000	11	43	25.58
Lead generation	Swieczak & Kukowski, 2016	17	46	36.96
Brand	Lehtinen, 2020	8	46	17.39
Emotional impact/response	Forlizzi & Battarbee, 2004	13	55	23.64
Trust	Vance et al., 2008	22	60	36.67
Business value	Haas et al., 2012	10	61	16.39
Digital business strategy/model	Bharadwaj et al., 2013	12	61	19.67
Experience	Ariely & Carmon, 2003	18	67	26.87
Digital transformation	Vial, 2019	28	90	31.11
UX	Lehtinen, 2020	14	106	13.21

Only one source fully populated five themes: shared/co-creation, management, logic, B2B and CHOICES. The theme of shared/co-creation can form part of both customer and relationship value. However, the source in which it was found discussed the idea of value creation with any stakeholder and not specifically with only customers or other businesses (in the B2B domain). The management theme deals with managing a lead generation strategy, which was not discussed independently of the core of lead generation. This can explain why this theme was populated by only one source, as this source was the only one that discussed the management thereof in an isolated way.

Logic consists of three logics explaining digital business strategy. It could form a part of said theme, yet these logics explain the key considerations for digital transformation and creating a digital business strategy. B2B can also be absorbed into the lead generation theme as it discusses lead generation in a business-to-business domain. Lastly, CHOICES is an acronym for context, habits, other people, incentives offered, congruence of private goals and public display, emotions

and salience of a design—all of which could form part of another theme created throughout the analysis. However, they were discussed as a single concept and were assigned this theme.

Four themes had 70–89.99% of their total codes populated from a single source: timing, prevent errors, principles and nurturing/management. Timing is a theme that could be absorbed into another theme (UX). However, the timing of UX involvement in a project can simplify the process and therefore receive its theme. Prevent errors and principles both have the same prominent source. These themes mostly originate from one source because the golden rules of interface design by Shneiderman et al. (2018) was adopted for this research, the only source specifically discussing UX principles and not the concept of UX as a whole. Lastly, the theme of nurturing/management could once again be absorbed into the theme of lead generation since it is one of the key processes that would decrease the percentage of codes assigned from a single source.

Nine themes had 50–69.99% of their codes originating from a single source. These themes are all assigned as subthemes to a parent or grandparent theme, meaning they could be absorbed into these themes, yet the importance of the specific concepts called for isolated themes to be formed. The remaining themes had less than 50% of their codes originating from a single source, with a minuscule percentage of codes from the prominent source being UX (13.21%). This comes as no surprise as UX is the most prominent theme, with 109 codes assigned to it from 28 sources. Two themes follow this, complexity/dynamic and meaningfulness, which had 15.38% of their total codes originating from a single source. Complexity/dynamic consists of eight sources, and meaningfulness consists of thirteen. APPENDIX D shows a table for each theme with the sources, the number of codes from each source and the percentage that each source represents of the total codes.

Digital transformation and digital business strategy/model emerged from lead generation sources and showed the importance of undergoing digital transformation and forming a digital business strategy to allow for an effective online lead-generation strategy. The importance of digital transformation has a tremendous influence on effective lead generation (Berman, 2012). The rise of the digital revolution leaves businesses no choice but to conform to and master digital transformation to remain relevant in the 21st century (Chanias, 2017).

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Digital transformation (90 codes) requires the fusion of products, services and strategies with IT to form a new way of identifying, creating and capturing value to remain relevant in a competitive market (El Sawy et al., 2010). This requires forming a digital business strategy (61 codes) to ensure the digital transformation process is done efficiently and effectively (Chanias, 2017). A competent manager should complement this with the skills and capabilities to spearhead this tremendously challenging endeavour and adjust and learn to ensure that goals are met. Digital business strategies are predefined actions undertaken through digital channels that allow the business to identify and capture new value-generating pathways and position the business as a worthy opponent in a competitive market (Woodard et al., 2013; A. Bharadwaj et al., 2013).

After successful digital transformation commencement, a business can focus on its lead generation (46 codes). Lead generation is a process of identifying the target market, implementing ways to draw its attention to a product or business, and convincing the targeted individuals that the solution that the product/business offers would fulfil their needs (23 codes) (Swieczak & Kukowski, 2016). The process (20 codes) of lead generation is situationally dependent and would require adaptation for every scenario to be as effective as possible. However, it is suggested that multiple strategies should be used in conjunction to allow for maximum results, and analysis (17 codes) should be done regularly as current effective strategies may become obsolete.

Lead generation includes the importance of marketing to draw attention to a business and its products. Marketing can deliver a valuable list of leads to the business to nurture (16 codes) and ultimately convert into paying customers who can deliver exchange value to the business (Priem, 2007; Swieczak & Kukowski, 2016). However, before the conversion process can commence, it is important to understand what a typical lead life cycle (eight codes) looks like for the business. The lead life cycle entails an individual's entire process, from being a stranger to becoming a paying customer (Brock, 2019; Bondarenko et al., 2019).

After a clear picture of what the lead life cycle looks like is formed, the classification (28 codes) of the leads obtained from marketing activities should follow. Typically, leads are classified as cold, warm or hot (Bondarenko et al., 2019), each with its own inclusion and exclusion criteria

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and definitions determined by each business. The classification of a lead can be assisted by the CHOICES (eight codes) acronym, which represents Context, Habits, Incentives offered, Congruence of private goals and public display, Emotions, and Salience of a design (Verhulsdonck & Shalamova, 2020), all of which affect the individual's willingness to deal with a business. Furthermore, it can also be assisted by the AIDA (17 codes) prism, which is an acronym which stands for Attention, Interest, Desire and Action (Swieczak & Kukowski, 2016). This prism depicts an individual's phases when dealing with a business, with each phase requiring its strategy and advertisements to ensure a higher conversion rate. Furthermore, it is important to note that demographics (18 codes), such as ethnicity, culture, age, race, education and employment, can significantly impact how advertisements and interfaces are perceived.

The nurturing/management (16 codes) of leads is critical to ensure that more customers are acquired; however, this concept is not the only important consideration in lead generation; retention (15 codes) is another important concept. Retention entails creating a relationship with customers that instils trust and loyalty to ensure that a customer will continue dealing with the business for years after the initial sale. This relationship can be created by delivering meaningful (32 codes) content (38 codes) to customers that they can trust. This shows how many of the themes are closely related, with all the themes affecting each other. After a specific lead generation strategy is implemented and has had time to yield results, a return on investment ([ROI] 41 codes) analysis should be done. This ensures that the financial input into the strategy is adequately met with an increase in key performance indicators ([KPI] six codes). For example, an increase in the quality and quantity of leads can be converted into exchange value at some point.

The five themes with the most codes assigned to them are UX (106), Digital transformation (90), Experience (67), Digital business strategy (61) and Business Value (61). UX also has the broadest range of sources coded to it (28), and the most prominent source (Lehtinen, 2020) only constitutes 13.21% of the total codes found in the theme. Table 13 shows the sources, the number of codes and the percentage of total codes each source represents for the UX theme. Lastly, it shows the total number of codes in the theme. APPENDIX D contains tables for each of the themes.

Table 13. UX sources

Source	# of codes	% of codes
Lehtinen, 2020	14	13.21
Forlizzi & Battarbee, 2004	12	11.32
Kashfi et al., 2019	11	10.38
Hassenzahl, 2008	8	7.55
Song et al., 2021	7	6.60
Zhou et al., 2010	7	6.60
Kuniavsky, 2010	5	4.72
Luther et al., 2020	5	4.72
Bargas-avila & Hornbæk, 2011	4	3.77
Setia et al., 2013	3	2.83
Hartson & Pyla, 2019	3	2.83
Hassenzahl et al., 2021	3	2.83
Rodriguez & Peterson, 2012	2	1.89
Dougherty & Murthy, 2009	2	1.89
Vance et al., 2008	2	1.89
Minge & Thüring, 2018	2	1.89
Pettersson et al., 2018	2	1.89
Santoso & Schrepp, 2019	2	1.89
Wang et al., 2020	2	1.89
Shneiderman et al., 2018 – Chapter 12	2	1.89
Swieczak & Kukowski, 2016	1	0.94
Koski, 2016	1	0.94
Sebastian et al., 2017	1	0.94
Reichheld & Schefter, 2000	1	0.94
Berman, 2012	1	0.94
Ebert & Duarte, 2018	1	0.94
Battarbee & Koskinen, 2005	1	0.94
Weinman, 2015	1	0.94
Total codes		106

The fact that UX is the most prominent theme that emerged from the analysis is not surprising, as one of the keywords utilised for searching for sources included user experience, which makes the prominence of experience unsurprising. Experience has 15 sources coded to it, and the most prominent source (Ariely & Carmon, 2003) only constitutes 26.87% of its total codes. The most prominent source and the percentage that the source represents in the theme can be seen for every theme in Table 12.

Experience can consist of co-experience (34 codes) and *an* experience (three codes). Co-experience states that even if an interaction occurs between a business and just one individual, the experience does not exist in isolation from others since opinions and perceptions of experiences are regularly shared between people. It also explores shared experiences where people experience something together and how the event is perceived and shared after the fact. *An* experience appears very little in the data and explains an isolated event with a clear beginning and end. However, it is a distinction between the distinct kinds of experiences. No further exploration of this concept was done as any interaction with a business forms part of a cumulative experience consisting of all interactions across all touchpoints with a business.

Business value is a concept regularly discussed regarding both UX and lead generation and possesses three dependent themes, namely relationship value (29 codes), co-creation of value (two codes) and customer value (19 codes). The idea of relationship value encapsulates how creating and fostering a relationship with the business stakeholders can add a value-creation path. It closely relates to the theme relationship (41 codes), which speaks to the importance of a relationship created through delivering an interface people can trust (60 codes) and thereby adding to a company's loyal (43 codes) customer base. This, in turn, is interrelated with the theme of customer value as a loyal customer is most likely to create repeated exchange value for the business (Priem, 2007). Customer value is a combination of how customers add value to a business and how it should deliver value to its customers.

A loyal customer base can also be created through brand awareness (46 codes), achieved by creating and fostering a relationship between the customer and the business before any transactions occur and creating a business persona a company's prospective customers can trust. A loyal customer base can also create a sustainable competitive advantage for a business (Durmaz & Efendioglu, 2016). Creating loyalty is time-consuming and requires delivering products and services that are rich in value at all touchpoints (Durmaz & Efendioglu, 2016). Furthermore, sustainability could be twofold; it can meet the definition of possessing rare skills and capabilities that are difficult or impossible to recreate by anyone outside the business (Barney, 1991). It can also meet the definition of utilising processes and products to meet current needs while protecting humankind's future and preserving the environment (Rainey, 2015).

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The eight golden rules of interface design by Shneiderman et al. (2018) were used explicitly as themes for this analysis since it is accepted as the most encompassing and overarching principles of UX. These rules are: strive for consistency, seek universal useability, offer informative feedback, design dialogs to yield closure, prevent errors, permit easy reversal of actions, keep users in control, and reduce short-term memory load. The rules with fewer than ten codes are predominantly found only in Shneiderman et al. (2018). The reason for this could be manifold, including the relatively young age of the source, limiting the number of other sources citing and utilising the knowledge in this source, or the fact that other authors could focus on different principles (11 codes).

High-level encapsulation of UX includes usefulness (two codes), meaningfulness (32 codes) and emotional impact/response (55 codes). The occurrence of the term *usefulness* is scarce; however, for something to be deemed useful, it needs to fulfil needs or be a tool necessary for goal achievement, which means that user needs/goals (23 codes) should be seen synonymously with usefulness. Meaningfulness can be achieved by adding value to an individual's life by being helpful and meeting or surpassing their expectations (15 codes). Emotional impact/response deals with the interface's emotional impression on users and what their emotional reaction leads them to do. If they feel highly unsatisfied and find the experience unpleasant, they will likely move on to competitors until their needs and expectations are met.

The complex (13 codes) nature of UX is becoming apparent now, with several interrelated principles, high-level encapsulation, external influences (10 codes) and other considerations appearing. These considerations are aspects like layout (three codes), content (38 codes), the learnability (eight codes) of the interface, aesthetics (18 codes), and the pleasure (11 codes) it can deliver. However, the ultimate goal is to create and maintain a flow state (29 codes) for individuals, which decreases distractions such as errors and inconsistencies. The flow state can be ensured by implementing UX strategies from the beginning of the project design and should be incorporated into all planes (three codes) of the interface. After the interface deployment, it is vital to evaluate (18 codes) the effectiveness of the applied strategies for the population at hand to establish if additional changes should be made.

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5.2.3.2 SOURCE ANALYSIS

Table 14 below lists the sources for the analysis in alphabetical order. It also shows the total number of quotes from each source, the most prominent theme in that source, the number of quotes assigned to that theme and the percentage of the total quotes assigned to that theme. More than one theme is mentioned because the same number of quotes were assigned to those themes from the source.

Two sources were used solely to expand a single theme (Oldroyd et al., 2011; Pavlou & Sawy, 2010), meaning that 100% of the quotes are assigned to a single theme. Oldroyd et al. (2011) were the shortest source with the least number of characters and also with the least number of quotes assigned from it (one code), which makes sense of the high percentage of the prominent code found within it. Pavlou and Sawy (2010) fell within the top ten sources in terms of character length but had a relatively sparse number of codes originating from it (seven), all assigned to the theme of competitive advantage. The highly concentrated nature of this theme is understandable as the source's title is The Third Hand: IT-Enabled Competitive Advantage in Turbulence Through Improvisational Capabilities.

Table 14. Source analysis

Source name	# of quotes	# of themes	Most prominent theme	# of quotes from the prominent theme	% of total quotes
Ariely & Carmon, 2003	23	6	Experience	18	78.26
Bargas-avila & Hornbæk, 2011	15	9	UX; Emotional impact/response	4	26.67
Battarbee & Koskinen, 2005	37	13	CO-experience	10	27.03
Behera et al., 2020	14	12	Analysis; Sustainability	2	14.29
Berman, 2012	27	11	Digital business strategy/model	11	40.74
Bharadwaj et al., 2013	27	4	Digital business strategy/model	12	44.44
Bondarenko et al., 2019	23	6	Importance - LG	7	30.43
Budac, 2008	6	4	Loyalty	3	50
Chanias, 2017	12	4	Digital transformation	9	75
Dhanda & Shrotryia, 2020	28	11	Sustainability	11	39.29
Dougherty & Murthy, 2009	6	5	UX	2	33.33

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Ebert & Duarte, 2018	9	7	Digital transformation	3	33.33
Forlizzi & Battarbee, 2004	74	15	Experience	16	21.62
Frow & Payne, 2007	36	14	CX	8	22.22
Gebayew et al., 2018	14	8	Digital Transformation; CX	3	21.43
Graesch et al., 2021	6	5	Digital transformation	2	33.33
Grubor & Olja, 2018	28	17	Marketing	5	17.86
Gupta & Nimkar, 2020	37	14	Information/content	7	18.92
Haas et al., 2012	32	4	Relationship value	20	62.5
Hartson & Pyla, 2019	29	13	Learnability	8	27.59
Hassenzahl et al., 2013	14	6	User needs/goals	4	28.57
Hassenzahl et al., 2021	24	9	Useability	5	20.83
Hassenzahl, 2008	14	5	UX	8	57.14
Helfat & Raubitschek, 2000	3	2	Lead Generation	2	66.67
Kashfi et al., 2019	26	8	UX	11	42.31
Koski, 2016	53	16	Nurture/Management	14	26.42
Kuniavsky, 2010	23	15	UX	5	21.74
Lehtinen, 2020	121	31	UX	14	11.57
Light, 2003	5	4	Social	2	40
Luther et al., 2020	20	11	UX	5	25
Mahmood et al., 2019	14	4	Digital Transformation; Digital Business strategy/model	6	42.86
Minge & Thüring, 2018	16	4	Aesthetics; Emotional impact/response	5	31.25
Mosakhani et al., 2012	10	8	Business Value; ROI/Financial implications	2	20
Mosley, 2007	24	9	Brand	7	29.17
Norman, 2002	8	3	Emotional impact/response	6	75
Oldroyd et al., 2011	1	1	Lead life cycle	1	100
Pavlou & Sawy, 2010	7	1	Competitive advantage	7	100
Pekuri et al., 2013	13	5	Digital business strategy/model	7	53.85
Peters, 2022	23	11	Keep user in control	5	21.74
Pettersson et al., 2018	8	2	Evaluation	6	75
Piccoli & Ives, 2005	11	5	Sustainability	5	45.45

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Porter, 2001	37	11	Competitive advantage	13	35.14
Reichheld & Schefter, 2000	24	9	Loyalty	11	45.83
Rodriguez & Peterson, 2012	44	17	Relationship	7	15.91
Santoso & Schrepp, 2019	6	4	Demographics; UX	2	33.33
Sebastian et al., 2017	13	6	Digital business strategy/model	6	46.15
Setia et al., 2013	18	11	Information/Content	4	22.22
Shneiderman et al., 2018 – Chapter 12	25	13	Keep users in control	5	20
Shneiderman et al., 2018- Chapter 3	43	16	Principles	8	18.60
Shneiderman et al., 2018- Chapter 5	10	5	Evaluation	6	60
Song et al., 2021	11	3	UX	7	63.64
Swieczak & Kukowski, 2016	109	22	Lead Generation	17	15.60
Vance et al., 2008	37	9	Trust	22	59.46
Verhulsdonck & Shalamova, 2020	20	9	CHOICES	8	40
Vial, 2019	41	6	Digital transformation	28	68.29
Wang et al., 2020	17	9	User/customer expectations; Strive for consistency	3	17.65
Weinman, 2015	4	4	Timing; Retention; Lead generation; UX	1	25
Wilcox & Sussman, 2014	8	7	Influence (LG)	2	25
Wiley & Getto, 2015	2	2	Keep User in control; Reduce short-term memory load	1	50
Woodard et al., 2013	34	6	Digital transformation	17	50
Zhou et al., 2010	59	16	Trust	11	18.64
Zumstein et al., 2021	24	12	Marketing	6	25

The source with the most variety of themes assigned is Lehtinen (2020); it has 121 quotes originating from it, covering 31 themes. The most prominent theme found in this source is UX, which constitutes 14 of the 121 codes, 11.52% of all quotes. Lehtinen (2020) also had the second-highest character length (377 228 characters). Swieczak and Kukowski (2016) had the second most

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variance in themes found within the source. A total of 21 themes were found in this source, with the most prominent theme being lead generation, with 27 codes assigned to this theme. This equates to 15.6% of the 109 quotes in the source. Swieczak and Kukowski (2016) also had the most significant number of characters (498 379). APPENDIX D contains the tables for all but three sources as they only consist of a single theme already seen in Table 14.

The theme most often found as a prominent theme in the sources is UX, with ten sources assigning it as the most prominent theme. This is followed by digital transformation, with seven sources having this theme as a prominent theme. Digital business strategy/model was a prominent theme in five sources, and emotional response/impact was a prominent theme in four sources. Lead generation was a prominent theme for three sources; other themes that also had three prominent sources were information/content, sustainability, and keep users in control. A list of the themes predominantly found in the data can be seen in APPENDIX D.

Table 15 shows the theme breakdown for Swieczak and Kukowski (2016), where the theme name and number of codes assigned to that theme in this source and the percentage of each theme can be seen in descending order. The most found theme in this source was lead generation (17 codes – 15.60 %), followed by ROI/financial implications (13 codes, 11.93 %), analysis (11 codes, 10.10 %), classification (10 codes, 9.17 %) and process/how to (nine codes, 8.26 %). The table also shows the total number of quotes in the source.

Table 15. Swieczak and Kukowski, 2016 - Themes

Theme	# of codes	% of total codes
Lead generation	17	15.60
ROI/Financial implications	13	11.93
Analysis	11	10.09
Classification	10	9.17
Process/how to	9	8.26
AIDA	8	7.34
Marketing	7	6.42
Brand	7	6.42
Importance - LG	5	4.59
User needs/goals	3	2.75
Information/Content	3	2.75
KPI	3	2.75
Management	3	2.75

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Keep users in Control	2	2.75
UX	1	0.92
Loyalty	1	0.92
Business value	1	0.92
Customer value	1	0.92
Retention	1	0.92
Useability	1	0.92
Demographics	1	0.92
Emotional impact/response	1	0.92
Total codes		109

Table 16 shows another example of theme breakdown for Peters (2022). Where the top five themes are keep users in control (five codes, 21.74 %), Offer informative feedback (four codes, 17.39 %), meaningfulness (three codes, 13.04 %), Reduce short-term memory load (two codes, 8.70 %) and co-experience (two codes, 8.70 %). This source can be seen as instrumental, as the four most assigned themes are one of the eight golden rules of interface design by Shneiderman et al. (2018), which is accepted as the most encompassing UX principles. Tables for each source used in this analysis were created and can be seen in APPENDIX D.

Table 16. Peters, 2022 - Themes

Theme	# of codes	% of total codes
Keep users in Control	5	21.74
Offer informative feedback	4	17.39
Meaningfulness	3	13.04
Useability	2	8.70
Reduce short-term memory load	2	8.70
Co-experience	2	8.70
User needs/goals	1	4.35
Demographics	1	4.35
Evaluation	1	4.35
Permit easy reversal of actions	1	4.35
Design dialogues to yield closure	1	4.35
Total codes		23

5.2.4 SUMMARY

The purpose of the document analysis was twofold, first, to establish the cornerstones for discussion in participatory design (PD) and second, as a means of data triangulation. The cornerstones that arose from the analysis were all the themes, specifically focused on the top 10

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themes from the analysis, which are as follows: UX, digital transformation, experience, business value, digital business strategy/model, trust, emotional impact/response, brand, lead generation and loyalty. All these cornerstones will not be included as a point of submerged discussion for the PD, but some might just be discussed along with the topic of importance; for example, emotional impact/response will be discussed within its grandparent theme of UX.

Due to the broad scope of sources included in the analysis, some vitally important concepts in the overarching topics of the analysis came across as seemingly unimportant because of the number of codes assigned to that specific theme. This indicates that future research analysis should be done on a narrower topic to allow for the inclusion of more topic-specific, detailed sources to gain a more holistic picture of that single topic rather than bits and pieces of multiple topics. Overall, the results yielded from the analysis were in line with the preconceived ideas based on knowledge acquired through peer-reviewed articles and experience.

5.3 CONCLUSION

This chapter presented the questionnaire findings that form part of the first phase of the DSR (problem identification) and the document analysis forming part of the second phase of the DSR (defining the objectives of a solution). The questionnaire investigated the problem in the literature surrounding UX and lead generation; it indicated a deficiency in the literature on implementing a combination of UX and lead generation strategies to elicit business value. The document analysis identified the central themes when examining UX and lead generation; it yielded 63 codes spread out across 34 themes. These codes were used in the following phase to ensure that the central themes were adequately discussed in the participatory design session, discussed in Chapter 6.

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6. DEVELOPMENT

6.1 INTRODUCTION

This chapter discusses the participatory design session held with six professionals to create the first UXOLF—also discussed in this chapter. The first PD session falls within the development phase of the DSR main cycle. The thematic analysis (TA) results are then represented, followed by the second version of the framework, adapted by utilising the TA results. Figure 26 below outlines the overall chapter layout with the current chapter highlighted to position it in the research.
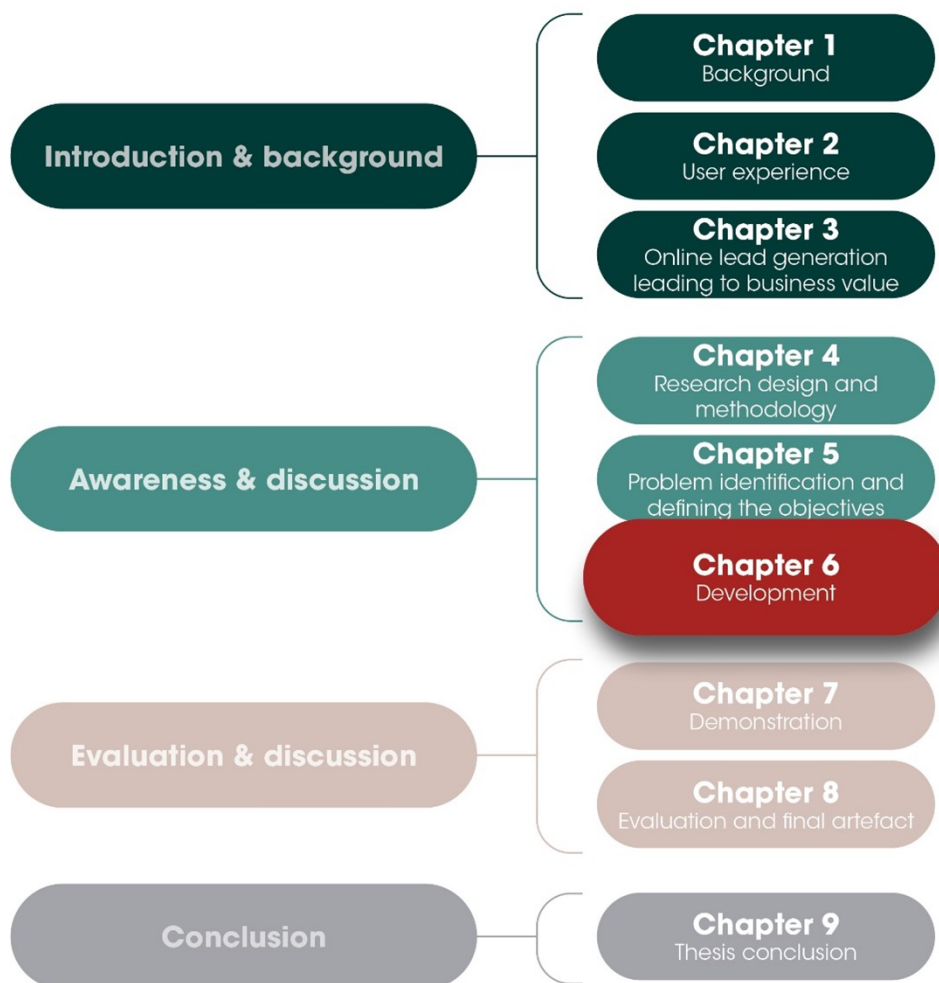
Figure 26. Chapter 6 positioning

6.2 PARTICIPATORY DESIGN

Participatory design (PD) focuses on creating and fostering tacit knowledge through design partnerships between research, designers and participants (Spinuzzi, 2005). Tacit knowledge

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allows for a quick response or reaction without following an entire thought process from beginning to end (Spinuzzi, 2005). In these partnerships, researchers and participants iteratively design artefacts, workflows or work environments to ensure that all the parties understand the activity. PD has three phases: initial exploration, discovery and prototyping (Spinuzzi, 2005); Section 6.2.1 discusses these phases and their applications.

6.2.1   SESSION PROTOCOL

During **initial exploration**, participants become familiar with the users' world and their function within a specific context (Spinuzzi, 2005). The participants were a chief digital officer, two business directors and design professionals. The eventual users of the artefact will also be individuals with similar roles to the participants. The results from the document analysis were used in this phase for all the participants to understand the context and purpose of the design task. The results of the DA were emailed to all participants two weeks before the scheduled session to allow each participant to become familiar with academic information surrounding UX and lead generation.

During **discovery**, participants (designers and users) understand and prioritise the current situation and begin to visualise future solutions (Spinuzzi, 2005). Goals and values were clarified, and participants agreed on the desired outcome. The researcher made suggestions for the UXOLF— these suggestions stemmed from the themes of the DA. The suggestions, combined with the suggestions from the design professionals, were dissected and discussed to ensure that only valuable suggestions form part of the UXOLF. A background was presented at the start of the session, followed by a summary of the academic knowledge. Four discussion points were held: design principles, marketing, evaluation, and lead nurturing. The online collaboration platform whiteboard tool *Miro* was used during the session (https://miro.com/). During the design principles topic, the participants had to add their most used and beneficial design principles to the relevant *Miro* section created before the session. The participants then then discussed the principles to form a consensus. The other three sections were populated by participants with methodologies and considerations for marketing, evaluation and lead nurturing, each of which had discussions afterwards.

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After these two initial stages of the PD, the first sub-phase of the development phase was completed. This sub-phase is called problem identification and is depicted in Figure 27.
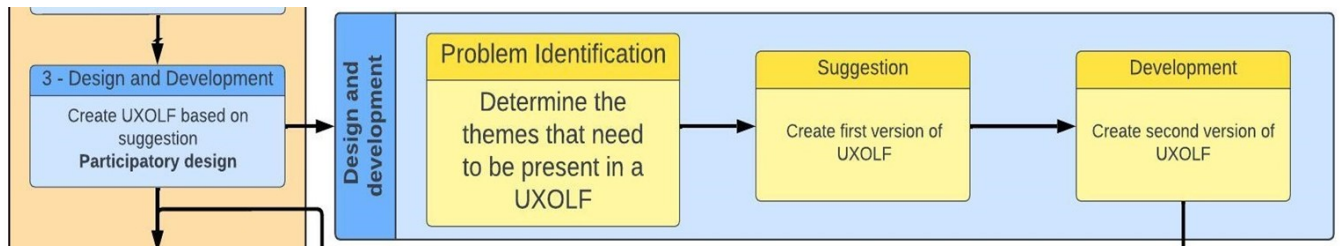

Figure 27. Problem identification sub-phase

The final stage is **prototyping**. During this stage, participants work together iteratively to discuss the suggestions established in the discovery phase and finalise the artefact (Spinuzzi, 2005). The prototyping can take place with a variety of methods; low-fidelity prototyping was used for this research. This means the representations can be a collection of sticky notes, sketches, diagrams and storyboards produced on whiteboards or paper. The designers and users collaborated in building a representation of the UXOLF on a physical whiteboard. Section 6.3 discusses this first version of the UXOLF. The virtual sticky notes, a picture of the UXOLF and the session recording were used for thematic analysis. The type of thematic analysis for the PD followed an inductive approach to coding, meaning the themes arose from the data rather than the analyst imposing themes unto the data. This stage of the PD completed the second sub-phase of the design and development phase; the sub-phase is named suggestion and is depicted in Figure 28.
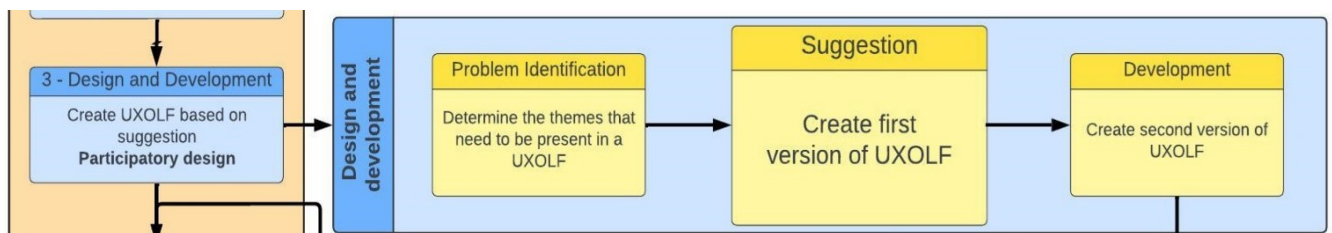

Figure 28. Suggestion sub-phase

6.2.2 PARTICIPANTS

Table 17 documents the six participants who formed part of the participatory design sessions, with their professional backgrounds. Participants from diverse backgrounds were specifically selected to ensure that all-encompassing views were present in the sessions. Most participants would also

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benefit from the final framework as it can be applied to their work to maximise benefits and increase business value. They received informed consent forms before the commencement of the session. No personal information was noted for these professionals, allowing for complete confidentiality and anonymity. Additionally, they were informed about the need to record the sessions. Each participant signed the informed consent form after the introduction to the session, which can be found in APPENDIX E, along with the raw data obtained from the session and the thematic analysis.

Table 17. Participatory design participants

Participant #	Professional background
1	Research, business and IT
2	Research
3	Research, design, business and IT
4	Research, design, business and IT
5	UX & UI Design
6	UX & UI Design

6.3 FIRST VERSION OF THE UXOLF

The first version of the framework was created during the last hour of the participatory design session. All the participants contributed and debated why specific core concepts should be included. The framework was constructed on a whiteboard and photographed after the session. The framework was then electronically recreated to improve its visual representation. Figure 29 depicts the electronically recreated UXOLF v1; APPENDIX E contains its unrefined version.
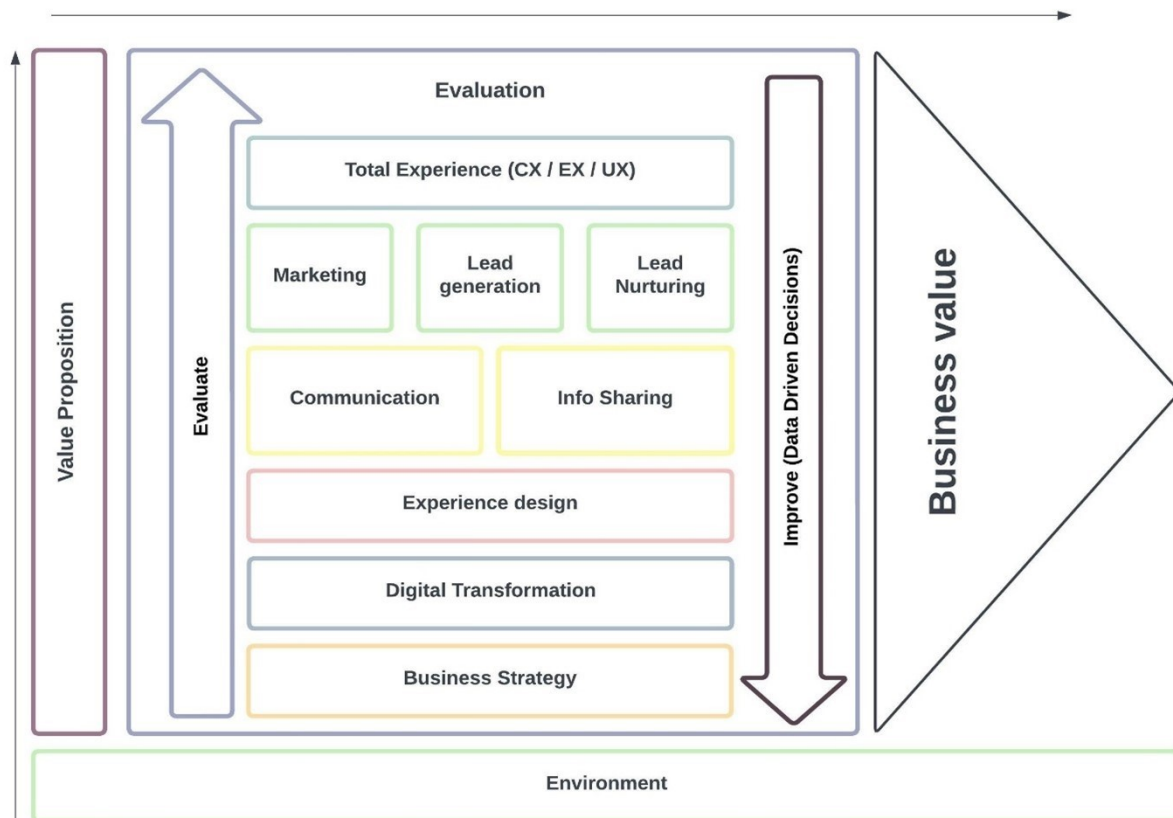
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Figure 29. UXOLF v1

The framework functions from the bottom up and from left to right, meaning that first, we have the environment, followed by the value proposition, and then the evaluation block with all of its content. If done effectively, it can deliver business value as an output.

The framework states that, first and foremost, the environment within which the business operates, including the business domain, country, economic stance and other demographical characteristics, influences every operational decision of the business. Therefore, the block indicating the core concept of environment spans the entirety of the framework. The input into this business value delivery framework is the value proposition that the business promises its customers/users; this brings them into the business and the lead generation process.

This is followed by the entire block of evaluation, which also has a bottom-up flow, meaning that the business strategy should be determined as it affects the business's ability to operate. It also influences the business's ability to transform digitally—the next concept. The business's digital

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transformation allows it to digitise all its organisational processes and sets them up to create a digital business strategy. This, in turn, allows them to perform experience design. Experience design encapsulates design principles, the design process, the execution of these two and the methodology for applying the design principles.

Once experience design is perfected, communication and information sharing should be adapted to reflect the principles established during experience design. Communication and information sharing differ in a specific way; information sharing is the information the business makes available to anyone through its digital channels. Communication is the personalised interaction between an agent representing the business and the user. The tone and content of the communication and the information-sharing concepts should be perfected before initiating the lead generation process.

The lead generation process can be divided into three core concepts: marketing, lead generation, and lead nurturing. All the preceding concepts should form the basis and structure for how each will be executed. Combining these three lead generation concepts then delivers the total experience, which includes CX, UX and employee eXperience (EX), which can elicit feelings of meaningfulness, pleasure and satisfaction.

All of these concepts that form part of the evaluation block should constantly be evaluated and analysed to ensure that data-driven decisions are made to improve the entire process—the arrows indicate this in the evaluation block. If executed effectively, it should deliver business value, which is the aim of this framework. Business value can take many shapes, among others, trust, ROI, emotional impact, sustainability and competitive advantage—all of which deliver their own set of value to the business and users.

6.4   THEMATIC ANALYSIS RESULTS

The thematic analysis of the participatory design followed an inductive approach to TA, meaning that the themes that resulted from the analysis arose from the data. Shukla et al. (2019) bring forward a six-step process for thematic analysis, namely 1) familiarisation, 2) generating codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) producing a

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report. These steps were used for the analysis in the current study. Table 18 lists these six steps and an explanation and application of each.

Table 18. Thematic analysis steps

Step number and name	Explanation and Application
1 – Familiarisation	Full submersion within the available data for the phenomenon at hand (Shukla et al., 2019) This was done by the researcher being part of the PD session and by the transcription of the data.
2 – Generating codes	The creation of initial codes that emerge from the data (Shukla et al., 2019). Codes capture interesting data descriptions (Clarke & Braun, 2016; Gibbs, 2021). The codes started to emerge during the transcription of the session.
3 – Searching for themes	This step will require the researcher to interpret the codes established in the previous step to identify possible themes found within the data (Bowen, 2009; Shukla et al., 2019). The themes were created using the software *Quirkos* (https://.quirkos.com/).
4 – Reviewing themes	This step entailed iterative evaluation of the themes (Shukla et al., 2019; Braun & Clarke, 2022). Both latent and semantic themes were included in this analysis and resulting in themes being merged.
5 – Defining and naming themes	Iteratively reviewing the themes, ultimately grouping them (Shukla et al., 2019). The names of the themes should allude to the definition of the theme (Braun & Clarke, 2006). The themes were named using no more

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	than three words and were explained where necessary.
6 – Producing a Report	The researcher communicates the analysis findings (Shukla et al., 2019).

Table 19 shows the theme summary for the analysis, along with the parent and grandparent themes, the theme description where necessary and the total number of codes assigned to each theme. The themes appear in ascending order of the total codes assigned to them. The themes were identified from the data as an inductive approach was utilised. A total of 75 themes arose during the analysis, with 494 codes assigned between them. Table 19 was created with the software *Quirkos* (https://.quirkos.com/) utilised for the analysis.

Table 19. Participatory design thematic analysis

Theme Title	Parent	Grandparent	Theme Description	Total Codes
Desired experience	UX		The experience designers set out to create	1
Ease	Evaluation		Ease of evaluation	1
Supply chain			Business supply chain	1
Evaluation				1
Attention	Marketing		Grabbing user attention	1
Retest	Evaluation		Re-evaluation of a specific element	1
Organisational culture				1
Curiosity	Marketing		User curiosity	2
Analysing	Evaluation		Analysis of results obtained from an evaluation	2
Heuristic evaluation	Evaluation			2
Repeatability	Evaluation		Evaluation methods should be repeatable	2
Competitors	Evaluation		Evaluate what competitors are doing	2
Concurrency	Lead nurturing		Performing multiple tasks at once	2
Process effectively	Lead nurturing		Ensure the process runs effectively	2

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Quality	Performance/ Efficiency	Design principles	Interface quality	2
Experience	Marketing		Created experience through marketing	2
Automate			Automate as much as possible of the process	2
Probability of success	Lead nurturing		Evaluating the lead's probability of success	2
Design principles				2
Error prevention	Design principles		Prevent catastrophic errors from occurring	3
Easy	Marketing		Contacting a business because of marketing activities should be easy	3
Functional testing	Evaluation		Evaluation method	3
KPIs/objectives	Evaluation		Evaluation method	3
Convincing	Lead nurturing		Convincing users of the business or product	3
Resource allocation	Lead nurturing		Effective allocation of available resources	3
Attention to dead leads	Lead nurturing		Revive dead leads	3
Personalisation / Personal touch	Lead nurturing		Some personal touch to this part of the process	3
Competitive advantage				3
Intent	Convincing	Lead nurturing	User's intent of doing business with them	3
Friction	Design principles		Good friction allows for lead quality over quantity	3
Expert reviews	Evaluation		Evaluation method	3
User control	Design principles		Ensure user autonomy	4
Business maturity	Marketing		Marketing should relay business maturity	4
Drop-offs	Evaluation		Where the majority of users leave the process	4
Holistic vs step	Evaluation		Entire and step evaluation	4
Process management	Design principles		Effective management of the entire process	4
Mixed methods	Evaluation			4
Financial implications				4

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Empathy	Marketing		Express empathy towards users	4
Reviews/Word of mouth	Marketing			5
Continuous alignment	Evaluation		Continuous evaluation throughout the process	5
Sustainability	Marketing		The longevity of a strategy	5
Funnel / live feed tracking	Evaluation		Evaluation method	5
User needs/goals	Design principles			6
Digital transformation				6
Performance/ Efficiency	Design principles		How efficiently an interface works	7
A/B Testing	Evaluation		Evaluation method	7
Lead nurturing				7
Thought	UX		The thought process behind the design	7
Value proposition	Business value		What is promised to customers/users	7
Market	Marketing		Understanding the target audience	8
Lead generation form	Conversion			8
Marketing				8
Context awareness/ Accessibility	Design principles		Designers' awareness of user context and possible accessibility issues	9
Understanding	Evaluation		Why do users/systems act the way they do	9
Conversion			Lead conversion	9
Brand	Marketing		Business' brand	9
Simplification	Design principles			10
Purpose and context	Design principles		The reason why specific information is required	10
Relationship	Lead nurturing		Relationship between user and business	10
Online lead generation				10
Expectations/Perceivance	Marketing		User expectations or the Perceivance of an experience	10

Employee/Contact	Lead nurturing		Employee and other contact points influence	11
Data-driven decision	Evaluation			11
Business value				13
Lead qualification	Lead nurturing		Assigning leads to specific groups	14
Ease-of-use	Design principles			15
User testing	Evaluation		Includes multiple ways in which user testing can be done	15
Feedback	Design principles		Feedback about a process or action on an interface	15
Trust	Design principles		User trust in a business	17
Communication	Design principles		Includes communication tone, content, and information	17
UX			User experience	20
Timing/Speed	Design principles		The speed of the interface and timing of contact	22
Information requirements	Design principles		The information asked from a user	23
Consistency	Design principles		A consistent message and experience throughout a business	25
TOTAL NUMBER OF CODES	494			
TOTAL NUMBER OF QUIRKS	75			

The most widely found theme within the data was consistency, with 25 codes assigned to it. information requirements with 23 codes follow this, then Timing/Speed with 22 codes, followed by UX with 20 codes and lastly, communication and trust have 17 codes assigned to them.

Overall, the root word 'consistent' and its variances (consistency and consistently) appear in the text 30 times, with some occurrences forming part of a single code if they appear within the same sentence or paragraph. This theme was an overarching principle in all four discussion topics during the PD session: design principles, marketing, evaluation and lead nurturing. This means that the most important aspect to ensure throughout a business is a consistent message and experience.

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During the content analysis done for the document analysis, the theme of Consistency also arose with 20 codes assigned to it. The second most important theme from this session was Information requirements; this theme entails the information a user has to provide to a business. It balances between requesting enough information to reveal intent and requesting as little as possible not to overwhelm users. The amount of information requested can significantly affect the lead quality that results from them completing the lead generation form. This theme also shows that the frequency of requesting the same information from a user should never exceed one.

The next theme is Timing/Speed, a combination of the timing of user information requirements and the interaction speed. This could also take the form of interface interaction. The timing of requiring information from a customer/user is also important to consider, as there needs to be an established relationship or some form of trust before a user is willing to provide personal information to the business. Additionally, it became apparent throughout the analysis that the timing of contacting a user/lead impacts their willingness to interact with a business and that the speed of the interaction is essential to ensure complete user control. One example given by Participant 4 was where a user might only have five minutes on their commute to complete a form, so the interface should respond speedily to ensure that the user can complete it in the time they have available. This finding is further substantiated by Weinman (2015) and Lehtinen (2020), who state that speed significantly affects user experience.

UX is the next most coded theme found during this analysis, with 20 codes assigned to it—it is also the only one in the top five themes that do not form part of design principles. This theme deals with a user's all-encompassing experience with a business through digital channels. The high occurrence of this theme and the same theme found in the document analysis, with 106 codes assigned, shows that UX is an important and effective way to maximise customer satisfaction, increasing the probability of an increased business value. The themes of communication and trust have the same number of codes assigned to them (17 codes). Communication deals with the information the business provides to a user and includes the content and tone of this communication. The communication tone should be consistent throughout the business and portray the brand persona to the user. Effective and clear communication that provides users with the necessary information about the business or product can foster a relationship and increase lead conversion (Lehtinen, 2020). Trust entails the trust between a user and a business and the trust a

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user puts in an interface. Rodriguez and& Peterson (2012: 182) state that trust can be beneficial by reducing the "risk of failed transactions". Therefore, trust and communication are principal factors for lead generation and business value.

The other design principles that arose from this session were: feedback (15 codes), ease of use (15 codes), purpose and context (10 codes), simplification (10 codes), context awareness/accessibility (nine codes), performance/efficiency (seven codes), user needs/goals (six codes), process management (four codes), user control (four codes), friction (four codes), error prevention (three codes) and quality (two codes). The marketing principles found were expectations/perceivance (10 codes), brand (nine codes), market (eight codes), sustainability (five codes), reviews/word of mouth (five codes), empathy (four codes), business maturity (four codes), ease (two codes), experience (two codes), curiosity (two codes) and attention (one code).

The evaluation principles that arose during the session were: user testing (15 codes), data-driven decision-making (11 codes), understanding (nine codes), A/B testing (seven codes), funnel/live feed tracking (five codes), continuous alignment (five codes), mixed methods (four codes), holistic vs step evaluation (four codes), drop-offs (four codes), expert reviews (third codes), KPIs/objectives (three codes), Functional testing (three codes), competitors (two codes), repeatability (two codes), heuristic evaluation (two codes), analysing (two codes), retest (one code) and ease of evaluation (one code). The lead nurturing principles that were found were: lead qualification (14 codes), employee/contact (11 codes), relationship (10 codes), personalisation/personal touch (three codes), attention to dead leads (three codes), resource allocation (three codes), convincing (three codes), intent (three codes), probability of success (two codes), effective process (two codes) and concurrency (two codes). The rest of the themes are considered as other business considerations surrounding the process of online lead generation and UX.

6.5 SECOND VERSION OF THE UXOLF

This creation of the second version of the UXOLF forms part of the last sub-phase of the design and development phase, namely development, as depicted in Figure 30 below. The framework was enriched with results of the thematic analysis. This entailed the addition of the prominent design principle themes that arose from the PD session that did not make it into the first version of the framework. The PD discussion topics were created from the main themes identified in the DA,

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where the design principles were informed by the eight golden rules of interface design by Shneiderman et al. (2018). This allowed for the inclusion of both design principles from practice and principles most prominently found in academia into the second version of the framework.
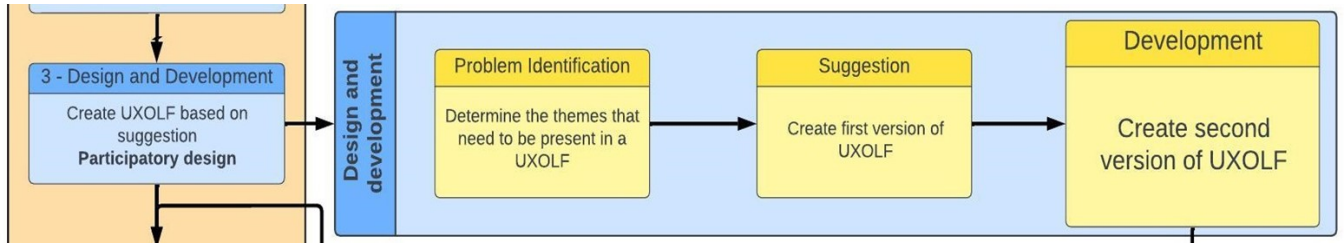

Figure 30. Development sub-phase

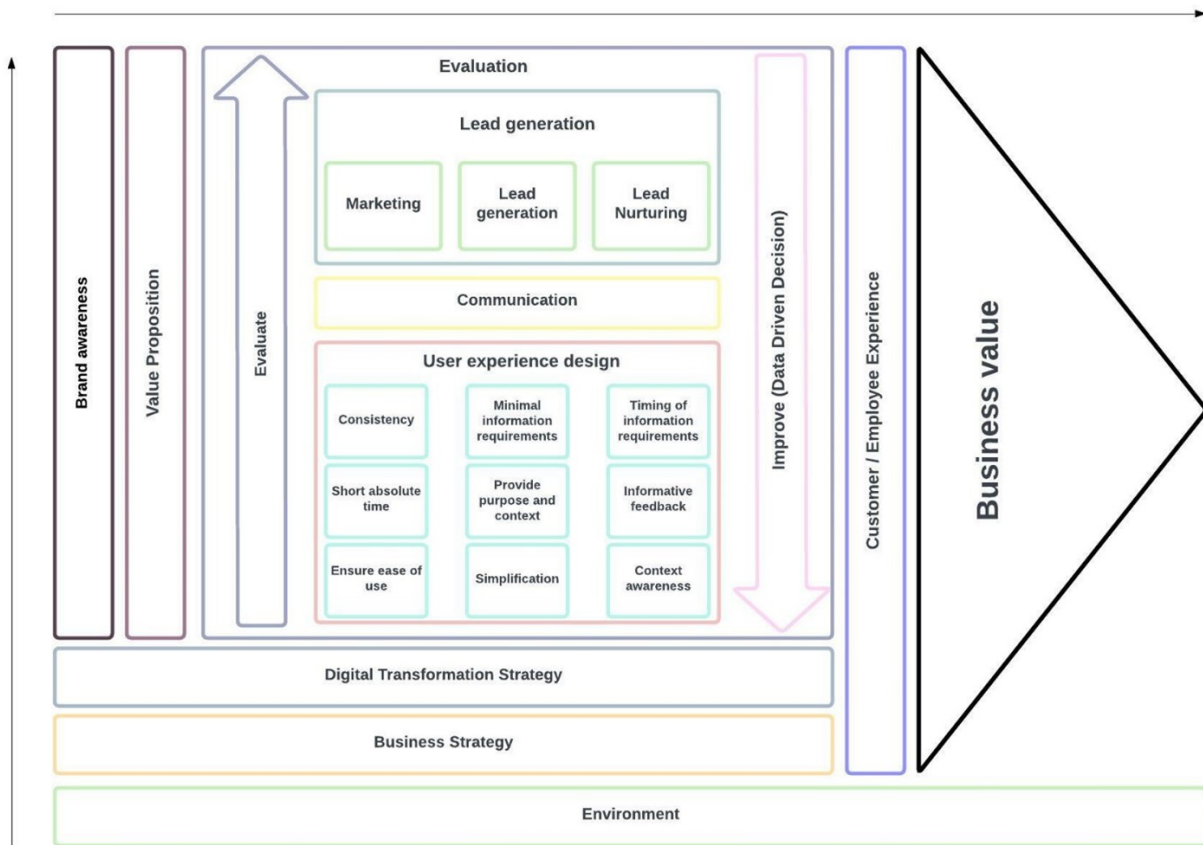During this phase, the second version of the framework was created, and Figure 31 depicts this version of the UXOLF.

Figure 31. UXOLF v2

The flow of this version is also a bottom-up and left-to-right direction. The overarching consideration remains the environment in which the business operates. With the environment as a

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consideration, a business strategy can be created, which allows for the formation of a digital transformation strategy, which gives the business the ability to follow the rest of the framework, as online lead generation requires a business to be digitally transformed. This is one significant change in the framework from the first version, where the evaluation block previously absorbed the business and digital transformation strategy and is now moved to before brand awareness and value proposition as they inform these business actions.

This is followed by brand awareness marketing done by the business, which is guided by their business and digital transformation strategies. Brand awareness is where the business' value proposition is given to prospective customers/users, brings attention to the business, and serves as input into the framework.

This leads to the framework's evaluation block, where the bottom-up flow is again followed. The first concept to consider is experience design, which includes the most discussed principles from the PD: *consistency, minimal information requirements, the timing of information requirements, short absolute time, providing purpose and context, informative feedback, ensuring ease-of-use, simplification* and *context awareness*.

Consistency was the most coded theme found in the thematic analysis of the PD; it was also a theme found within the content analysis of the academic sources about UX and lead generation. This shows that both in academia and practice, consistency is important for these two fields, with Wang et al. (2020: 2) stating, "*An excellent Internet product needs to be consistent in terms of function and wording"*. This shows that consistency is important for experience design and communication, which is the next core concept in the framework. This principle also aligns with the *strive for consistency* principle in the eight golden rules of interface design by Shneiderman et al. (2018).

The next principle is *minimal information requirements*, which states that as little as possible information should be required from an individual while yielding a quality lead. This principle also states that information should only be requested from a user once, which aligns with the *reduce short-term memory load* principle of the eight golden rules of interface design. Since privacy has become such a big concern for users with the rise of the Internet of Things (IoT), this principle and the *timing of information requirements* have become vitally important (Kim et al.,

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2019). Minimal information requirement also decreases the chance of errors, which is another golden rule of interface design (Shneiderman et al., 2018).

Timing of information requirements and *short absolute time* are two branches of the theme timing/ speed found from the analysis of the PD. *Timing of information requirements* states that some information requests should be reserved for when a relationship has been formed and trust has been established. This is so as not to overwhelm and scare away prospective leads by asking for personal information, such as ID numbers, on the first interaction. *Short absolute time* states that from the interest in a business and its products or services phase to the completion of a transaction should take as little time as possible. This also aligns with *reduce short-term memory load* as the shortest possible process does not require users/customers to remember what was done in the previous interaction for exceptionally long periods (Shneiderman et al., 2018).

The next principle is *providing purpose and context*, which is especially important when specific personal information from a user is required to qualify that lead. The explanation as to why specific information is necessary to obtain will put the user at ease and make them more likely to provide the information they are generally reluctant to provide, thereby increasing the conversion probability of that user. This is followed by *informative feedback*, which is also a golden rule (Shneiderman et al., 2018). This principle states that users should be informed about the entire process and that feedback should be given on small actions and information provided. This can be a visual representation or a dialogue box of something like an acknowledgement of receipt.

Ease of use is the next principle from the PD session, which aligns with the useability principle in the eight golden rules of interface design by Shneiderman et al. (2018). This principle states that the flow of an interface should be as logical as possible to ensure that any user can complete an action with as little mental stress and frustration as possible. The subsequent principle is then *simplification* which lines up with *reduce short-term memory load* of the eight golden rules of interface design (Shneiderman et al., 2018). This principle states that as far as possible, any interface should be simplified without sacrificing the quality and characteristics of the other principles.

The last principle that arose was *context awareness*, which lines up with the useability and user control principle of the eight golden rules of interface design (Shneiderman et al., 2018). This principle states that the context in which the product/interface will be used should be considered,

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including the educational background of the intended user audience, the use environment, and the level of needs to be met, to name a few. Ultimately, this principle states that full submersion and familiarisation with the target audience are necessary for a successful interface (Hassenzahl et al., 2021; Peters, 2022).

This leads to the next core concept in the framework: *communication*. Communication in this version of the framework entails information sharing and content, which should be congruent with the experience design principles in the preceding concept and reflect the business strategy explicitly formed within the business environment.

Thereafter, the lead generation process commences and can be divided into three distinct phases: marketing, lead generation and lead nurturing. Each of these phases has its own purpose and processes; however, all of these should be congruent with the initial concepts in the framework. Additionally, the two arrows in the evaluation block indicate that all of the concepts within this block should be consistently evaluated and analysed to make the necessary improvements through data-driven decisions.

This leads to *customer/user/employee experience*, and if the preceding concepts are effectively executed, a positive experience will be delivered. According to Luther, Tiberius and Brem et al. (2020: 16), "*UX is a promising source of competitive advantages, a unique selling proposition, and possibilities of value creation and capture*", which then leads to the final concept and outcome of the framework, *business value*.

6.6 CONCLUSION

This chapter discussed the development phase of the DSR, which entailed a PD session where six participants discussed important aspects of UX and lead generation and collaboratively created the first version of the UXOLF. This first version of the UXOLF is also discussed in this chapter. The session recording and sticky notes were subjected to thematic analysis, also discussed in this chapter. The top five themes from the analysis were consistency, information requirements, timing/speed, UX, and joint in fifth place was communication and trust. The findings from this analysis are congruent with those from the document analysis. The results from the thematic analysis were used to enrich the framework by adding design principles and combining two similar

concepts in the first version of the UXOLF. This chapter also outlined and discussed the second version of the framework.

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7. DEMONSTRATION

This chapter discusses the fourth phase of the DSR demonstration. Figure 32 outlines the overall thesis overviews with the current chapter highlighted to position it in the research.
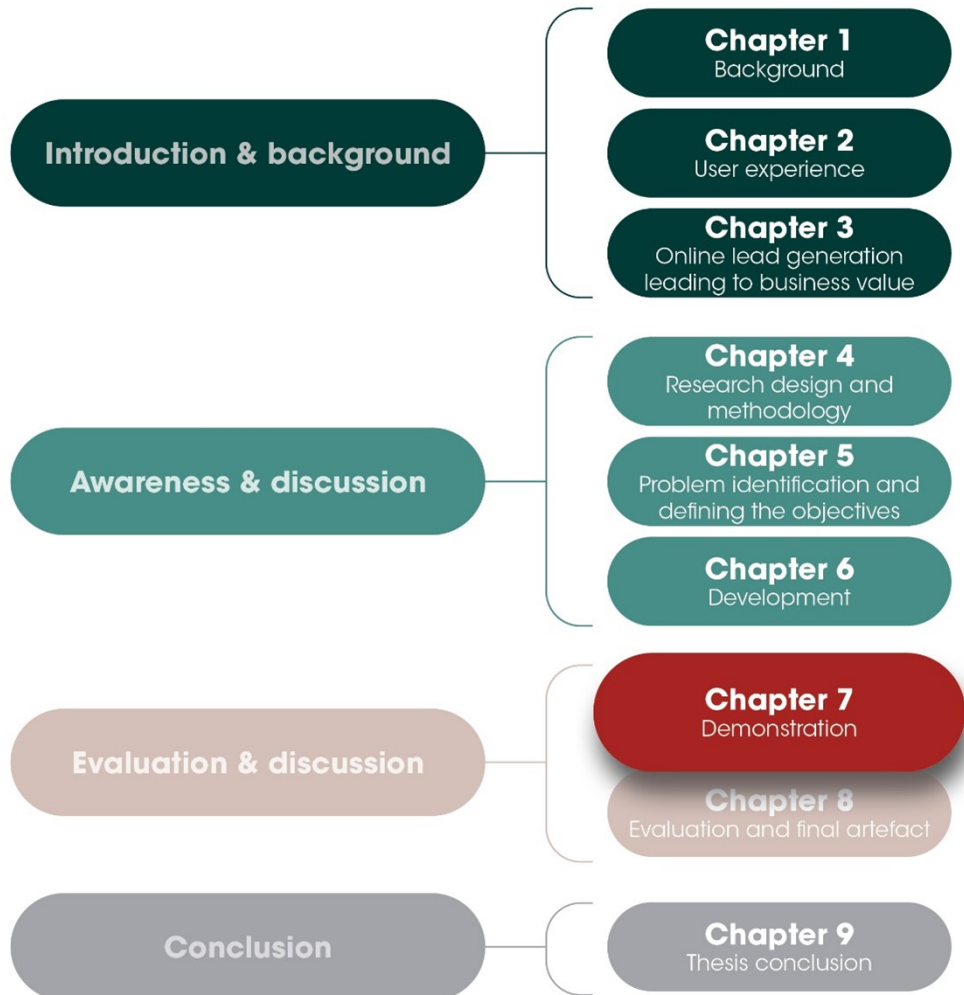

Figure 32. Chapter 7 positioning

7.1 INTRODUCTION

Experiments are a strategy very often used during research. It is utilised to determine which variables of a phenomenon have a more significant effect on the phenomenon itself (Saunders et al., 2009). The experiments in this study demonstrate the UXOLF contributing to business value, created by six professionals in a participatory design session. The demonstration of the framework is limited to demonstrating the design principles identified through this session in action and determining the effect it has on lead conversion ability through positive UX. This increase in

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conversion ability directly affects the case organisation's ability to produce value-generating pathways, thus contributing to business value. Even though the other core concepts play an equally important role in the framework and its ability to output business value, the evaluation and demonstration of those concepts exceed the permission granted by the case organisation. Testing the other concepts would involve operational processes and interdepartmental collaboration, which could impede day-to-day operations.

This chapter first discusses the idea of A/B testing as an experiment in detail, followed by its application to the case organisation. Then the experimental protocol and assumptions as well as each experiment's results and analysis are discussed, followed by the discussion of each. The explication of the experiments ends with an experimental summary section, and lastly, the chapter ends with a conclusion.

7.2 A/B TESTING PROTOCOL

A/B testing, also known as split testing, is an experiment that is conducted to compare changes made to an interface with the original version of that same interface (Optimizely, n.d.). This study applied Siroker an& Koomen's (2013) approach to A/B testing. The steps are as follows; 1) define success, 2) identify bottlenecks, 3) construct a hypothesis, 4) prioritise, and 5) test.

The first step, *define success*, should be guided by the aim of the interface being targeted for improvement. The successes can take the form of key performance indicators (KPIs), which are important indicators of a business's current and subsequent success (Parmenter, 2010). This step defines the purpose of an interface and identifies aspects that measure the degree to which the interface is reaching its purpose (Siroker & Koomen, 2013).

The second step, *identify bottlenecks*, is then initiated. During this step, it is important to identify specific interface parts where most users either drop off or spend most of their time (Siroker & Koomen, 2013). This will help identify the areas that require the most attention to improvements. These indicate the most optimisable areas; improvements made to these areas will, at the very least, lead to an increase in useability, which has a direct effect on the UX of the interface, a direct driver of organisational performance (Grewal et al., 2009; Mosley, 2007; Puccinelli et al., 2009).

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This step aligns with the problem identification sub-phase in the demonstration phase of the DSR. Figure 33 below depicts the demonstration phase, highlighting the problem identification sub-phase.
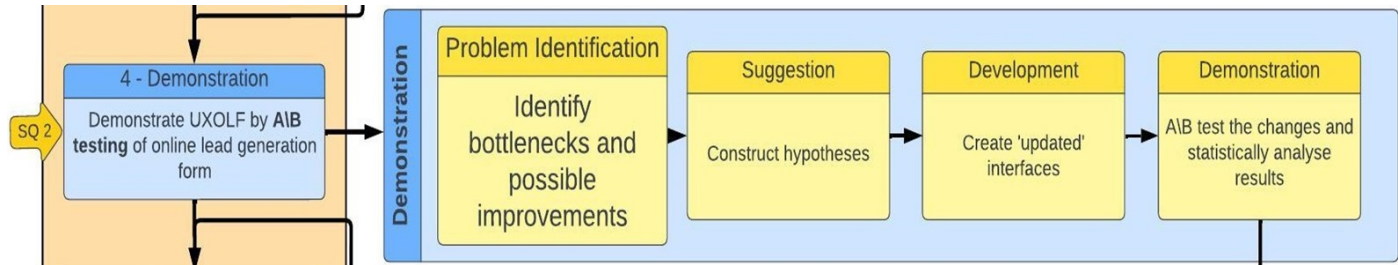

Figure 33. Problem identification sub-phase

The third step, *construct a hypothesis*, follows. During this step, a researcher uses the findings from the preceding steps to speculate what changes could bring about the desired effect (Siroker & Koomen, 2013). Hypotheses are critical to guide the test(s) to be conducted (Siroker & Koomen, 2013). Multiple theories can be hypothesised to reach an end goal, and it is important to note these hypotheses in the succeeding steps. This step comprises the suggestion sub-phase of the main demonstration phase, as depicted in Figure 34 below.
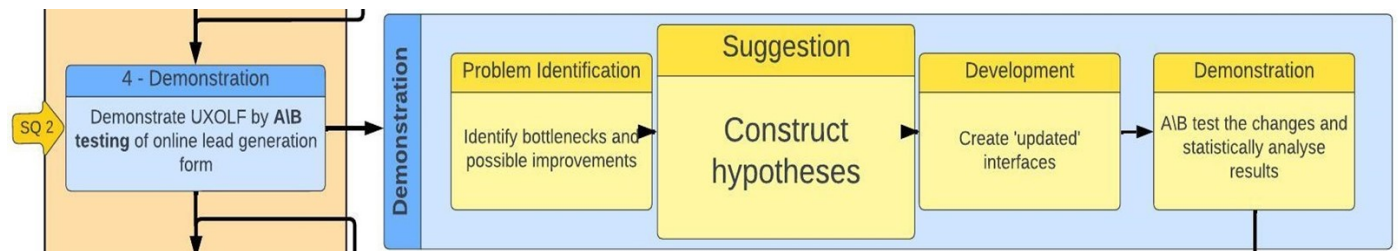
Figure 34. Suggestion sub-phase

The fourth step, *prioritise*, can commence once sufficient hypotheses are formulated. During this step, a researcher must make educated guesses about which hypothesis would yield the most favourable results (Siroker & Koomen, 2013). If multiple hypotheses were formulated, the researcher should organise them in order of most likely to bring about the desired effect. Return on investment (ROI) could be a driving force for this step, i.e., ranking your hypothesis in order of most likely to succeed and yield a positive ROI (Siroker & Koomen, 2013). A positive ROI would yield a monetary return on the time and financial investment into building the interface and running these tests (Bondarenko et al., 2019). After this phase, the development sub-phase of the

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main demonstration phase commences, where the changes are made to the interface to represent the hypotheses. Figure 35 depicts the sub-phase highlighted in the demonstration phase of the DSR.
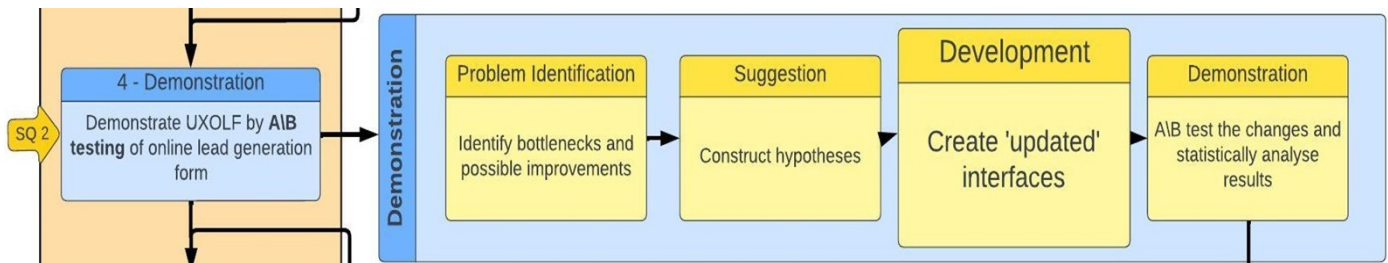
Figure 35. Development sub-phase

The fifth step in this process, *test*, can commence after prioritising the hypotheses. This final step is where a researcher would serve half of the users with a variation of the interface (experimental group) and the other half with the original version (control group) (Saunders et al., 2009). The assignment to each group should be random and can be effectively done by employing a load balancer. This randomised assignment to groups increases the internal validity and the experiment's reliability by eliminating biased assignments (Saunders et al., 2009). After the tests have run, the researcher can prove or disprove the hypotheses formulated in Step 3. Both proving and disproving the hypothesis is beneficial since disproving allows for the focus of more time and financial investments on other changes to the interface that could prove beneficial (Siroker & Koomen, 2013). Conducting the A/B test coincides with the last sub-phase in the demonstration phase—also called demonstration—depicted in Figure 36.
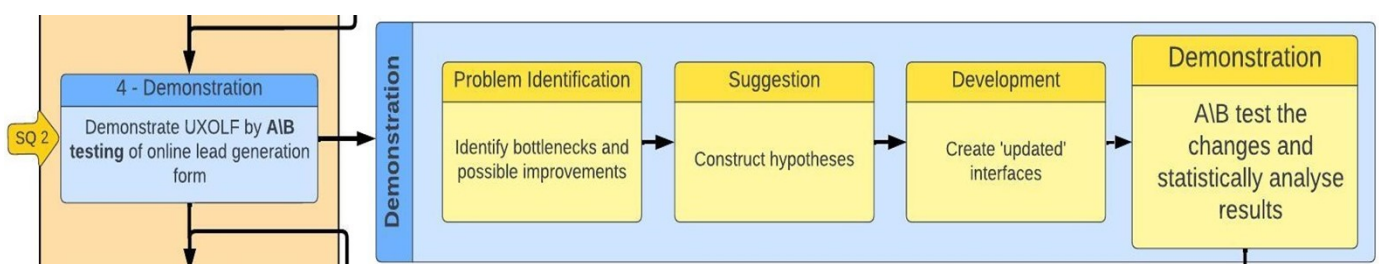
Figure 36. Demonstration sub-phase

7.2.1   APPLIED A/B TESTING PROCESS

This subsection discusses the process of A/B testing applied to the case organisation. The experiments were explicitly executed through an online form, which requires vehicle and personal details. This form consists of four steps before the lead is logged. APPENDIX F displays screenshots of each step in this form. This original online form represents the control group for the experiments.

The first step yielded the identification of the success metrics as the number of users who completed the online form, i.e., logging the lead. The next step led to identifying the most significant bottleneck between Steps 1 and 2 (Select category and Car). The hypotheses formulated were based on the UXOLF. Multiple hypotheses were formulated and then prioritised by seeming effectiveness at increasing the number of users who completed the form. The A/B testing commenced with the seemingly most influential hypothesis driving the first experiment.

Only 12 hypotheses were included in the experiments for this study. Table 20 below shows the list of hypotheses and indicates by which user experience design principle from the framework the hypothesis was driven.

Table 20. A/B Testing Hypotheses

#	Hypothesis	Corresponding UX Principle
H1	Changing the button text from 'Get Valuation' to 'Get Price'.	Ensure ease of use, simplification, context awareness.
H2	Removing the optional text field for car asking price.	Short absolute time, minimal information requirements, simplification.
H3	Placing the customer information before the vehicle information.	Timing of information requirements, consistency.
$H4_1$	Adding a check mark as each section is completed.	Informative feedback.
$H4_2$	Adding a progress bar at the top of the form.	Informative feedback.
$H5_1$	Shortening the form into three steps rather than four.	Simplification, short absolute time.

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H5$_2$	Creating one longer form rather than the four individual steps.	Simplification, ease of use.
H6	Ensure that all labels coincide.	Consistency, provide purpose.
H7	Remove additional number field.	Minimal information requirements, simplification, short absolute time.
H8	Combine label consistency, check marks and remove the additional number field.	Consistency, Informative feedback, Simplification, Minimal information requirements, Provide purpose.
H9	List the top ten cars sold first in the car 'Make' dropdown.	Simplification, Ease of use, Short absolute time.
H10	Using a *WhatsApp* bot to replace the last step of the form.	Simplification, Ease of use, Short absolute time and Timing of information requirements

7.3 EXPERIMENTAL PROTOCOL

The hypotheses depicted in Table 20 guided the experiments. The hypotheses were used to make the relevant changes to the original buy lead form (control) to create the experimental form. Both forms were uploaded to the case organisation's servers, where a load balancer was used to assign participants to the control and experimental groups. The intended split for Experiments 1, 2 and 10 was 66.6/33.3. This was achieved by running the control form on two of the three servers available and running the experimental form on the last server. The exact assignment ratio was not achievable, and a range of 65–67 / 35–33 was accepted for these experiments.

The intended split for Experiments 3, 4-1, 5-2, 5-1, 5-2, 6, 7, 8 and 9 was 50/50. This was done by running two experiments simultaneously, i.e., running the control form on one server and each experiment on its own server. The load balancer was again responsible for directing participants to the relevant servers to achieve a good split. This exact split was once again not achievable, and a split range of 48–52 / 48–52 was accepted for these experiments.

Some of the experiments had changes that affected the entire form. In contrast, others had minor changes only in specific steps. These experiments were discussed regarding the overall conversion

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ability and the conversion of the specific step where the changes were made. The discussion of both is because the overall conversion was identified as the primary success metric for these experiments. The changes made to a specific step could prove statistically significant for that step but not necessarily for the entire form. The fact that the changes made at a specific step could significantly increase the probability of success for that step led to the combination of three experiments into one to assess the results at each step, but also overall, to make inferences about the effectiveness of multiple hypotheses used in a single experiment (Experiments 8 and 10).

The hypotheses of the experiments were formulated with specific assumptions in mind. Table 21 below displays these assumptions and split ratios, along with the corresponding hypothesis number.

Table 21. Experimental assumptions and split ratios

#	Assumption	Split ratio (%)
1	The label change should clarify the action to the users, increasing the probability of pressing the button and, ultimately, the conversion.	65.9/34.1
2	The removal of the optional text field where users enter their expected price should decrease their mental stress and will further encourage them to convert.	65.6/34.4
3	As most forms require personal information before any other information, switching personal and vehicle details should increase the form's familiarity and ultimately, its conversion rate.	51.5/48.5
4-1	Adding a check mark after completing each form section should provide users with positive feedback and increase their conversion probability.	51.4/48.6
4-2	Adding a progress bar where each field on the form represents a certain percentage will give users an indication of the length of the form and time to completion, which should increase their willingness to complete the entire form.	51.6/48.4
5-1	Combining the last two steps will shorten the form and require less time for completion. This should increase the probability of conversion.	51.7/48.3

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5-2	Removing the steps into one long form will allow users to scroll through the entire form and get an indication of the information requirements, which should increase their probability of conversion.	51.1/48.9
6	Ensuring that all labels on the form are consistent will reduce the mental load on users and simplify the process for them. This, in turn, will increase the probability of conversion.	51.1/48.9
7	Many individuals do not have a second contact number, and removing the additional contact number field should increase their probability of moving to the last step and ultimately converting.	51.7/48.3
8	The combination of Experiments 4-2, 6 and 7 should increase the overall conversion rate as these experiments change different parts of the form.	51.6/48.4
9	The top ten car brands already used by the case organisation is significantly affecting the form's conversion rate. Removing the top ten cars and alphabetically representing cars should decrease the conversion rate.	51.2/48.8
10	Removing the final step and introducing a *WhatsApp* bot should increase the chances of conversion of the form and positively affect the lead nurturing process by decreasing the time taken for contact from the case organisation.	66.04/33.96

The results from a step or overall analysis were used to classify the hypothesis guiding the experiments. The three classification levels used were true, neutral and false. Only statistically significant results yielded true or false classifications, and non-significant results were classified as neutral. For a test to be classified as statistically significant, the absolute z-score should be above 1.96 to ensure a 95% confidence interval (SurveyMonkey, n.d.), or the p-value should be less than 0.05 to indicate statistical significance (Beers, 2022). The experiment results are presented with the hypothesis classification of each experiment in the following sections.

7.4 EXPERIMENT 1

H1 guided the first experiment. The original form had the label of the final button set to 'Get Valuation'. The hypothesis was driven by the UX principles of *ease of use*, *simplification*, as well

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as *context awareness*. These principles align with this experiment because the new label 'Get Price' are merely two short words but leaves the user with a transparent meaning behind clicking that final button. The user is not required to think about what 'Get Valuation' could mean, thus meeting the *clear and effective content* and *simplification* principles. It also allows users from any educational background to understand the label, thus ensuring *ease of use*. Figure 37 below shows the new button label for the final step.
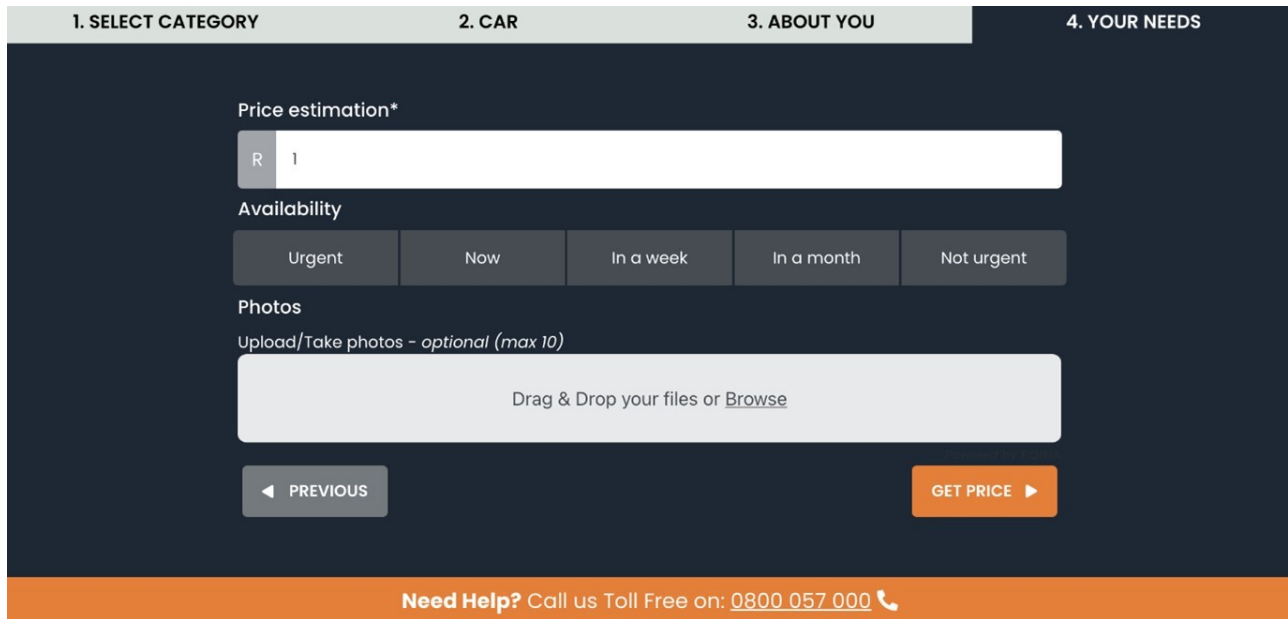
Figure 37. Experiment 1

7.4.1   Overall results

The control group for this experiment had a sample size of 161 286 participants, and the experimental group had a sample size of 83 477 participants. The participants were randomly assigned to the groups with a ≈ 65.9:34.1 assignment ratio. 65.9% of the total population was assigned to the control group, and 34.1% was assigned to the experimental group. The intended assignment ratio was 66.67:33.33. This unequal assignment of participants to a group is due to simple randomisation used by the load balancer. Simple randomisation keeps the assignment of participants to a specific group random (Suresh, 2011). The original form was completed by 20 216 participants, yielding a conversion rate of 12.53%. The adapted form was completed by 10 643 participants, yielding a conversion rate of 12.75%. An upper and lower limit for these

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conversion rates was established to ensure a 95% confidence interval, which can be found in Table 22.

Table 22. Experiment 1 - overall

	Control group	Experimental group
Assignment Ratio	0.6590	0.3411
Sample Size	161 286	83 477
Number of conversions	20 216	10 643
Lower Limit (95%)	12.3727	12.5235
Conversion (%)	12.5343	12.7498
Upper Limit (95%)	12.6959	12.9760
Probability of success	0.1253	0.1275
Standard Error (SE)	0.00082	0.00115
P-value	0.128	
SE of the entire test	0.001415291	
Relative Uplift (%)	1.72	

The probability of success for both the control and the experimental groups can also be seen in Table 22 above. The control group (original form) yielded a 0.1253 probability of success, i.e., approximately 12.53% of individuals who start the form will complete it. The experimental group yielded a 0.1275 probability of success, which means that approximately 12.75% of individuals who start this form will complete it. The table also shows the relative uplift of this experiment, which is 1.7%. Lastly, Table 22 also depicts the p-value for this experiment, which yielded a 0.128 p-value.

7.4.2   Results Step 4

This analysis used the participants who had completed the fourth step and assessed the conversion probability of Step 4 by itself since this is where the change was made. This allows for isolated analysis of just this step and allows for inferences and discussions about the effectiveness of the label change. The control group for Step 4 had a sample size of 25 038 participants, and the experimental group had a sample size of 13 053 participants. This step had an assignment ratio of ≈ 65.7:34.3. This means that 65.73% of the total population was part of the control group, and 34.26% was part of the experimental group. The original form was completed by 20 216 participants yielding a conversion rate of 80.74%. The adapted form was completed by 10 643

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participants and yielded a conversion rate of 81.54%. An upper and lower limit for these conversion rates was established to ensure a 95% confidence interval, as shown in Table 23 below.

Table 23. Experiment 1 - Step 4

	Control group	**Experimental group**
Assignment Ratio	0.6573	0.3427
Sample Size	25 038	13 053
Number of conversions	20 216	10 643
Lower Limit (95%)	80.2521	80.8698
Conversion (%)	80.7405	81.5354
Upper Limit (95%)	81.2290	82.2010
Probability of success	0.8074	0.8154
Standard Error (SE)	0.00249	0.0034
P-value	0.0605	
SE of the entire test	0.00423403	
Relative Uplift (%)	0.98	

Table 23 above displays the probability of success for both the control and the experimental group. The control group yielded a 0.8074 probability of success, i.e., approximately 80.74% of individuals who start the step will complete it. The experimental group yielded a 0.8154 probability of success, which means that approximately 81.54% of individuals who start this step will complete it. The relative uplift for this step is 0.98%. Lastly, the table also depicts the p-value for this experiment, which yielded a 0.0605 p-value.

7.4.3 Discussion

The overall analysis showed a 0.22% difference in its conversion ability and a 0.002 difference in the probability of success, favouring the experimental group. However, since the p-value from the overall analysis was 0.128 (which exceeds the maximum of 0.05 for statistical significance), the results showed no statistically significant difference. Figure 38 shows the expected distribution of the overall analysis black for the control and orange for the experimental group. Note that the peak of the two graphs differs in height due to the assignment ratio between the two groups. Expected distribution graphs show the probability of achieving every potential value that a random variable can assume. The closer these two graphs are together, the more similar they are; conversely, the

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further apart they are, the more extensive the difference. It becomes evident if statistically significant results are obtained from the experiments by the proximity of these graphs.

Additionally, the direction in which the experimental graph is dispersed from the control graph can indicate positive or negative significance. In Figure 38, the rightward direction of the experimental graph indicates that the experimental group showed a slightly better probability of success. However, the two graphs are still relatively close together, indicating the statistically insignificant results obtained by this experiment.
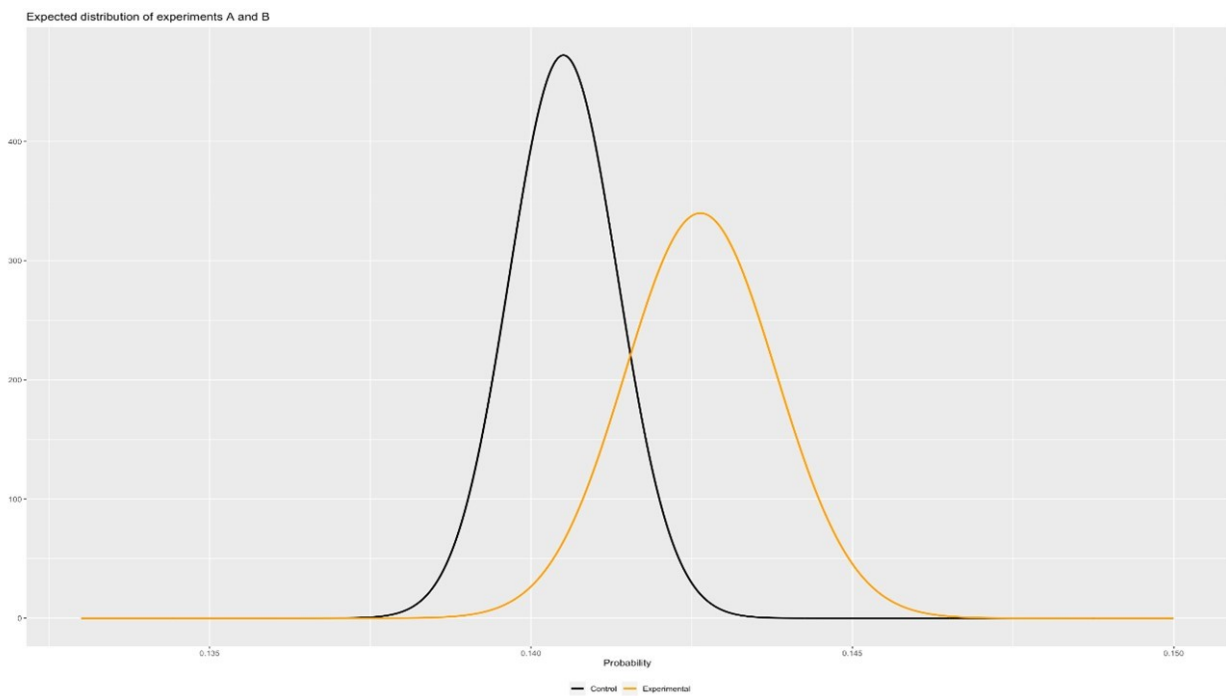
Figure 38. Expected distribution (Exp 1 - overall)

Figure 39 depicts the funnels for the control (Get Valuation) and experimental (Get Price) groups. Since the split for this experiment was 66.66% to 33.33%, the experimental group's funnel is smaller than the control group's. The funnel is an excellent visual representation of the drop-offs; it is evident that the drop-off percentage for the experimental group is lower than that of the control group at the final step. The slight difference in percentage drop-offs between the groups at the preceding steps can be attributed to environmental noise, as no interventions were made.

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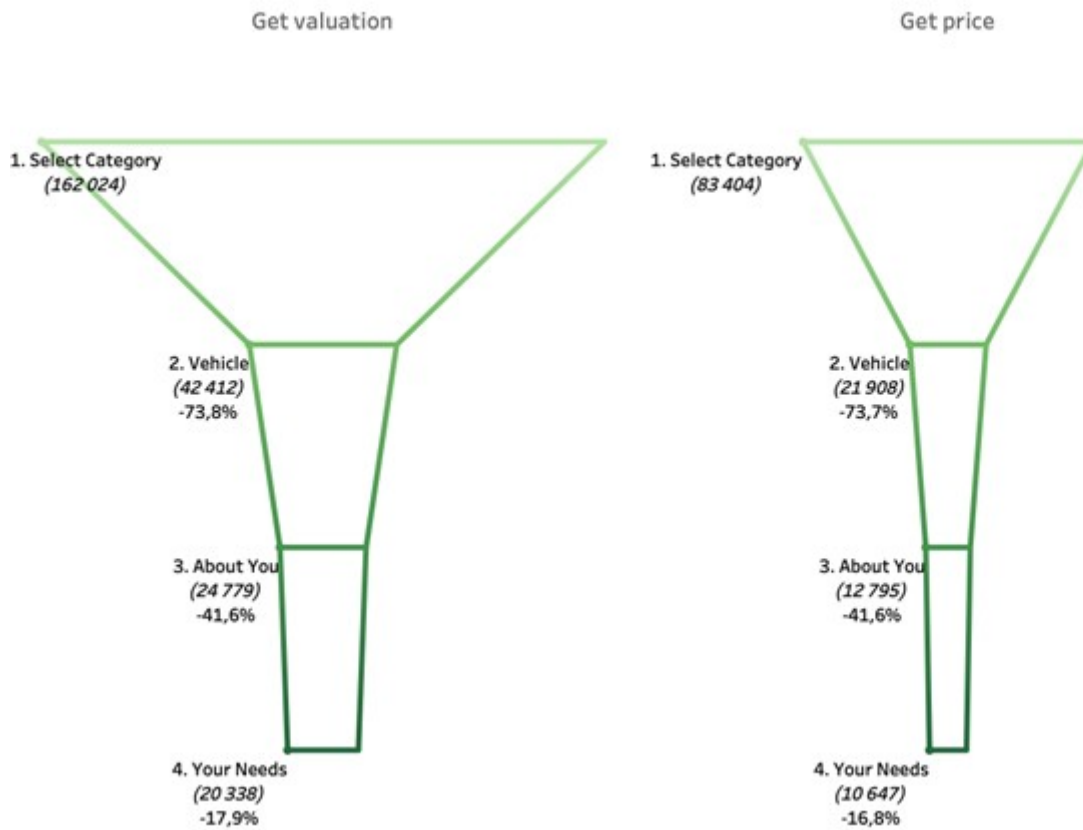
Figure 39. Experiment 1 funnels

The analysis of only Step 4 showed a 0.79% difference in the conversion rate and a difference of 0.008 in the probability of success, favouring the experimental group. However, the p-value of 0.0605 merely misses the benchmark for the statistically significant result (below 0.05). This means that the hypothesis yielded no statistically significant results and was classified as neutral, as it showed a positive difference in favour of the experimental group, just not large enough. Figure 40 below shows the expected distribution for Step 4 only.
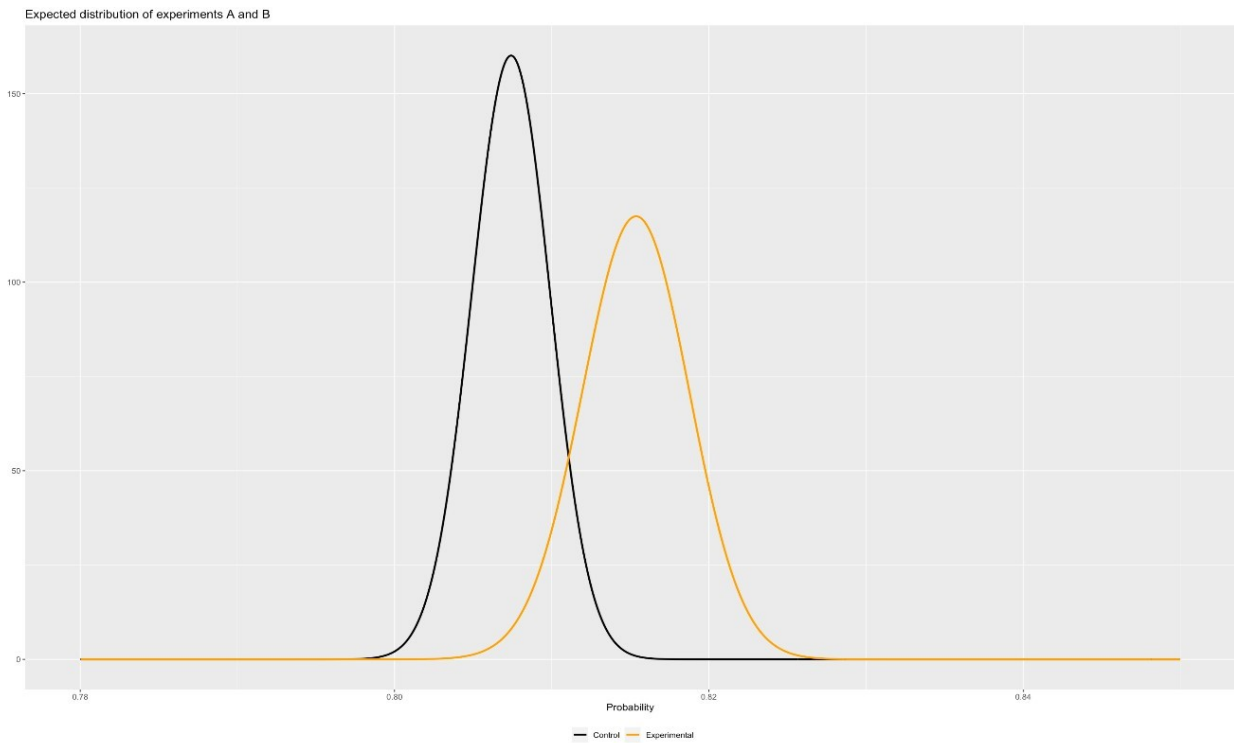
Figure 40. Expected Distribution (Exp1 - Step 4)

7.5 EXPERIMENT 2

This experiment run was guided by H2, as seen in Table 20. The original form included an optional field where individuals could insert a price estimation for their car before submitting the form and logging the lead. This field was located on the form's final step, where many drop-offs occurred. The hypothesis was driven by this drop-off and substantiated by the UX principles of *short absolute time*, *minimal information requirements* and *simplification*. Removing this optional field should reduce the time to complete the form and the required user information. Figure 41 displays the final step of the form, as it was the only change made for this experiment.
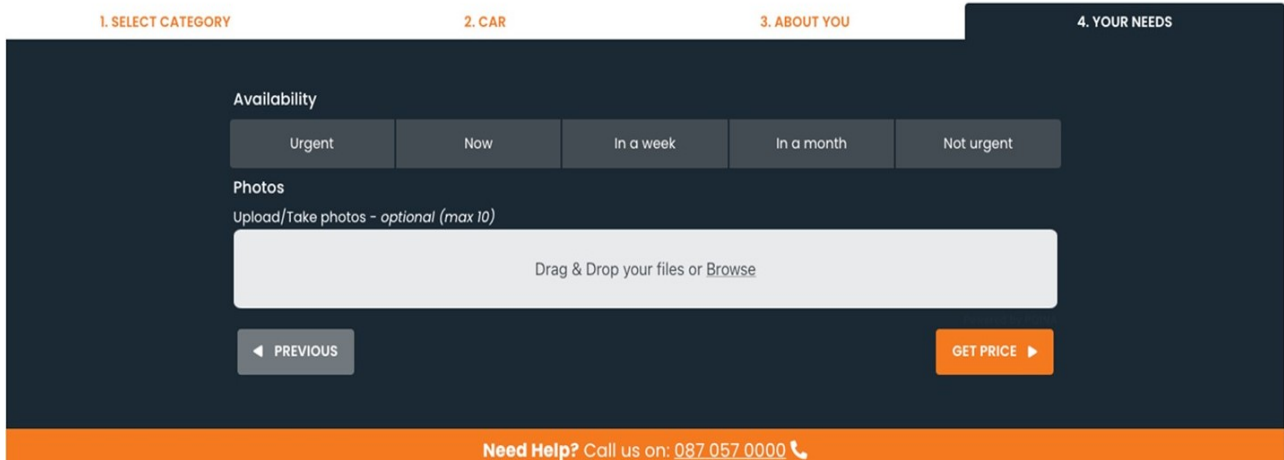
Figure 41. Experiment 2

7.5.1 Overall results

The control group of Experiment 2 had a sample size of 169 233 participants, whereas the experimental group had a sample size of 88 715 participants. The assignment of participants to a group was done by a load balancer and resulted in an assignment ratio of ≈65.6:34.4. This translates to the control group receiving approximately 65.61% of the total population and the experimental group receiving approximately 34.39% of the population. The number of conversions for the control group was 23 778 and yielded a conversion rate of 14.05%. The number of conversions for the experimental group was 12 654 and yielded a conversion rate of 14.26%. These percentages have both an upper and lower limit depicted below in Table 24 to ensure a 95% confidence interval.

Table 24. Experiment 2 - overall

	Control group	Experimental group
Assignment Ratio	0.6561	0.3439
Sample Size	169 233	88 715
Number of conversions	23 778	12 654
Lower Limit (95%)	13.8850	14.0337
Conversion (%)	14.0505	14.2638
Upper Limit (95%)	14.2161	14.4939
Probability of success	0.1405	0.1426

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Standard Error (SE)	0.00084	0.00117
P-value	0.1396	
SE of the entire test	0.001443567	
Relative Uplift (%)	1.52	

Table 24 details the probability of success for both the control and the experimental group. The control group yielded a 0.1405 probability of success, i.e., approximately 14.05% of individuals who start the form will complete it. The experimental group yielded a 0.1426 probability of success, which means that approximately 14.26% of individuals who start this form will complete it. This experiment showed a relative uplift of 1.52%. Lastly, the table also depicts the p-value for this experiment, which yielded a 0.1396 p-value.

7.5.2   Result Step 4

The control group for this step had a sample size of 29 389 participants, and the experimental group had a sample size of 15 226 participants. The assignment ratio for this experiment was ≈65.9:34.1, meaning that approximately 65.87% of the population formed part of the control group, and approximately 34.12% formed part of the experimental group. The control group yielded a conversion rate of 80.91%, meaning that 23 778 participants completed this step. The experimental group yielded a conversion rate of 83.11%, which means that 12.654 participants from this group completed this step. Table 25 below details the upper and lower limit for this conversion rate.

Table 25. Experiment 2 - Step 4

	Control group	Experimental group
Assignment Ratio	0.6587	0.3413
Sample Size	29 389	15 226
Number of conversions	23 778	12 654
Lower Limit (95%)	80.4578	82.5116
Conversion (%)	80.9072	83.1067
Upper Limit (95%)	81.3565	83.7019
Probability of success	0.8091	0.8311
Standard Error (SE)	0.00229	0.00304
P-value	0	
SE of the entire test	0.003864311	

Relative Uplift (%)	2.72

Table 25 above presents the probability of success for both the control and experimental groups. The control group yielded a 0.8091 probability of success, i.e., approximately 80.91% of any individual who starts Step 3 will complete it. The experimental group yielded a 0.8311 probability of success, which means that approximately 83.11% of individuals who start this step will complete it. The relative uplift for this step was 2.27%. Lastly, the table also depicts the p-value for this experiment, which yielded a 0.00 p-value.

7.5.3 Discussion

The overall analysis shows a very slight difference (0.002) in the probability of success between the two groups, yet favouring the experimental group. It also showed that the experimental group had a 0.21% higher conversion rate than the control group. However, the analysis yielded a p-value of 0.1396, which exceeds the maximum of 0.05 to be classified as statistically significant (Beers, 2022). That means that the difference in the probability of success could be attributed to noise found in the test environment. Figure 42 indicates the expected distribution curve for the overall analysis of this experiment.
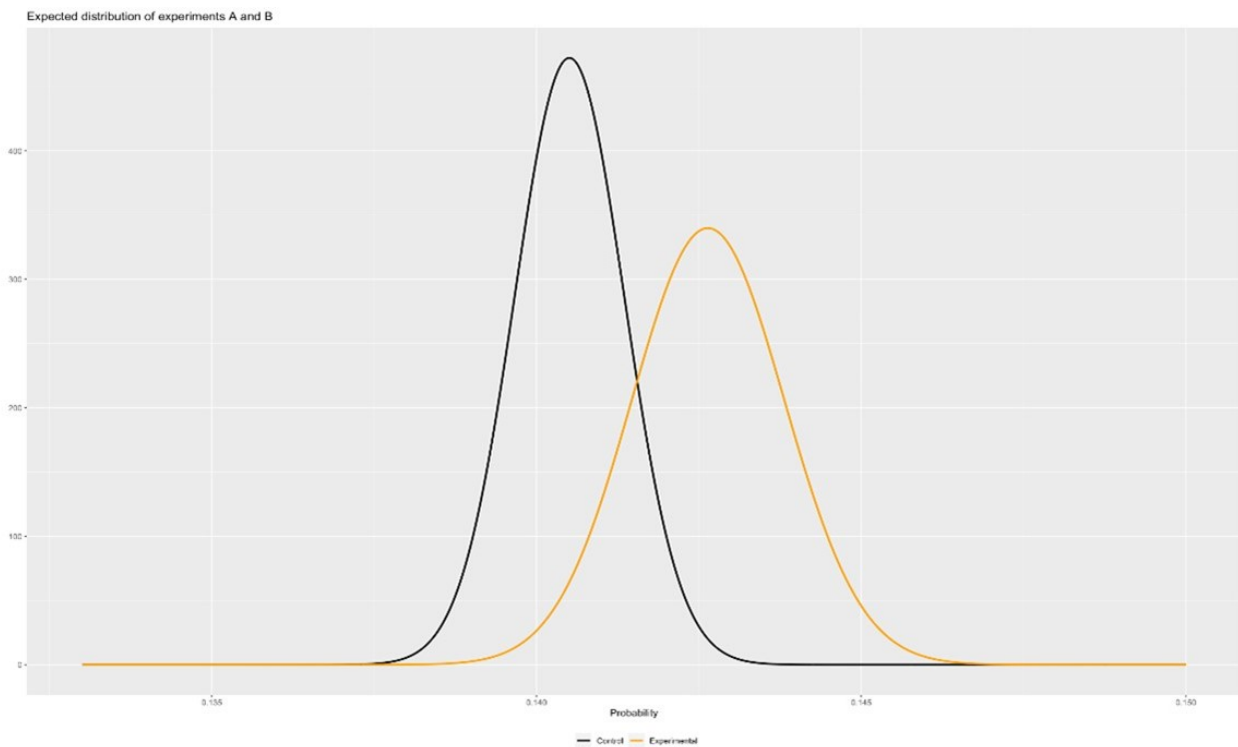
Figure 42. Expected distribution (Exp 2 - overall)

Figure 43 depicts the funnels for the control and experimental (Remove expectation) groups for Experiment 2. This experiment was executed at an assignment ratio of 0.66:0.33, which explains the difference in the size of the funnels. Using funnels is an excellent way of visually representing an experiment. The number of participants at the start of each step and the drop-off percentage from the preceding step are evident. The difference in the drop-off percentage for Steps 2 and 3 is negligible due to environmental noise rather than an intervention. The difference in drop-off percentage (2.2%) seen in Step 4 is the percentage that speaks to the effectiveness of the intervention made for this experiment, favouring the experimental group.
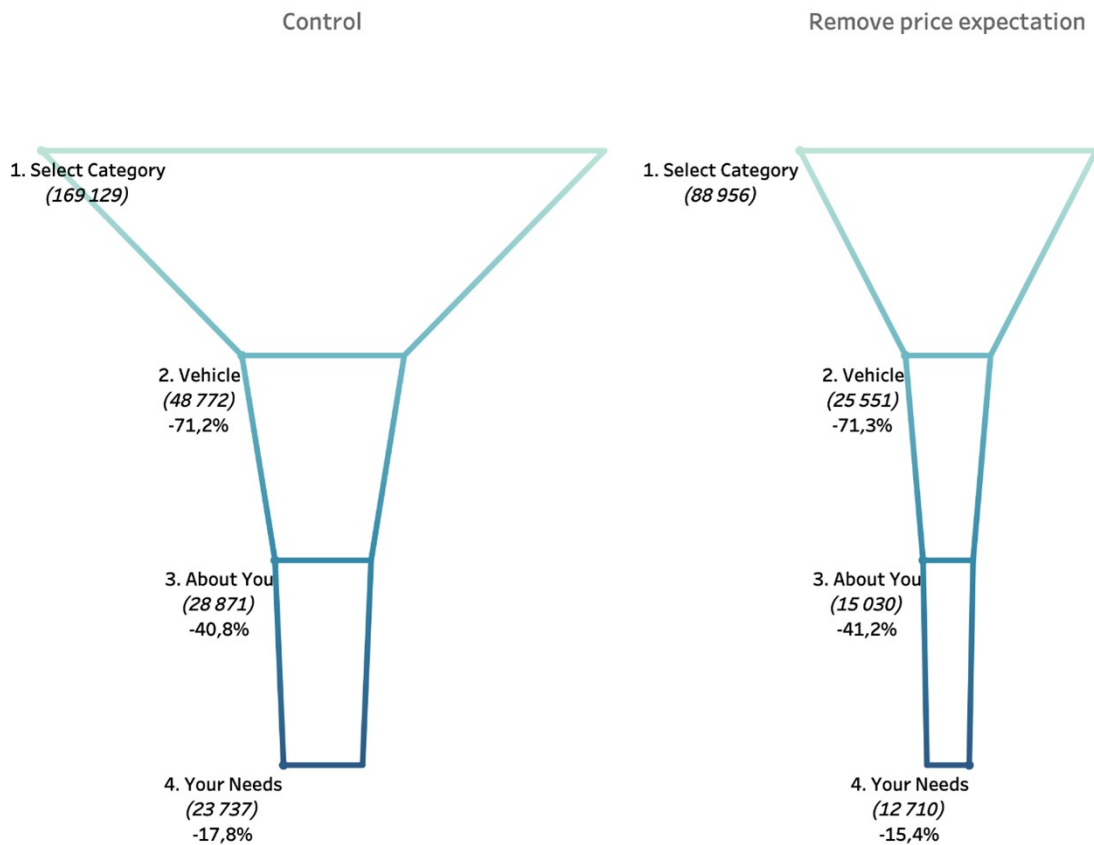
Figure 43. Experiment 2 funnels

The analysis of only Step 4 showed a 2.2% difference in the conversion rate between the two groups and a difference of 0.022 in the probability of success favouring the experimental group. The p-value returned from this analysis was 0, which deems the results statistically significant, leading to hypothesis two being classified as true. Figure 44 indicates the expected distribution of Step 4 only. Note how far apart the curves are from one another, with no overlap. This again indicates the statistical significance of the result.

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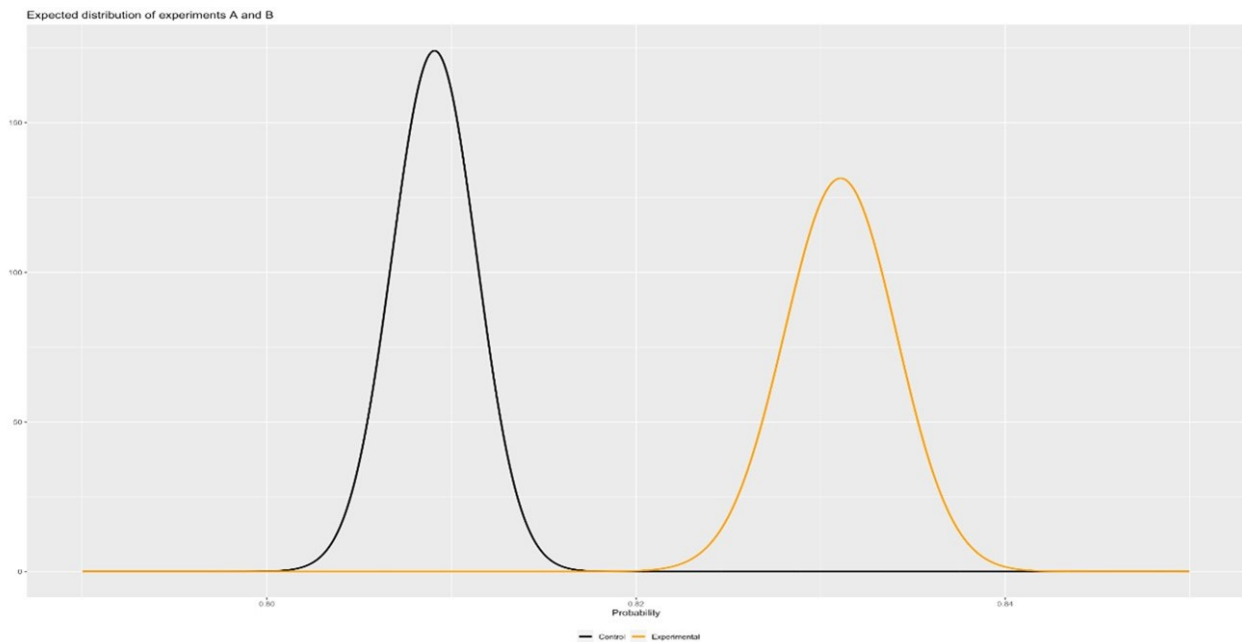
Figure 44. Expected distribution (Exp 2 - Step 4)

The significance of the results differs between the overall and step analyses; however, only the step analysis will be used for hypothesis classification. This is done as the only change made to the form was at Step 4, and other differences throughout the form do not speak to the changes made but rather to noise. Therefore, the hypothesis guiding Experiment 2 was classified as true.

7.6 EXPERIMENT 3

H3 guided this experiment. This experiment exchanged Steps 2 and 3, allowing personal information to be entered ahead of any vehicle detail. The hypothesis was driven by forms where personal information is usually requested before other information. This aligns with the UX principles *timing of information requirements* and c*onsistency*. The most significant drop-off occurs between Steps 1 and 2; exchanging Steps 2 and 3 might decrease this drop-off. This experiment was conducted because Bargas-Avila et al. (2010) suggest an intuitive sequence of data required from a user during online forms. Because most forms require personal information to be entered first, this will make the form more familiar. An overall analysis and an analysis of each step were done separately, allowing the changes made to each step to be independently analysed and constructing more comprehensive inferences. Figure 45 displays the adaptions made to the form for this experiment.

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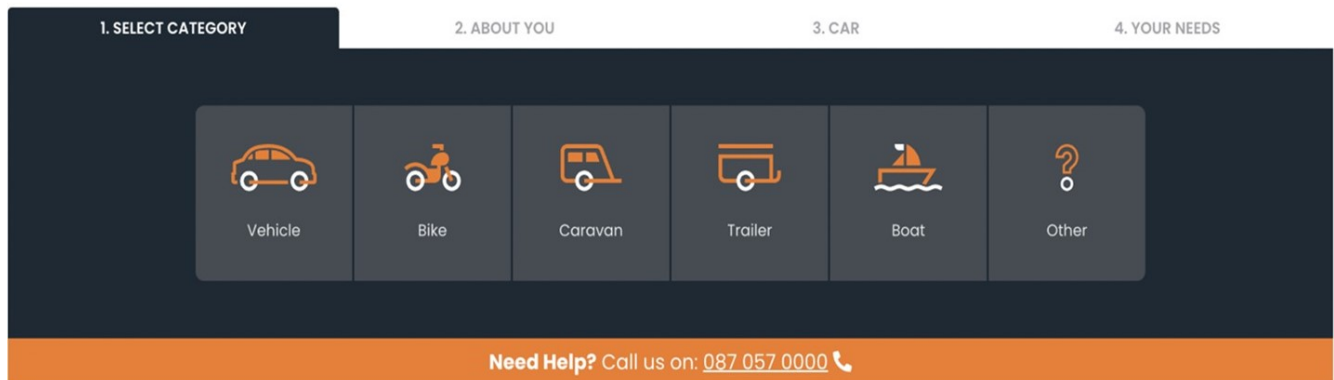
Figure 45. Experiment 3

7.6.1   Results Overall

The control group of Experiment 3 had a sample size of 65 783 participants, whereas the experimental group had a sample size of 62 051 participants. The assignment of participants to a group was done by a load balancer and resulted in an assignment ratio of ≈51.5:48.5. This translates to the control group receiving approximately 51.5% of the total population and the experimental group receiving approximately 48.5% of the population. The number of conversions for the control group was 14 089, yielding a conversion rate of 21.42%. The number of conversions for the experimental group was 10 256, yielding a conversion rate of 16.53%. These percentages have both an upper and lower limit, detailed below in Table 26, to ensure a 95% confidence interval.

Table 26. Experiment 3 - overall

	Control group	**Experimental group**
Assignment Ratio	0.5146	0.4854
Sample Size	65 783	62 051
Number of conversions	14 089	10 256
Lower Limit (95%)	21.1042	16.2364
Conversion (%)	21.4177	16.5286
Upper Limit (95%)	21.7312	16.8209
Probability of success	0.2142	0.1653
Standard Error (SE)	0.0016	0.00149

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P-value	0.00
SE of the entire test	0.002197342
Relative Uplift (%)	-22.83

Table 26 above details the probability of success for both the control and the experimental groups. The control group (original form) yielded a 0.2142 probability of success, i.e., approximately 21.42% of individuals who start the form will complete it. The experimental group yielded a 0.1653 probability of success, which means that approximately 16.53% of individuals who start this form will complete it. This experiment showed a relative uplift of -22.83%. Lastly, the table also depicts the p-value for this experiment, which yielded a 0 p-value.

7.6.2 Results Step 2

This analysis was done using the individuals who had started Step 2 of the form, and the conversion was logged once the final button in Step 2 was clicked, thereby advancing to Step 3. The Step 2 sample size for the control group consisted of 65 783 participants, and the experimental group comprised 62 051 participants. The control group had a conversion rate of 43.61%, which resulted in 28 689 participants completing this step. The experimental group had a conversion rate of 28.00%, which resulted in 17 374 participants completing this step. The lower and upper limits for the conversion rates are shown in Table 27 to ensure a 95% confidence interval.

Table 27. Experiment 3 - Step 2

	Control group	**Experimental group**
Sample Size	65 783	62 051
Number of conversions	28 689	17 374
Lower Limit (95%)	43.2333	27.6467
Conversion (%)	43.6122	28.0000
Upper Limit (95%)	43.9912	28.3533
Probability of success	0.4361	0.2800
Standard Error (SE)	0.00193	0.0018
P-value	0.00	
SE of the entire test	0.002686713	
Relative Uplift (%)	-35.8	

The table also shows each group's success probability, indicating the probability of any given person completing the step once they start it. The control group had a probability of success of

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0.4361, translating to approximately 43.61% of all participants who started the step being likely to complete it. The experimental group had a probability of success of 0.2800, translating to approximately 28.00% of all participants who started the step completing it. The relative uplift of this step is -35.8%. The table also shows the p-value of this analysis, which is 0.00.

7.6.3 Results between Steps 2 and 3

This analysis was done using the individuals who had started Step 2, and the conversion was logged when the final button of Step 3 was clicked, advancing to Step 4. The control group for this analysis consisted of 65 783 participants, and the control group comprised 62 051 participants. The conversion rates were 26.25% and 23.40% for the control and experimental groups, respectively. This led to 17 269 participants from the control group completing Step 3 and 14 522 participants from the experimental group completing Step 3. The lower and upper limits of the conversion rates can be seen in Table 28; this was done to ensure a 95% confidence interval.

Table 28. Experiment 3 - Steps 2–3

	Control group	Experimental group
Sample Size	65 783	62 051
Number of conversions	17 269	14 522
Lower Limit (95%)	25.9156	23.0706
Conversion (%)	26.2519	23.4037
Upper Limit (95%)	26.5881	23.7369
Probability of success	0.2625	0.2340
Standard Error (SE)	0.00172	0.0017
P-value	0.00	
SE of the entire test	0.00241897	
Relative Uplift (%)	-10.85	

The table also shows the probability of success for the control and experimental groups, which are 0.2625 and 0.2340, respectively. This means that approximately 26.25% of participants who start Step 2 of the control group will complete Steps 2 and 3. Approximately 23.40% of participants starting Step 2 of the experimental group will complete Steps 2 and 3. The relative uplift for these steps is -10.85%. The table also shows the p-value for this experiment to be 0.00.

7.6.4 Results Step 3

This analysis was done using the individuals who had started Step 3 (completed Step 2), and the conversion was logged when they clicked the final button of Step 3 and advanced to Step 4. The control group for this analysis consisted of 28 689 participants, and the experimental group consisted of 17 374 participants. In the control group, 17 269 participants completed Step 3, resulting in a conversion ratio of 60.19%; in the experimental group, 14 522 participants completed this step, resulting in a conversion ratio of 83.58%. The upper and lower limits of these conversion rates were established to ensure a 95% confidence interval, as seen in Table 29.

Table 29. Experiment 3 - Step 3

	Control group	Experimental group
Sample Size	28 689	17 374
Number of conversions	17 269	14 522
Lower Limit (95%)	59.6260	83.0329
Conversion (%)	60.1924	83.5837
Upper Limit (95%)	60.7589	84.1345
Probability of success	0.6019	0.8358
Standard Error (SE)	0.00289	0.00281
P-value	0.00	
SE of the entire test	0.004445399	
Relative Uplift (%)	38.86	

The control group had a probability of success of 0.6019 and the experimental group of 0.8358. This approximately translates to that 60.19 % of participants in the control group will complete Step 3 and 83.58% of participants in the experimental group will complete the step. The relative uplift of this step is 38.86%. The p-value of the analysis returned 0.00.

7.6.5 Discussion

The overall analysis shows a 4.89% difference in conversion rate and 0.049 in the probability of success, favouring the control group. The p-value returned was 0.00, meaning the results are statistically significant. Figure 46 indicates the expected distribution of the overall analysis, with the curves far apart and not overlapping at all.
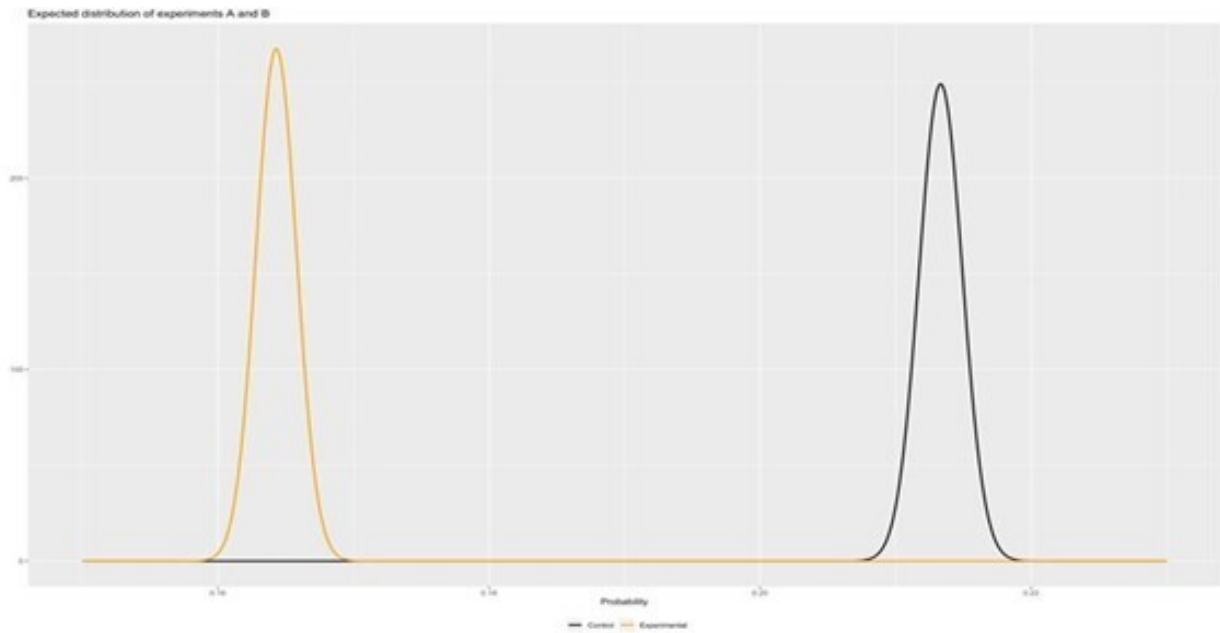
Figure 46. Expected distribution (Experiment 3 - overall)

Figure 47 shows the funnels for the control and experimental (Switch user info and Vehicle details) groups for Experiment 3. The split for this experiment was closer to 50/50 split, and the funnels' sizes at the top are similar. The funnels show a significant difference in the drop-offs between the two groups at Steps 2 and 4, favouring the control group. The significantly smaller drop-off in the experimental group at Step 3 speaks to the participants' willingness to provide vehicle rather than personal details. The difference in the number of participants who completed the forms is substantial (3 833), favouring the control group.

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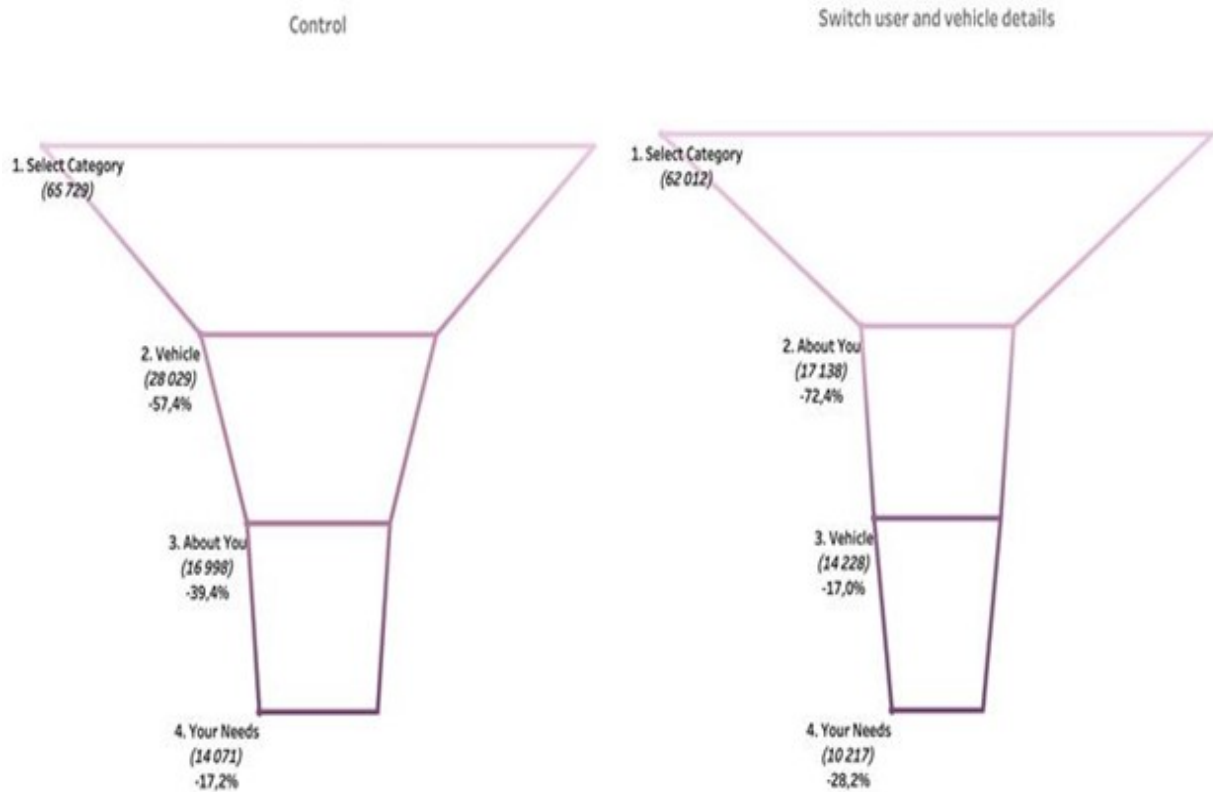
Figure 47. Experiment 3 funnels

The analysis of Step 2 showed a 15.61% difference in the conversion rate and a difference of 0.156 for the probability of success, favouring the control group. The p-value for this analysis also returned 0.00, indicating that the results are statistically significant. Figure 48 indicates the expected distribution curve for this analysis, where it is visible that the probability of success from the control group is far superior to that of the experimental group.
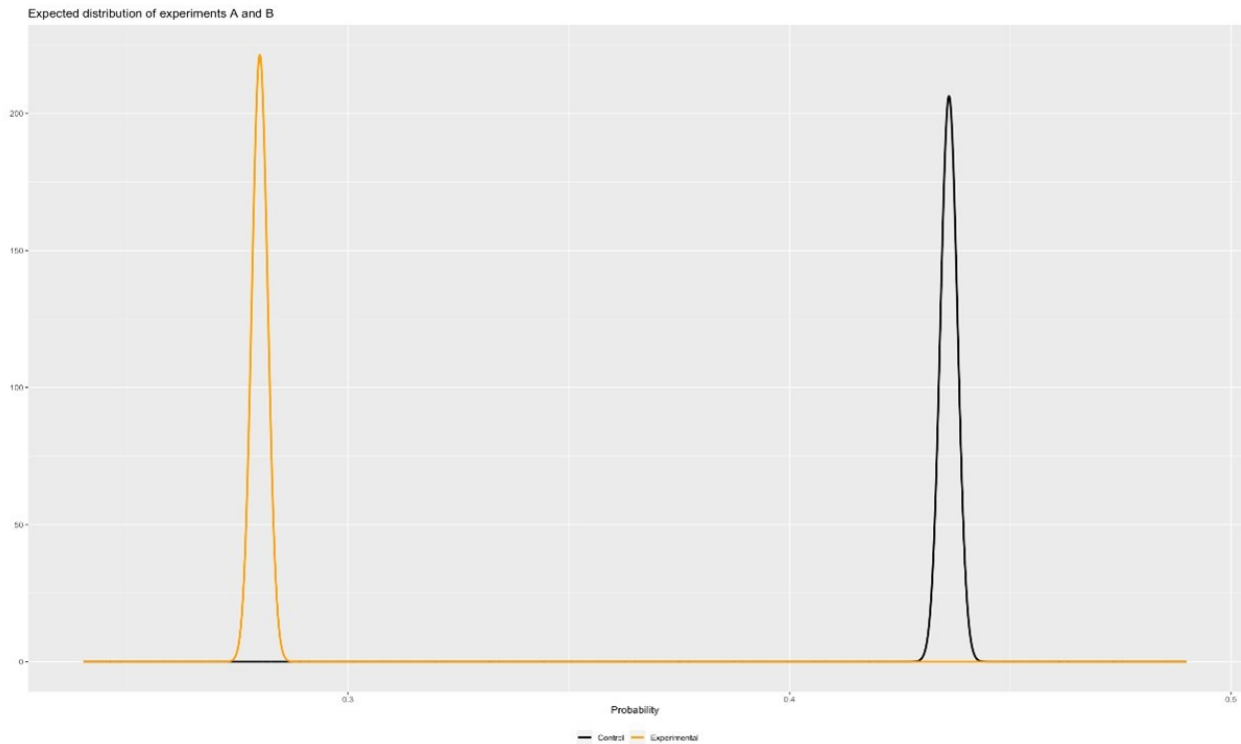
Figure 48. Expected distribution (Experiment 3 - Step 2)

The comparison between Steps 2 and 3 showed a difference of 0.285 in the probability of success and a 2.85% difference in conversion rate, favouring the control group. The p-value for this analysis also returned 0.00 indicating statistically significant results. Figure 49 indicates the expected distribution curves for this analysis.

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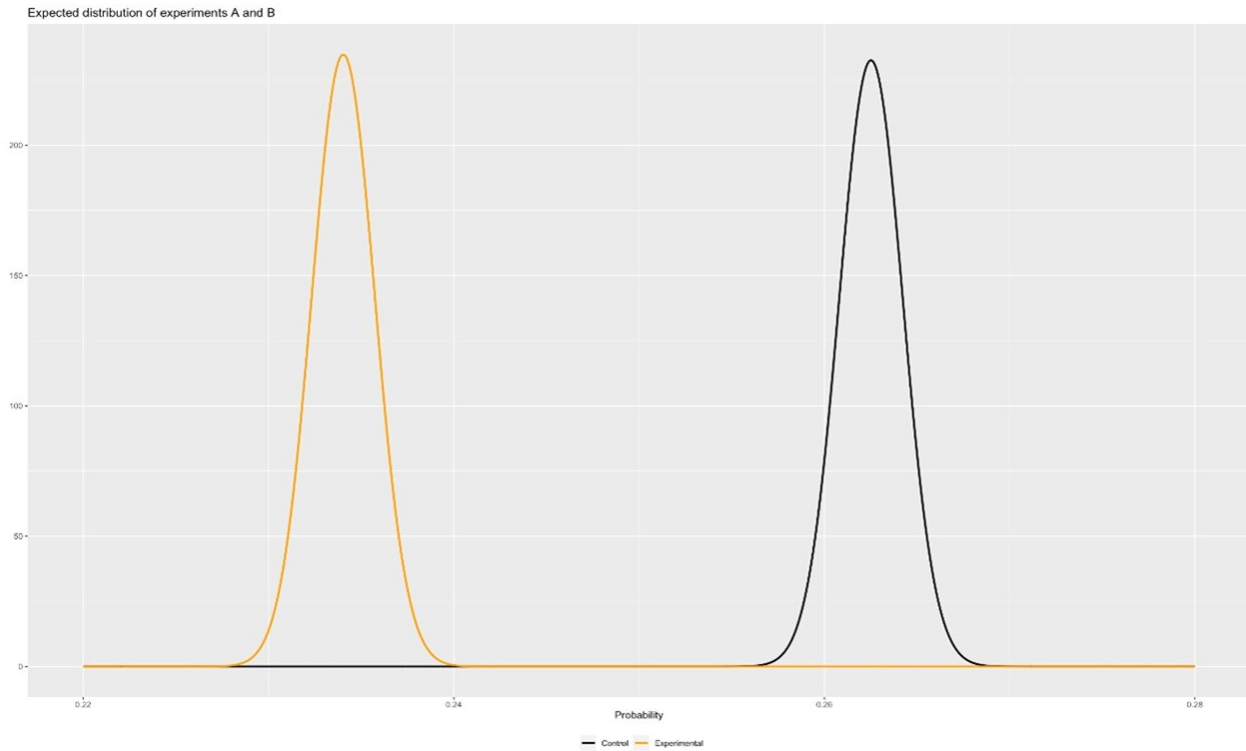
Figure 49. Expected distribution (Experiment 3 - Steps 2 and 3)

The analysis of Step 3 showed a 23.39% difference in conversion rate and a difference of 0.2339 in the probability of success, favouring the experimental group. The p-value returned 0.00, which indicates statistical significance in the result. Figure 50 indicates the expected distribution curves of this analysis.
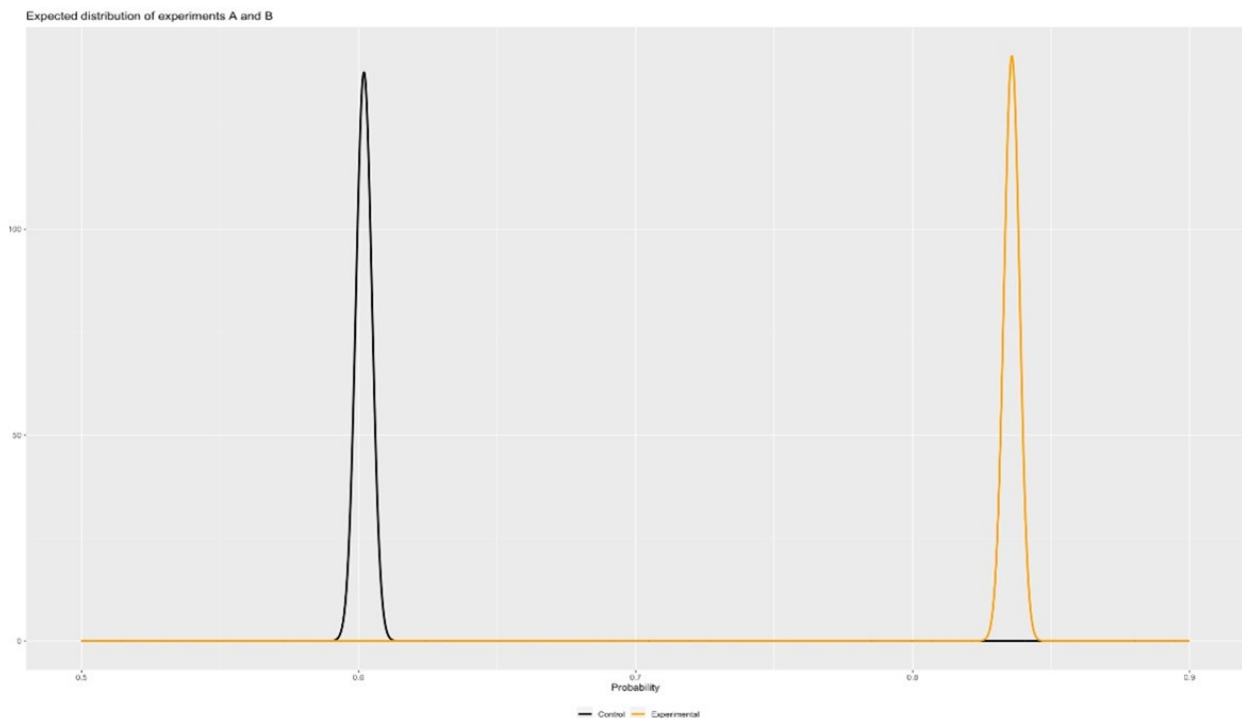
Figure 50. Expected distribution (Experiment 3 - Step 3)

The analysis of this experiment was troublesome, specifically because of the results obtained from Step 3. This is because all the other steps and the overall analysis showed a significant result favouring the control group, yet Step 3 showed significant results favouring the experimental group. One speculation as to why this might have occurred is that individuals focus on the task (selling their car) and not on providing their personal information. Therefore, the analysis from Step 3 was disregarded in the hypothesis classification, and the final classification of H3 is false.

7.7 EXPERIMENT 4

This experiment was divided into 4-1 and 4-2, guided by $H4_1$ and $H4_2$, respectively. No isolated step analysis was done for these experiments as the changes did not affect any specific step, only the form as a whole.

7.7.1 Experiment 4-1

This experiment strived to meet the UX principle of *informative feedback*. This was achieved for Experiment 4-1 by adding check marks to each section when completed. Figure 51 below displays these changes to the form.

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Figure 51. Experiment 4-1

7.7.1.1   Results

The control group for Experiment 4-1 had a sample size of 65 783 participants; the experimental group had a sample size of 62 187 participants. The participants were assigned to the groups randomly by a load balancer, eliminating any biased assignments, resulting in an assignment ratio of ≈ 51.4:48.6. 51.40% of the total population assigned to the control and 48.60% to the experimental group. This unequal assignment of participants to a group is due to simple randomisation used by the load balancer. Simple randomisation keeps the assignment of participants to a specific group random (Suresh, 2011). The original form was completed by 14 089 participants, yielding a conversion rate of 21.42%. The adapted form was completed by 13 229 participants, yielding a conversion rate of 21.27%. An upper and lower limit for these conversion rates was established to ensure a 95% confidence interval, as shown in Table 30 below.

Table 30. Experiment 4-1

	Control group	**Experimental group**
Assignment Ratio	0.5141	0.4860
Sample Size	65 783	62 187
Number of conversions	14 089	13 229
Lower Limit (95%)	21.1042	20.9516
Conversion (%)	21.4177	21.2733
Upper Limit (95%)	21.7312	21.5949
Probability of success	0.2142	0.2127

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Standard Error (SE)	0.0016	0.00164
P-value	0.5285	
SE of the entire test	0.002291791	
Relative Uplift (%)	-0.67	

Table 30 also shows each group's success probability; these values indicate the probability that any person viewing the form will complete it. For the control group, the probability of success is 0.2142, meaning that 21.42% of the sample size will complete the entire form. For the control group, the probability of success is 0.2127, meaning that 21.27% of the sample size will complete the form. The relative uplift for this experiment is -0.67%. Lastly, the p-value for this experiment was 0.5285.

7.7.1.2 Discussion

Despite the slight indifference of the sample sizes between the two groups, a 0.0014 difference in the probability of success emerged, favouring the control group. This means that the original form is more likely to yield success than the adapted form. It also shows a 0.14% higher conversion rate in the control group. However, the difference between the groups is not large enough to be statistically significant; therefore, the two forms are more or less equal. This experiment yielded no statistically significant results since the p-value (0.53) is greater than 0.05 (Beers, 2022). The difference in the probability of success can be attributed to noise, such as error, rather than the implementation. This resulted in the false classification for $H4_1$ that guided this experiment, as no statistically significant difference was seen. Figure 52 below shows the expected distribution for this experiment. The fact that no statistically significant results were obtained can also be seen in this graph, as the peak for each group is relatively close together, as opposed to a statistically significant test where they would be farther away from each other.
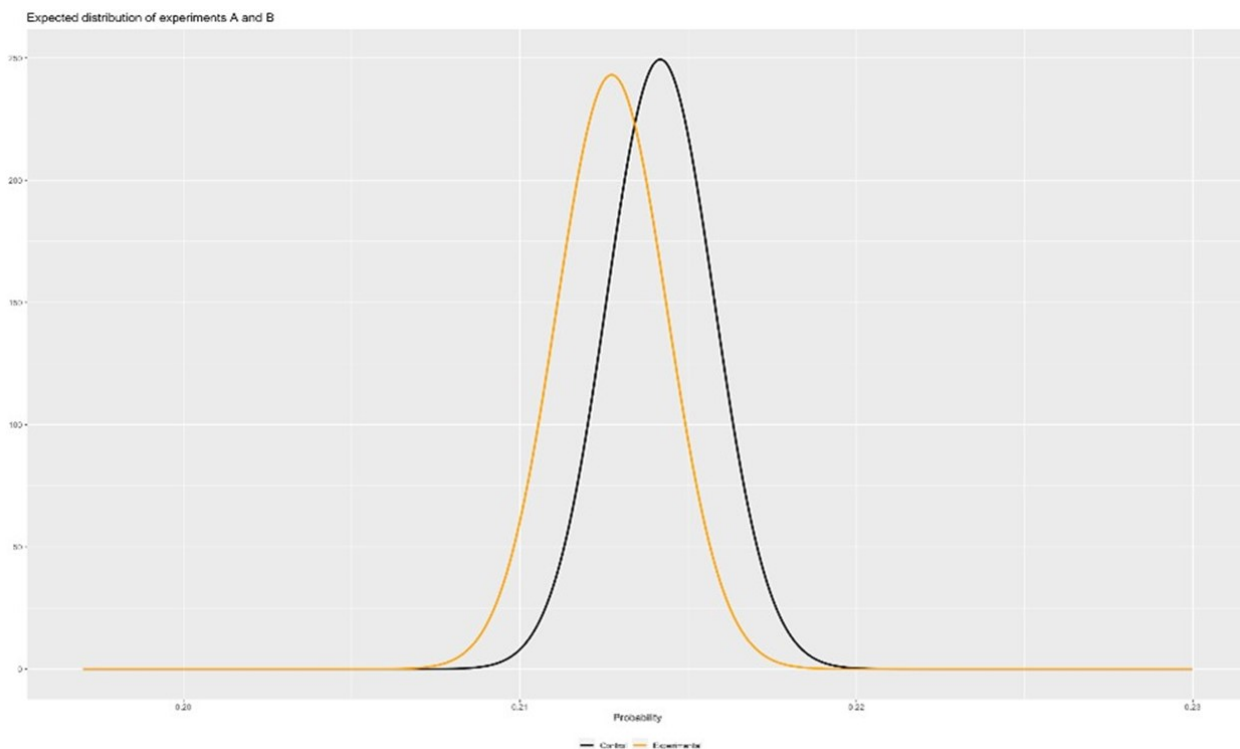
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Figure 52. Expected distribution (Experiment 4-1)

Figure 53 depicts the funnels for the control and experimental (Progress yield) groups for Experiment 4-1. The remarkable similarity between these funnels speaks to the nonsignificant results obtained from this experiment. The slight differences in drop-offs favouring the control group at Steps 2 and 3 are equal to the difference in a drop-off favouring the experimental group at Step 4.
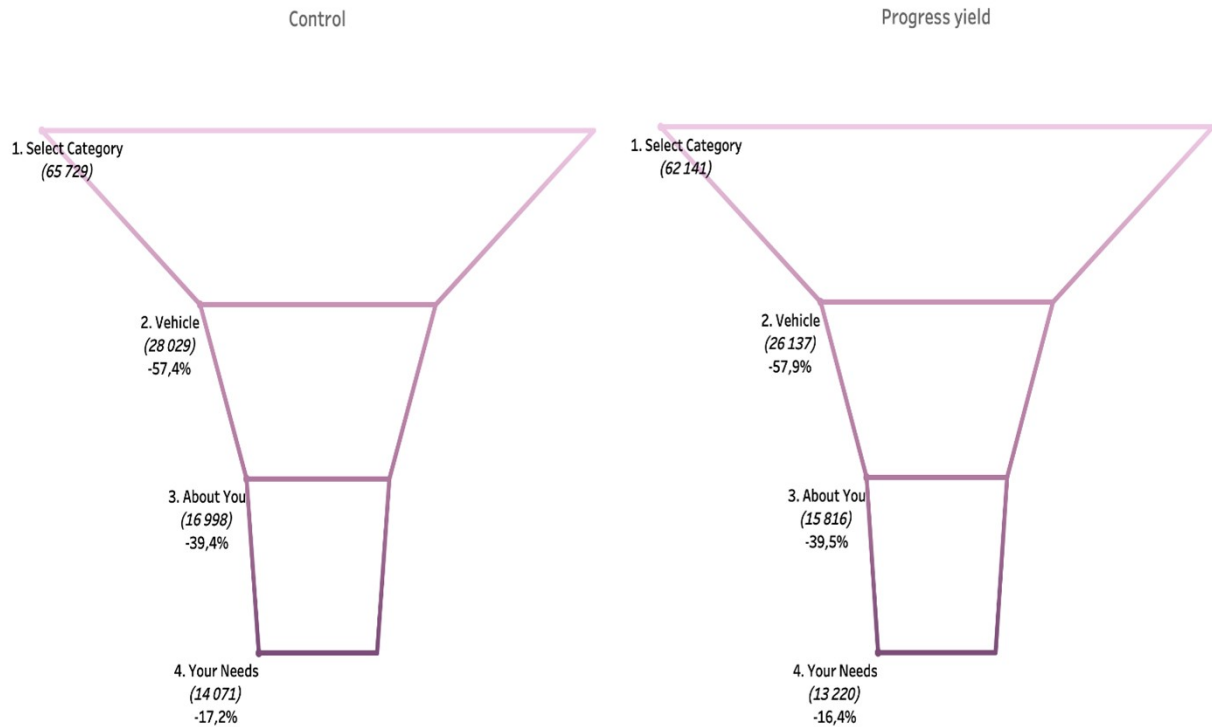
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Figure 53. Experiment 4-2 funnels

7.7.2   Experiment 4-2

This experiment was guided by H4$_2$ and strived to meet the UX principle of *informative feedback*. This experiment was conducted by assigning each field a percentage of 100, and as each field is completed, a progress bar would reflect the percentage change. Figure 54 below displays this change in the form.

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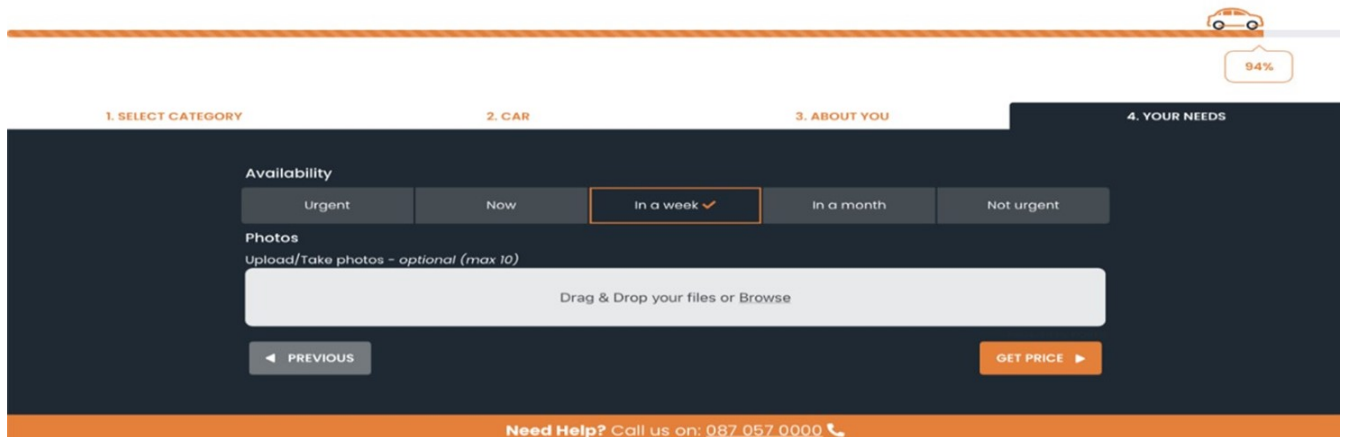
Figure 54. Experiment 4-2

7.7.2.1 Results

The control group for this experiment had a sample size of 72 216 participants; the experimental group had a sample size of 67 760 participants. The case organisation assigned these participants randomly utilising a load balancer. The assignment ratio for this experiment was ≈51.6:48.4, meaning that approximately 51.59% of the entire population was assigned to the control group, and approximately 48.41% was assigned to the experimental group. These groups did not receive a 50/50 split because of the simple randomisation utilised by the load balancer. The control group yielded a conversion rate of 19.98%, meaning that 14 428 participants completed the form. The experimental group yielded a conversion rate of 19.96%, which means that 13 521 participants from this group completed the form. Table 31 below details the upper and lower limits for this conversion rate.

Table 31. Experiment 4-2

	Control group	**Experimental group**
Assignment Ratio	0.5159	0.4841
Sample Size	72 216	67 760
Number of conversions	14 428	13 521
Lower Limit (95%)	19.6876	19.6536
Conversion (%)	19.9792	19.9545
Upper Limit (95%)	20.2709	20.2555
Probability of success	0.1998	0.1995

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Standard Error (SE)	0.00149	0.00154
P-value	0.9081	
SE of the entire test	0.002138032	
Relative Uplift (%)	-0.12	

Table 31 also shows the probability of success. The control group had a 0.1998 probability of success, whereas the experimental group had a 0.1995 probability of success. Interpreting these values means that approximately 19.98% of participants who start the form in the control group will complete the form, and approximately 19.95% of participants will complete the adapted form in the experimental group. The relative uplift for this experiment is -0.12%. Lastly, the p-value of this experiment is 0.9081.

7.7.2.2   Discussion

A minimal difference can be seen between the probability of success between the two groups, with the control group's conversion rate at 0.02% higher. This difference is not large enough to be of statistical significance, as can be seen with the p-value (0.91) exceeding 0.05, indicating statistical significance. This implies that the slight difference in the probability of success between these two groups could be attributed to noise, such as error or assignment ratio, not to the adaptations. This led to false classification $H4_2$ driving this experiment. Figure 55 below shows the expected distribution for this experiment. Again, the graphs are very close together, indicating that the results are not statistically significant.
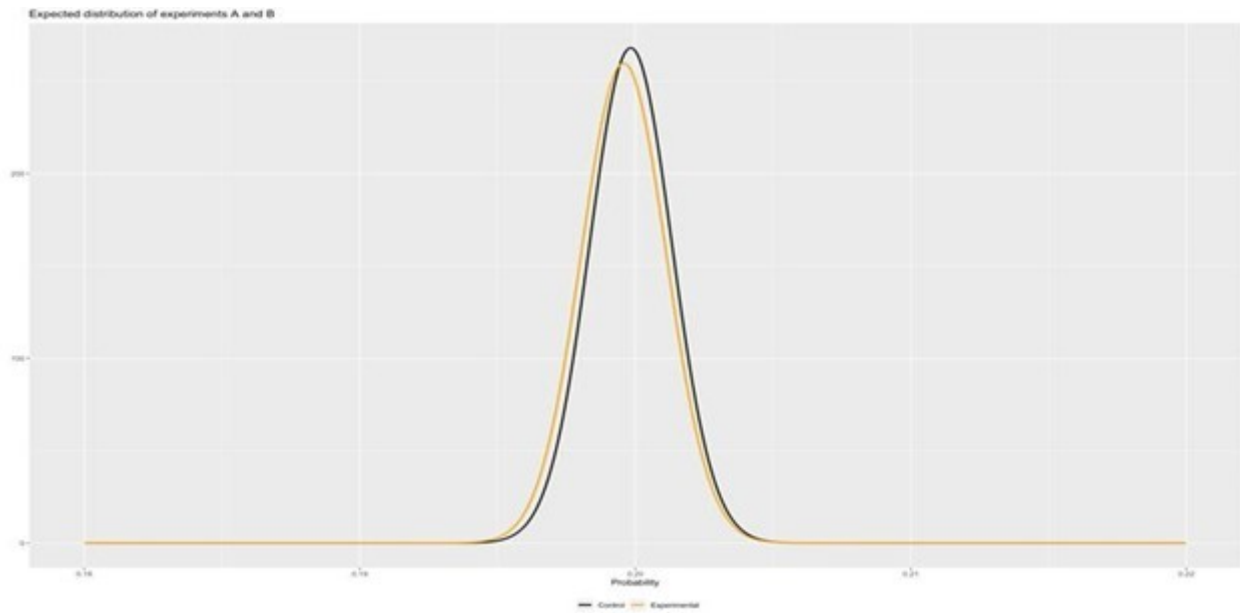
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Expected distribution of experiments A and B

Probability

— Control — Experimental

Figure 55. Expected distribution (Experiment 4-2)

Figure 56 depicts the funnels for the control and experimental (Progress bar) groups for experiment 4-2. The split for this experiment is very close to a 50/50 split, indicating that the tops of the funnels are similar. The progress bar has not significantly affected the experimental group, which can be seen by the similar drop-offs between the two groups.
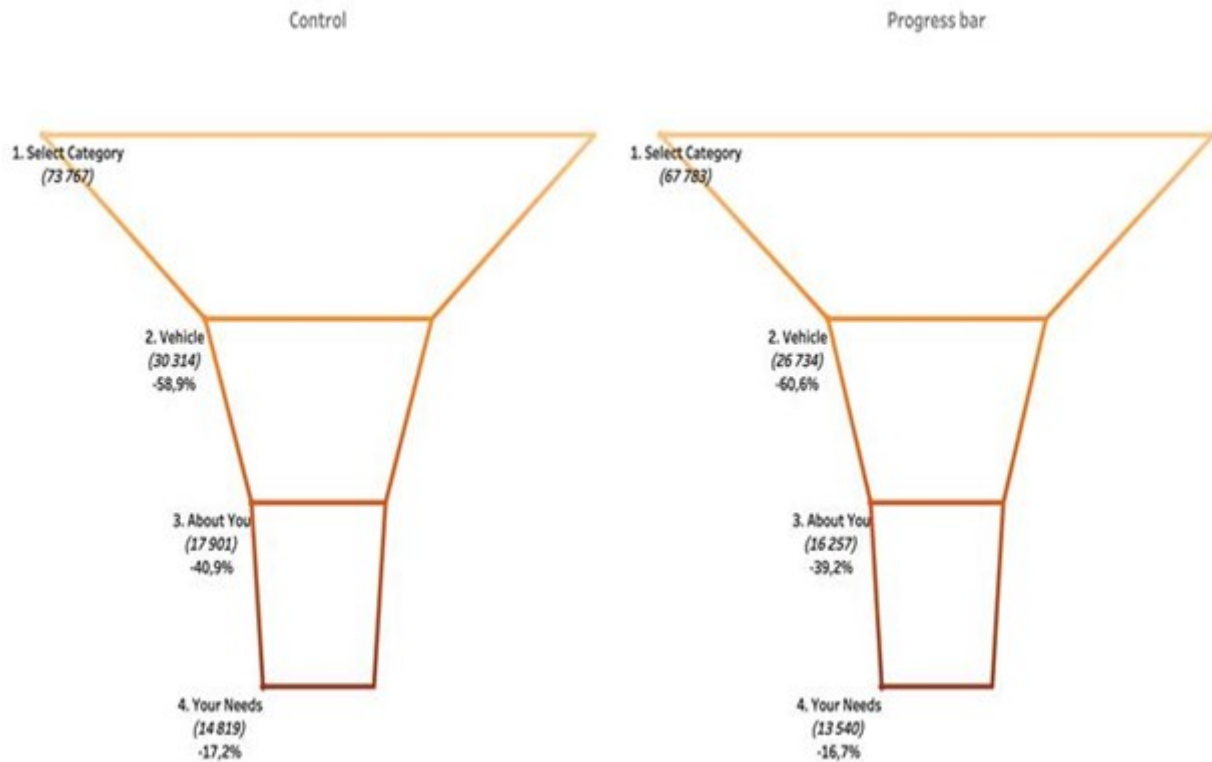
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Figure 56. Experiment 4-2 funnels

7.8 EXPERIMENT 5

This experiment was divided into 5-1 and 5-2, guided by H5$_1$ and H5$_2$, respectively.

7.8.1 Experiment 5-1

This experiment was guided by H5$_1$ and entailed the compression of the form from four steps into three steps. It was driven by the UX principles of *simplification* and *short absolute time*. Figure 57 displays the changes made to the form.

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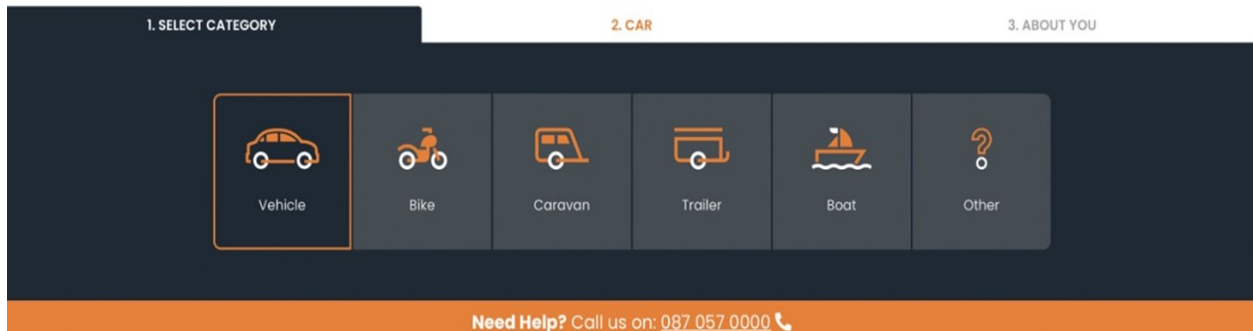
Figure 57. Experiment 5-1

7.8.1.1   Results

The control group had a sample size of 62 693 participants and an assignment of 51.65% of the entire population. The experimental group had a sample size of 58 697 and an assignment of 48.35% of the entire population. This slight malalignment is due to the simple randomisation utilised by the load balancer. The control group had a conversion rate of 22.63%, which resulted in the conversion of 14 188 participants into leads. The experimental group had a conversion rate of 21.79% which resulted in the conversion of 12 788 participants into leads. An upper and lower conversion rate limit was established for the experimental and control groups to ensure a 95% confidence interval. Table 32 below displays these upper and lower limits.

Table 32. Experiment 5-1

	Control group	**Experimental group**
Assignment Ratio	0.5165	0.4835
Sample Size	62 693	58 697
Number of conversions	14 188	12 788
Lower Limit (95%)	22.3037	21.4529
Conversion (%)	22.6313	21.7868
Upper Limit (95%)	22.9588	22.1208
Probability of success	0.2263	0.2179
Standard Error (SE)	0.00167	0.0017
P-value	0.0004	
SE of the entire test	0.002387801	
Relative Uplift (%)	-3.73	

The probability of success for the control group is 0.2263 and 0.2179 for the experimental group. These translated to the control form having approximately a 22.63% chance of converting any individual into a lead and the experimental form having a 21.79% chance of converting any individual into a lead. The relative uplift for this experiment is -3.73%, and the P-value for this experiment is 0.0004.

7.8.1.2 Discussion

There is a difference of approximately 0.84 in conversion rate and 0.014 in the probability of success for these experiments, favouring the control group. This means the control group is more likely to convert participants into leads. These results prove statistical significance as the p-value for this experiment is lower than 0.05, strongly implying that the interventions made to the experimental form are the reason for the results, not merely because of noise. Figure 58 below shows the expected distribution of this experiment, and once again, the distance between the graphs shows that statistically significant results were yielded. The experimental group yielding lower results than the control group led to the false classification of $H5_1$, as it showed a negative statistically significant result. Due to the size of the raw data required to construct the funnels, they are not included in this experiment.
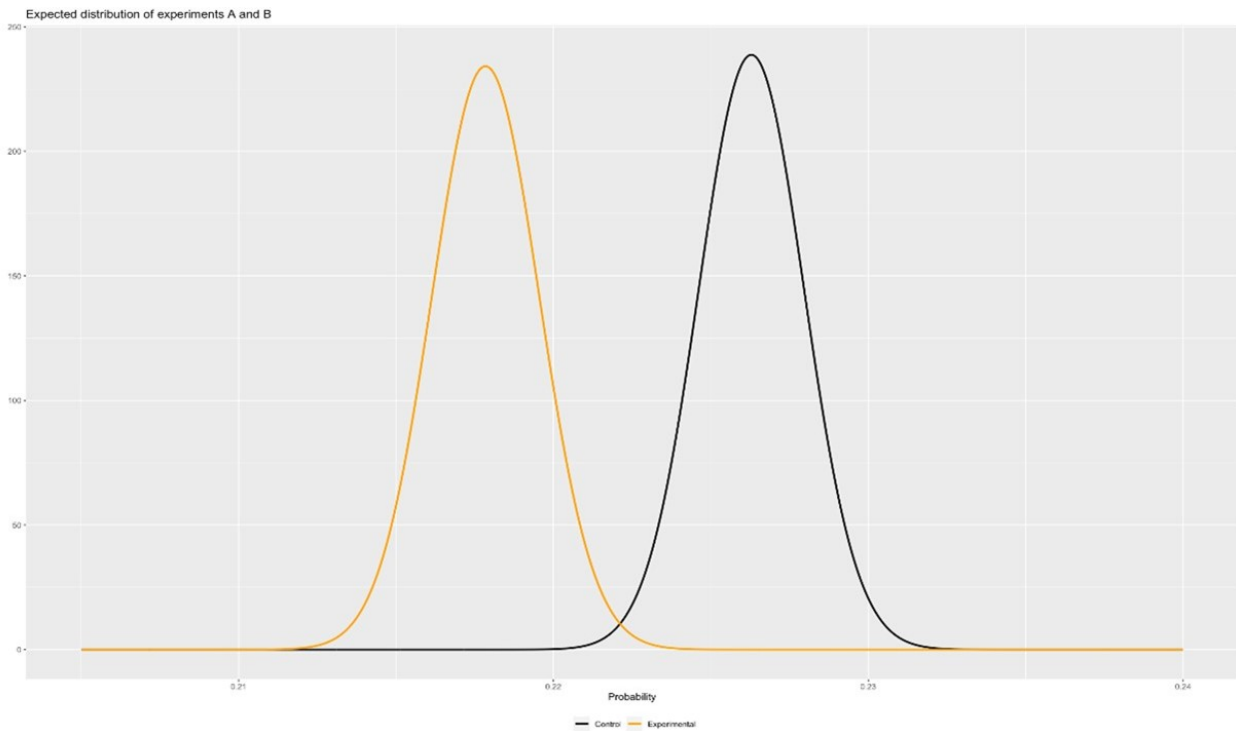
Figure 58. Expected distribution (Experiment 5-1)

7.8.2   Experiment 5-2

This experiment was guided by $H5_2$ and strived to meet the UX principles of *simplification* and *ease of use*. This was achieved by removing the different steps in the form and instead providing the users with one long form. Figure 59 below displays these changes; **note** that the figure shows only a part of the form, although all the steps from the original form are compressed into the second step of this form.

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Figure 59. Experiment 5-2

7.8.2.1 Results

The control group had a sample size of 62 693, and the experimental group had a sample size of 60 112. This resulted in an assignment ratio of ≈ 51.05:48.95, meaning that the control group received approximately 51.05% of the entire population, and the experimental group received approximately 48.95%. This mismatch in assignment ratio is due to the simple randomisation utilised by the load balancer. The control group converted 14 188 participants into leads, and the experimental group converted 13 017 participants into leads. This resulted in a conversion rate of 22.63% for the control group and 21.65% for the experimental group. Table 33 details the upper and lower limits of these conversion rates. These are established to ensure a 95% confidence interval for this experiment.

Table 33. Experiment 5-2

	Control group	**Experimental group**
Assignment Ratio	0.5105	0.4895
Sample Size	62 693	60 112
Number of conversions	14 188	13 017
Lower Limit (95%)	22.3037	21.3257
Conversion (%)	22.6313	21.6549
Upper Limit (95%)	22.9588	21.9842

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Probability of success	0.2263	0.2165
Standard Error (SE)	0.00167	0.00168
P-value	0.00	
SE of the entire test	0.002370583	
Relative Uplift (%)	-4.31	

The control group had a 0.2263 probability of success, and the experimental group had a 0.2165 probability of success. This means that the control group had a 22.63% chance of converting any individual, whereas the experimental group had a 21.65% chance of converting any individual into a lead. The relative uplift for this experiment is -4.31%. Lastly, the p-value for this experiment is 0.00.

7.8.2.2 Discussion

This experiment's differences in conversion rates (0.98) and probability of success (0.01) favour the control group. This means the control group is more likely to convert individuals into leads. These results were statistically significant as the p-value (0.00) falls way below the requirement (0.05) for statistical significance. Therefore, it is evident that the differences within the data are due to the interventions rather than experimental noise. Figure 60 below shows the expected distribution; the distance between the two graphs also speaks to the statistical significance of the study. This experiment yielded a negative statistical difference, which led to the false classification of H5$_2$. Due to the size of the raw data required to construct the funnels, they are not included in this experiment.
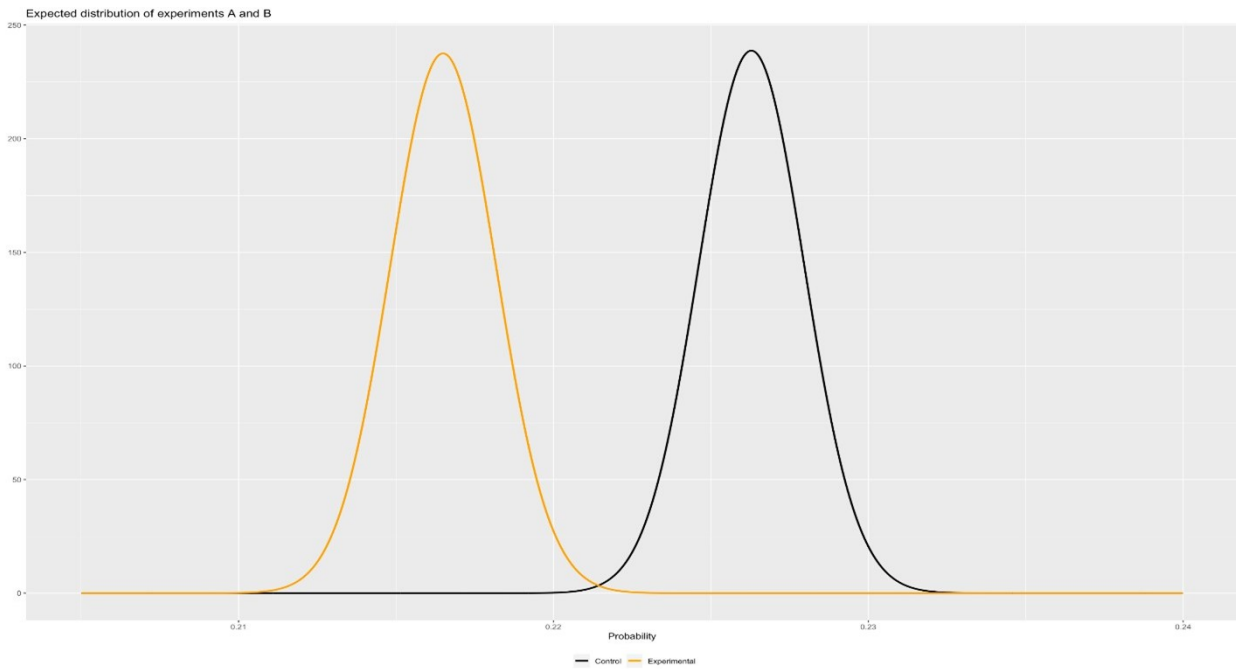
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Figure 60. Expected distribution (Experiment 5-2)

7.9 EXPERIMENT 6

H6 guided this experiment. It strived to meet the UX principles of *consistency* and *provide purpose*. This was achieved by ensuring that all labels were consistently named with understandable terms, ensuring that individuals from all educational backgrounds could comprehend the labels. The buttons at the end of each step were changed from 'continue' to 'next', as seen in Figure 61.

Figure 61. Experiment 6

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7.9.1 Results

The control group for this experiment consisted of 71 801 participants, and the experimental group consisted of 68 811 participants. The assignment ratio for this experiment was ≈ 51.06:48.94, meaning that 51.06% of the entire population was assigned to the control group and 48.94 % to the experimental group. The control group had 13 964 conversions resulting in a conversion rate of 19.45%. The experimental group converted 13 720 participants, resulting in a conversion rate of 19.94%. The upper and lower limits to these conversion rates were established to ensure a 95% confidence interval, as seen in Table 34.

Table 34. Experiment 6

	Control group	Experimental group
Assignment Ratio	0.5106	0.4894
Sample Size	71 801	68 811
Number of conversions	13 964	13 720
Lower Limit (95%)	19.1590	19.6404
Conversion (%)	19.4485	19.9390
Upper Limit (95%)	19.7380	20.2375
Probability of success	0.1945	0.1994
Standard Error (SE)	0.00148	0.00152
P-value	0.0208	
SE of the entire test	0.002121338	
Relative Uplift (%)	2.52	

The probability of success for the control and experimental groups was 0.1945 and 0.1994, respectively. This means that approximately 19.45 of the participants in the control group will complete the form, and approximately 19.94% of participants in the experimental group will complete the form. The relative uplift for this experiment is 2.52%. Lastly, the p-value of this experiment was 0.0208.

7.9.2 Discussion

A 0.049 difference in the probability of success and a 0.49 difference in the conversion rates were seen, favouring the experimental group. The p-value of 0.0208 is lower than 0.05, which is required for statistical significance, leading to the *true* classification of H6. Therefore, the results obtained

from this experiment are due to interventions and not experimental noise. Figure 62 indicates the expected distribution curves of this experiment.
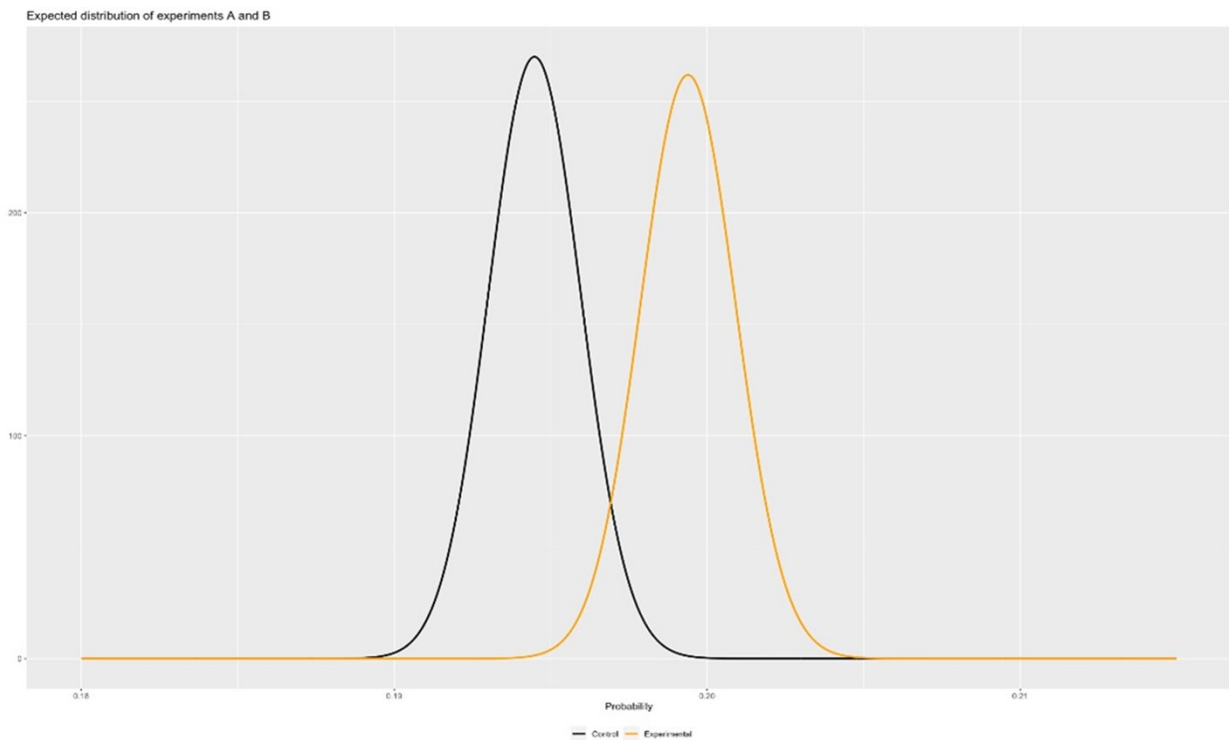

Figure 62. Expected distribution (Experiment 6)

Figure 63 depicts the funnels for both the control and experimental (Label consistency) groups for experiment 6. The funnels are a sufficient visual representation of the experiment and show minor differences in the drop-offs between the two groups at all steps, with an overall change in the drop-off of 1.5, favouring the experimental group.
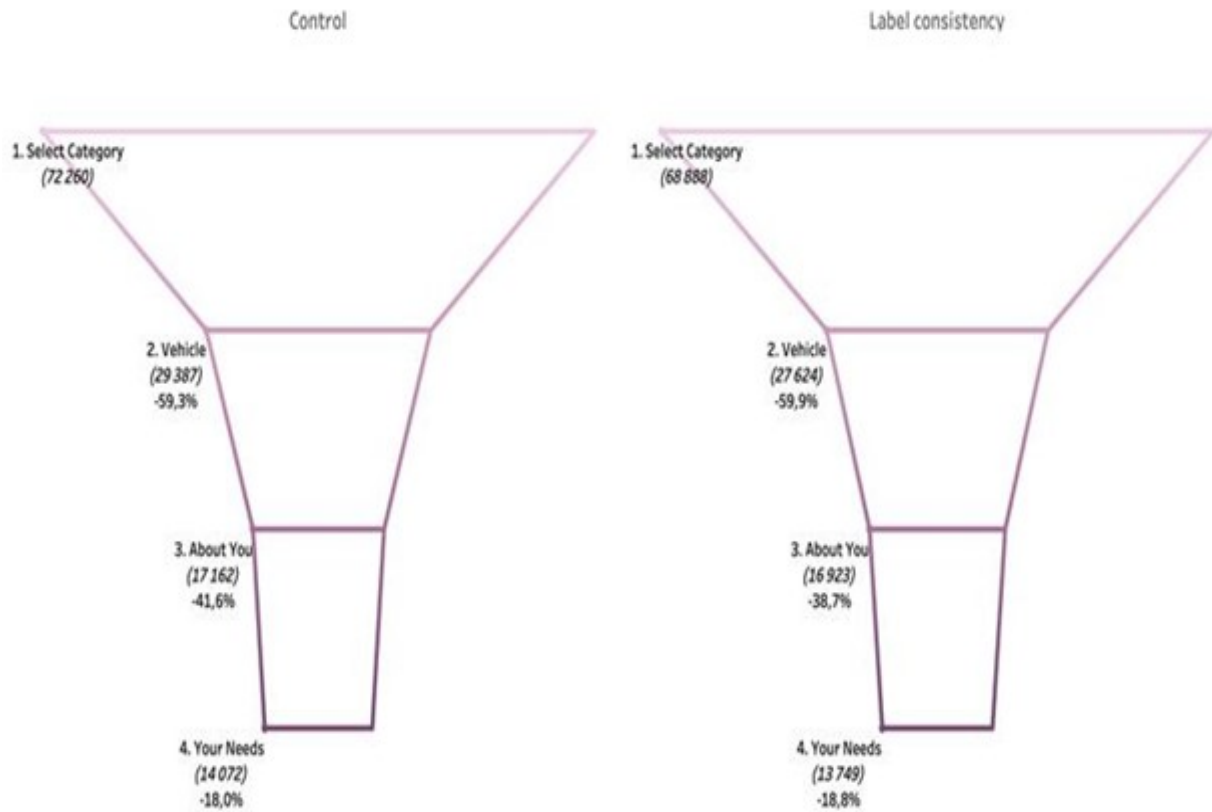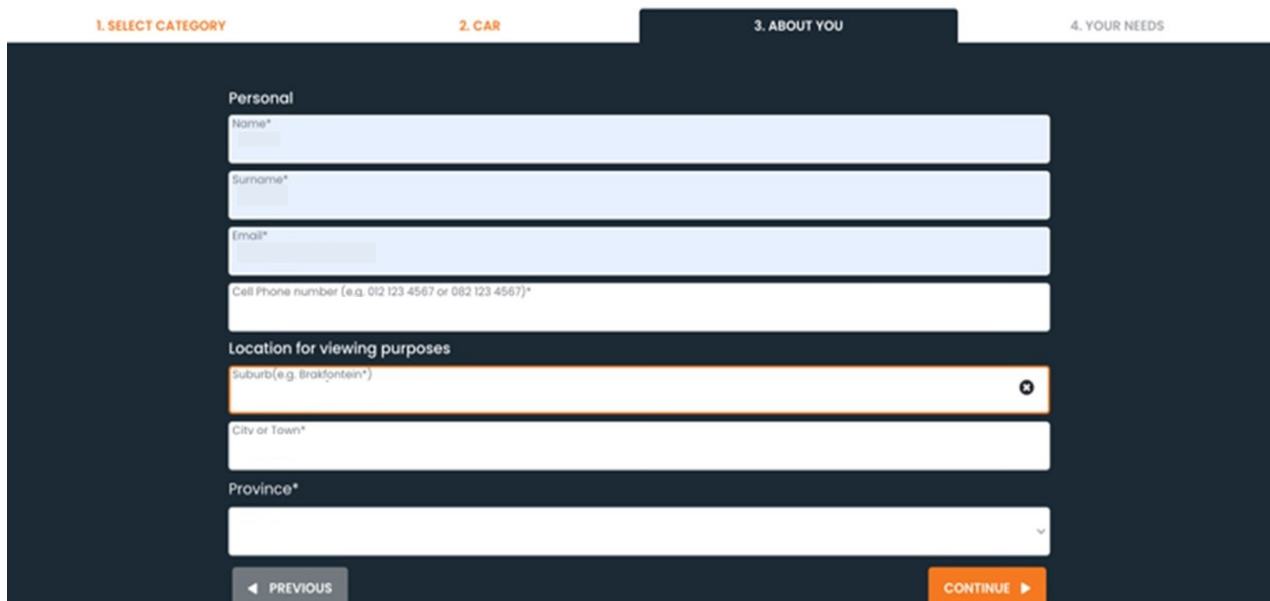
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Figure 63. Experiment 6 funnels

7.10 EXPERIMENT 7

H7 guided this experiment. It coincides with the UX principles of *minimal information requirements*, *simplification* and *short absolute time*. This was achieved by removing the additional number field in Step 3, meaning that individuals do not have to recall or look for the contact number of a family member or friend if they do not have two numbers. Figure 64 displays this change in action.

Figure 64. Experiment 7

7.10.1 Results Overall

The control group for this analysis had a sample size of 71 801, and the experimental group had a sample size of 67 150. The assignment of participants was done through a load balancer. The assignment ratio for this experiment was approximately 51.67:48.33, meaning that 51.67% of the entire population was assigned to the control group, and 48.33% was assigned to the experimental group. The control group had a conversion rate of 19.45%, leading to 13 964 conversions. The experimental group had a conversion rate of 21.26%, leading to 14 278 conversions. These conversion rates' upper and lower limits were established to ensure a 95% confidence interval, as seen in Table 35.

Table 35. Experiment 7 - overall

	Control group	Experimental group
Assignment Ratio	0.51674	0.48326
Sample Size	71 801	67 150
Number of conversions	13 964	14 278
Lower Limit (95%)	19.1590	20.9537
Conversion (%)	19.4485	21.2632
Upper Limit (95%)	19.7380	21.5726

Probability of success	0.1945	0.2126
Standard Error (SE)	0.00148	0.00158
P-value	0.00	
SE of the entire test	0.00216033	
Relative Uplift (%)	9.33	

The probability of success values for the control and experimental groups were 0.1945 and 0.2126, respectively. This translates to approximately 19.45% and 21.26% of individuals who start the control and experimental forms, respectively, are likely to finish them. The overall relative uplift for this experiment is 9.33%. Lastly, the p-value for this analysis is 0.00.

7.10.2   Results Step 3

The control group that started Step 3 consisted of 29 768 participants, and the experimental group consisted of 28 064 participants. The assignment ratio for the control and experimental groups were 51.47:48.53, respectively, meaning that from the population that started Step 3, 51.47% formed part of the control group and 48.53% formed part of the experimental group. The conversion rate for the control group was 58.04% leading to a conversion of 17 278 participants. The experimental group had a conversion rate of 62.19%, which led to the conversion of 17 453 participants. These conversion rates' upper and lower limits were established to ensure a 95% confidence interval, as seen in Table 36.

Table 36. Experiment 7 - Step 3

	Control group	**Experimental group**
Assignment Ratio	0.5147	0.4853
Sample Size	29 768	28 064
Number of conversions	17 278	17 453
Lower Limit (95%)	57.4802	61.6213
Conversion (%)	58.0408	62.1887
Upper Limit (95%)	58.6014	62.7560
Probability of success	0.5804	0.6219
Standard Error (SE)	0.00286	0.00289
P-value	0.00	
SE of the entire test	0.004075119	
Relative Uplift (%)	7.15	

The probability of success for the control group was 0.5804, meaning that approximately 58.04% of participants who start Step 3 will finish it. The probability of success for the experimental group was 0.6219, meaning that approximately 62.19% of participants who start this step will finish it. The relative uplift for this step is 7.15%. Lastly, the p-value for this analysis was 0.00.

7.10.3 Discussion

A difference of 1.81 can be seen in the conversion rate between the two groups and a 0.018 difference in the probability of success, favouring the experimental group. The p-value of 0.00 is lower than that of the maximum value of 0.05, which indicates statistical significance. Therefore, it is evident that the results obtained are due to the interventions made in the experimental form. Figure 65 indicates the expected distribution of the overall analysis of Experiment 7; the curves are relatively far apart and do not overlap, which also shows the significance of the results.
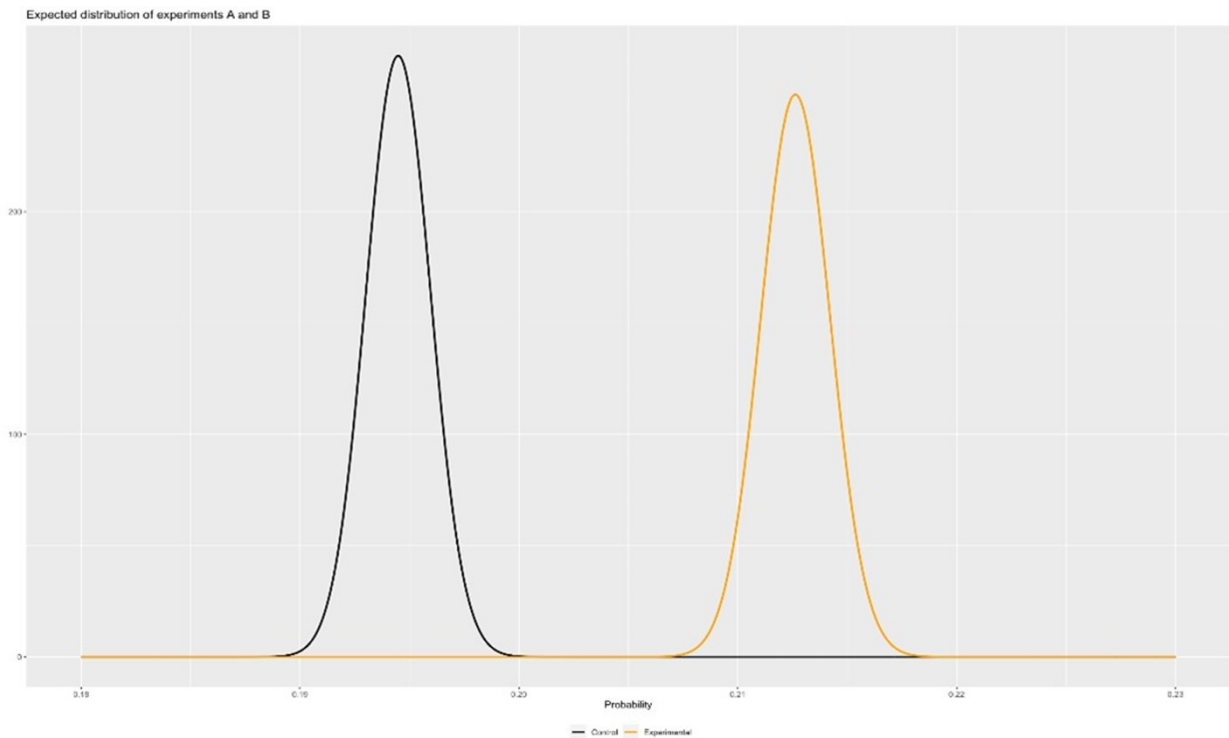

Figure 65. Expected distribution (Experiment 7 - overall)

Figure 66 depicts the funnels for both the control and experimental (Alternative number) groups for Experiment 7. The funnels are a sufficient visual representation of the experiment and show minor differences in the drop-offs between the two groups at all the steps. However, since the only intervention made was at Step 3, the difference in drop-off seen at this step is 4% in favour of the

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experimental group, which again shows the significant positive results obtained from this experiment.
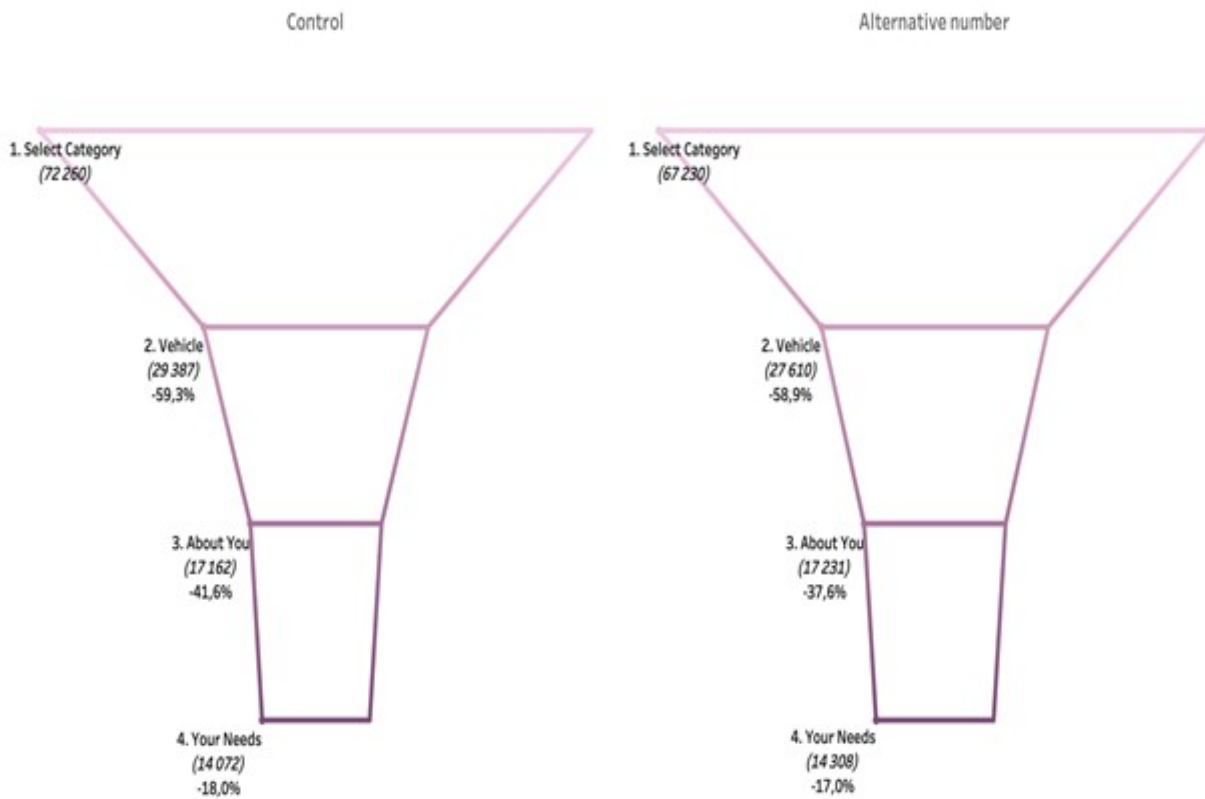

Figure 66. Experiment 7 funnels

The analysis of Step 3 shows a difference of 4.15 in the conversion rate and a difference of 0.042 in the probability of success, favouring the experimental group. The differences between these two groups in the step analysis show a more significant difference than the overall analysis. The analysis was done overall and at a specific step because the key success measure for the case organisation is the overall conversion rate. However, it also allows for analysis of the interventions made at the specific step (Lehtinen, 2020).
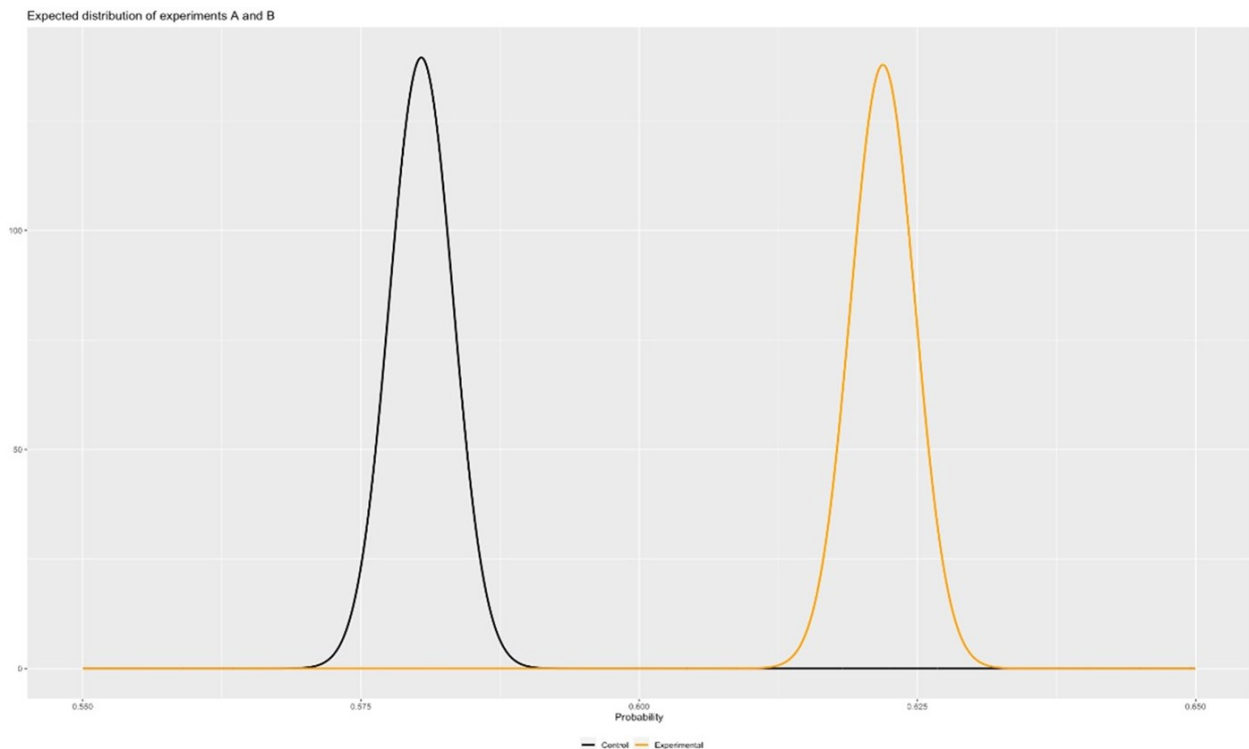
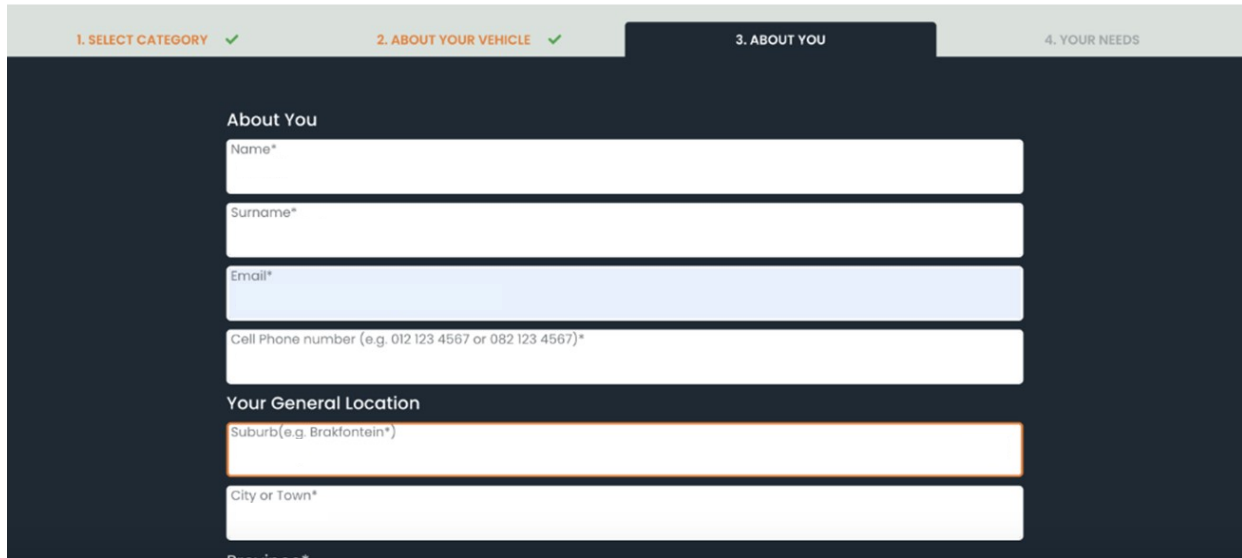**Figure 67. Expected distribution (Exp 7 - Step 3)**

Figure 67 indicates the expected distribution of the Step 3 analysis. The overall and step analysis shows that the experimental group has a statistically significant improvement from the control group. This ultimately led to the hypothesis for this experiment being classified as *true*.

7.11 EXPERIMENT 8

H8, a combination of $H4_1$, H6 and H7, guided this experiment. This experiment combined the most fruitful hypotheses into one experiment to assess the effectiveness of the combined changes made to the form. Therefore, this hypothesis lines up with the principles of *consistency*, *informative feedback*, *simplification*, *minimal information requirements* and *provide purpose*. All label changes were made, ensuring consistency across the entire form. Check marks were added to the top of each steps tab when an individual completed that step. Additionally, the 'location' field changed to 'your general location' to require the user's location when you hover over this label, and finally, the additional number field was removed. Figure 68 displays some of these changes.

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Figure 68. Experiment 8

7.11.1 Results overall

The control group had a sample size of 68 775, and the experimental group had a sample size of 64 560. The experiment had an assignment ratio of ≈ 51.58:48.42; 51.58% of the total population was assigned to the control group and 48.42% to the experimental group. The conversions were 13 608 and 14 131 participants for the control and experimental group, respectively. This resulted in a conversion rate of 19.79% for the control group and 21.89% for the experimental group. The upper and lower limits of these conversion rates were established to ensure a 95% confidence interval, as seen in Table 37.

Table 37. Experiment 8 - Overall

	Control group	**Experimental group**
Assignment Ratio	0.51581	0.48419
Sample Size	68 775	64 560
Number of conversions	13 608	14 131
Lower Limit (95%)	19.4888	21.56954
Conversion (%)	19.78655	21.88851
Upper Limit (95%)	20.0843	22.20747
Probability of success	0.1979	0.2189

Standard Error (SE)	0.00152	0.00163
P-value	0.00	
SE of the entire test	0.002224334	
Relative Uplift (%)	10.62	

This table also shows the probability of success, which was 0.1979 for the control group and 0.2189 for the experimental group. This translates to the control group having approximately a 19.79% chance of converting any individual who had started the form into a lead and the experimental group having a 21.89% chance of converting any given individual into a valuable lead for the case organisation. The overall relative uplift for this experiment was 10.62%. Finally, Table 36 also shows the p-value for this experiment, which is 0.

7.11.2 Results Step 3

The sample size of the control group for Step 3 was 28 787 participants, and the sample size for the experimental group at this step was 26 890 participants. This shows the assignment ratio of ≈51.7:48.3, meaning that 51.7% of the population was within the control group and 48.3% was in the experimental group. The control group converted 16 902 participants, resulting in a conversion rate of 58.71%. The experimental group converted 17 319 participants and, as a result, had a conversion rate of 64.41%. The upper and lower limits of these conversion rates were established to ensure a 95% confidence interval, as seen in Table 38.

Table 38. Experiment 8 - Step 3

	Control group	Experimental group
Assignment Ratio	0.51704	0.48296
Sample Size	28 787	26 890
Number of conversions	16 902	17 319
Lower Limit (95%)	58.1438	63.83323
Conversion (%)	58.71257	64.40552
Upper Limit (95%)	59.28133	64.40552
Probability of success	0.5871	0.6441
Standard Error (SE)	0.0029	0.00292
P-value	0.00	
SE of the entire test	0.00412752	
Relative Uplift (%)	9.7	

Table 38 also shows that the probability of success for the control group is 0.5871 and 0.6441 for the experimental group. The table further presents the standard error for each group, which is 0.0029 and 0.00292 for the control and experimental group, respectively. The relative uplift for this step is 9.7%, and the p-value for this step analysis is 0.00.

7.11.3 Discussion

The overall analysis showed a 2.1 difference in the conversion rate and 0.02 in the probability of success, favouring the experimental group. The overall analysis also returned a p-value of 0.00, which is lower than the minimum value (0.05) for statistical significance, meaning that the difference in the conversion ability between the two groups is significant. It seems evident that the changes made to the form resulted in the differences. Figure 69 indicates the expected distribution for the overall analysis.

Expected distribution of experiments A and B
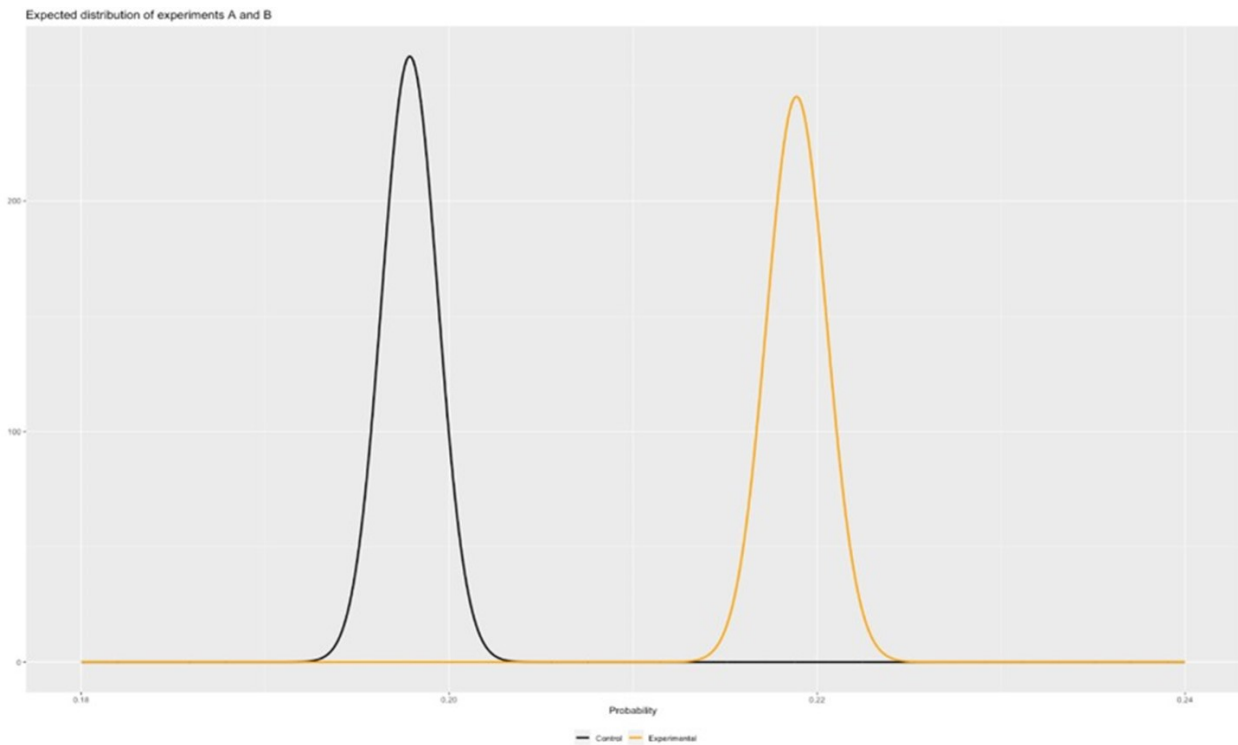
Figure 69. Expected distribution - Experiment 8 (overall)

Figure 70 depicts a funnel for both the control and experimental (Mix of experiments) groups alongside each other. The funnel visually depicts the drop-offs between the steps and the differences between the groups. The overall difference in drop-off for this experiment between all the steps is 5.7% in favour of the control group. The smaller overall drop-off seen in favour of the

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experimental group shows that the interventions made to the experimental group delivered positive results.
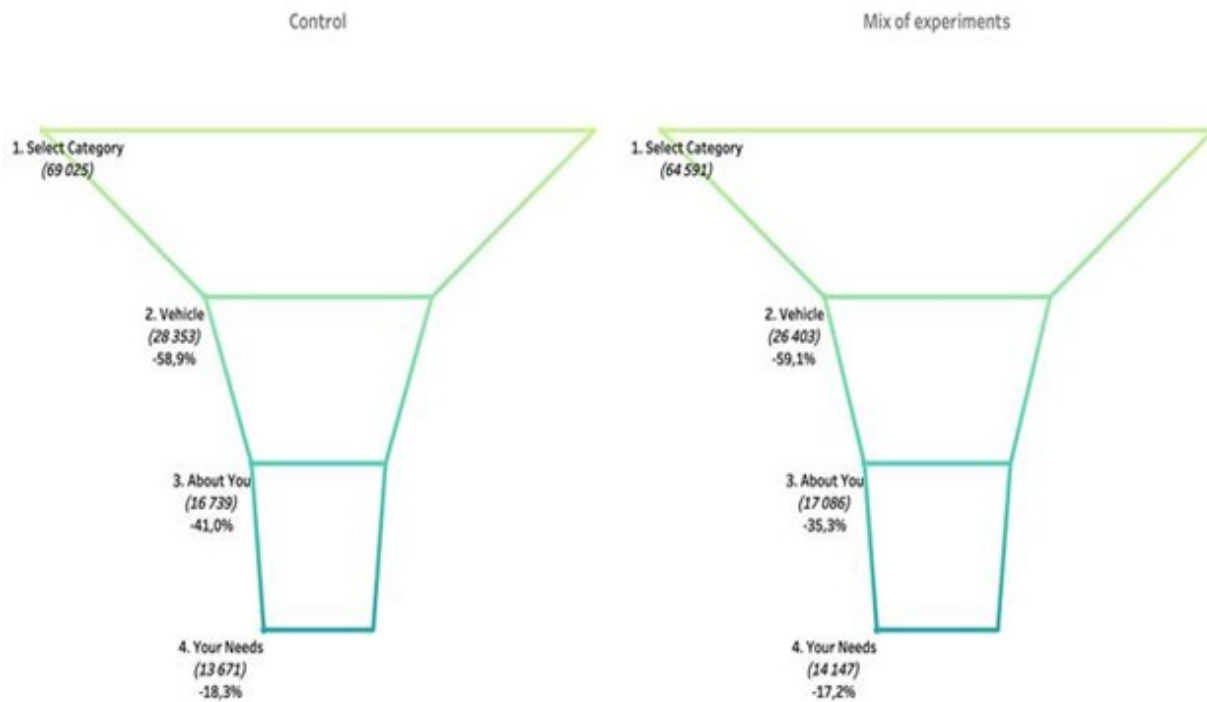
Figure 70. Experiment 8 funnels

The step analysis showed a difference of 5.69 in conversion rate and a 0.06 difference in the probability of success, favouring the experimental group. The p-value for this analysis also returned as 0.00 and indicates that the results are statistically significant since it is below that of 0.05 required for statistical significance. Figure 71 indicates the expected distribution for the step analysis of this experiment.
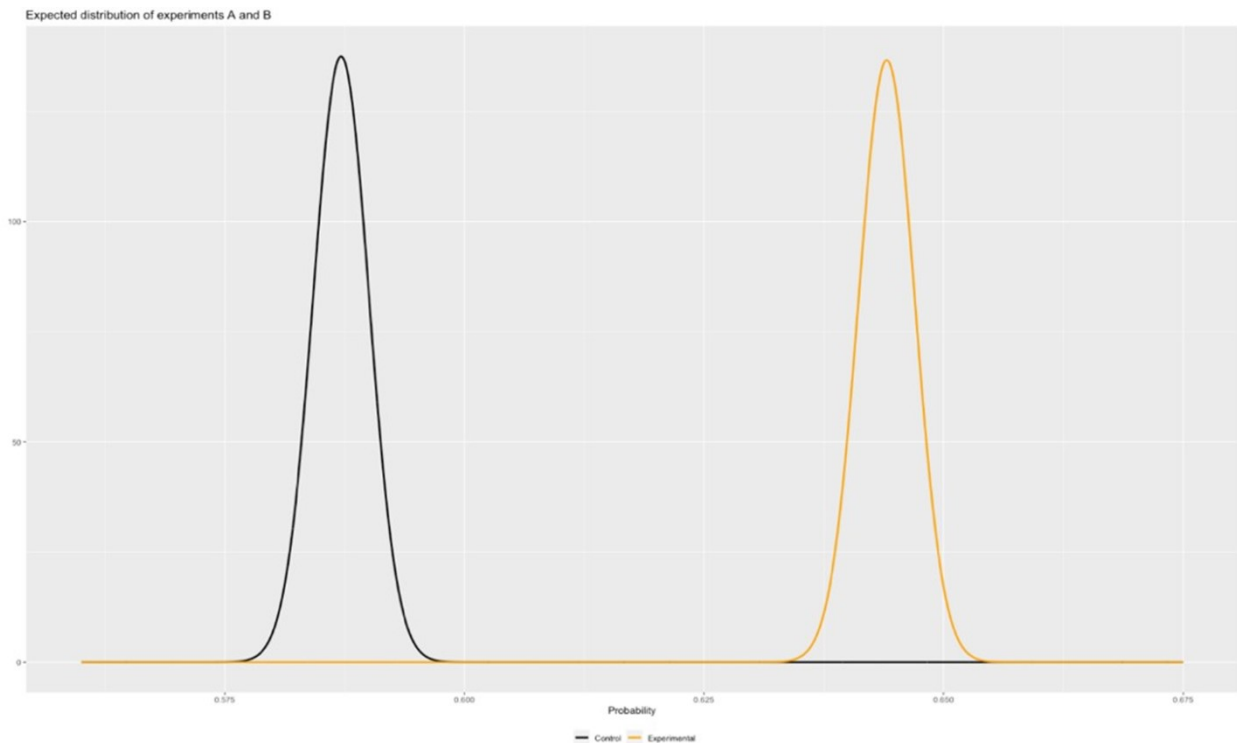
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Figure 71. Expected distribution - Experiment 8 (Step 3)

The overall and step analysis revealed a statistically significant difference in the conversion rate and probability of success, favouring the experimental group. Therefore, the hypothesis driving this experiment was classified as *true*, meaning that the experimental form is more likely to convert individuals into leads than the control form.

7.12 EXPERIMENT 9

This experiment was guided by H9, which states that the top ten car makes and models the case organisation has set up significantly impact the form's conversion ability. To test this hypothesis, the experimental group did not have the top ten car makes or models in their respective fields but instead had an alphabetical list of cars. The principles behind this hypothesis were *simplification*, *ease of use* and *short absolute time*. The removal of the top ten cars should prove that the simplification, ease of use and short absolute time they contribute to the form affect the probability of success. Figure 72 displays the changes made to the form.

Figure 72. Experiment 9

7.12.1 Results overall

The control group for the overall analysis consisted of 68 775 participants, and the experimental group consisted of 65 528 participants. The control group had a conversion rate of 19.79%, meaning that they converted 13 608 participants. The experimental group had a conversion rate of 18.11%, resulting in 11 867 participants being converted into leads. An upper and lower limit to these conversion rates was established to ensure a 95% confidence interval, as seen in Table 39. The assignment ratio for the experiment was 51.21:48.79; 51.21% was assigned to the control group, and 48.79% to the experimental group.

Table 39. Experiment 9 - overall

	Control group	**Experimental group**
Assignment Ratio	0.51209	0.48791
Sample Size	68 775	65 528
Number of conversions	13 608	11 867
Lower Limit (95%)	19.4888	17.81523
Conversion (%)	19.78655	18.11009
Upper Limit (95%)	20.0843	18.40495
Probability of success	0.1979	0.1811

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Standard Error (SE)	0.00152	0.0015
P-value	0.00	
SE of the entire test	0.002140207	
Relative Uplift (%)	-8.47	

Table 39 also shows the probability of success for the two groups, which is 0.1979 for the control group and 0.1811 for the experimental group. This translates into the control form having approximately a 19.79% chance of converting any given individual and the experimental form having an 18.11% chance. This table also displays the standard error for the two groups, which is 0.00152 for the control group and 0.0015 for the experimental group. The overall relative uplift for this experiment was -8.47%, and the p-value was 0.00 for this experiment.

7.12.2 Results Step 2

The control group for the step analysis had 68 775 participants, and the experimental control group had 65 528 participants, from an assignment ratio of 51.21:48.79. This ratio means that 51.21% was assigned to the control group, while 48.79% was assigned to the experimental group. The control group had 28 787 participants who had completed the step, which resulted in a conversion rate of 41.86%. The experimental group had 24 753 participants who had completed Step 2, which yielded a conversion rate of 37.78%. Table 40 presents the upper and lower limits for these conversion rates, which were established to ensure a 95% confidence interval.

Table 40. Experiment 9 - Step 2

	Control group	**Experimental group**
Assignment Ratio	0.51209	0.48791
Sample Size	68 775	65 528
Number of conversions	28 787	24 753
Lower Limit (95%)	41.48869	37.40405
Conversion (%)	41.85739	37.77527
Upper Limit (95%)	42.22609	38.14649
Probability of success	0.4186	0.3777
Standard Error (SE)	0.00188	0.00189
P-value	0.00	
SE of the entire test	0.002672845	
Relative Uplift (%)	-9.75	

Table 40 also shows the probability of success for Step 2; the control form has a 0.4186 probability of success, meaning that the control form's Step 2 has a 41.86% chance of leading any given individual into the next step. The experimental form has a 0.3777 probability of success, meaning that this form's Step 2 has a 37.77% chance of leading any given individual into the next step. The table also shows the standard error for the step analysis, with the control group having a standard error of 0.00188 and the experimental group of 0.00189. The relative uplift for this step is -9.75%. Lastly, this table also shows the 0.00 p-value of this analysis.

7.12.3 Discussion

The overall analysis showed a 1.68 difference in the conversion rate and 0.017 in the probability of success, favouring the control group. The p-value of 0.00 is significantly lower than 0.05, indicating that the results obtained from the experiment are statistically significant. Any difference in the results can be attributed to the changes made to the form. Figure 73 shows the expected distribution of the overall analysis for Experiment 9.
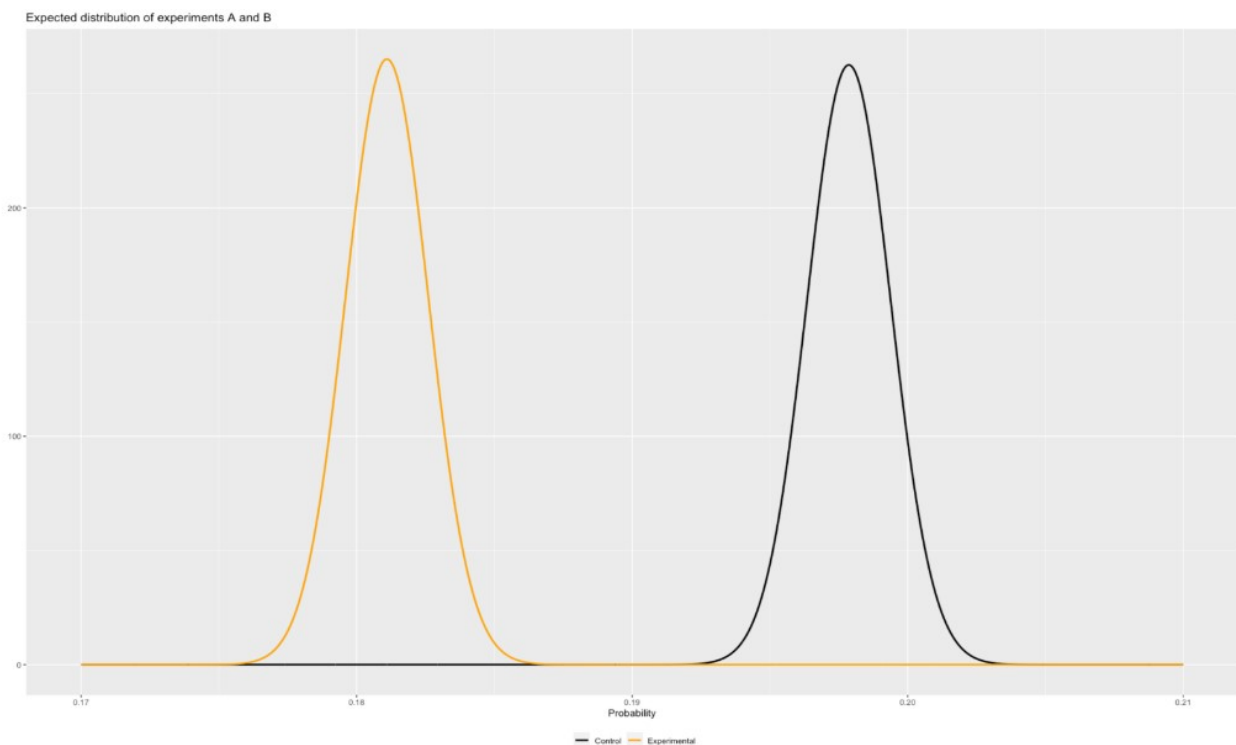

Figure 73. Expected distribution - Experiment 9 (overall)

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Figure 74 depicts the funnels of this experiment's control and experimental groups. The funnels are an effective visual representation of the drop-off at specific steps of the forms. It is also a good way of visually comparing the results of the two forms.

Control

1. Select Category
(69 025)

2. Vehicle
(28 353)
-58,9%

3. About You
(16 739)
-41,0%

4. Your Needs
(13 671)
-18,3%

No top 10 makes and models

1. Select Category
(65 540)

2. Vehicle
(24 241)
-63,0%

3. About You
(14 509)
-40,1%

4. Your Needs
(11 871)
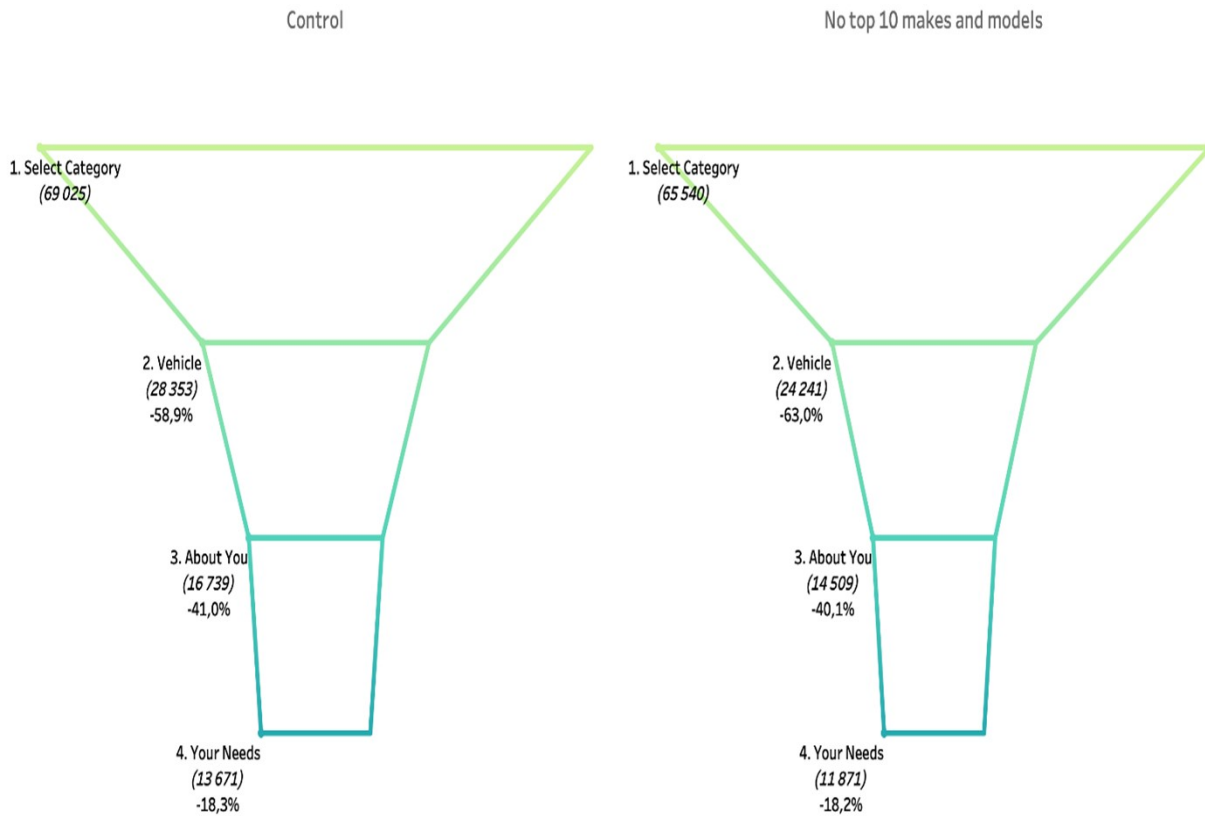-18,2%

Figure 74. Experiment 9 funnels

The step analysis showed a 4.082 difference in the conversion rate and 0.041 in the probability of success, favouring the control group. This analysis also returned a p-value of 0.00, indicating that the results are statistically significant as it is below the minimum value of 0.05. Figure 75 indicates the expected distribution of this analysis.
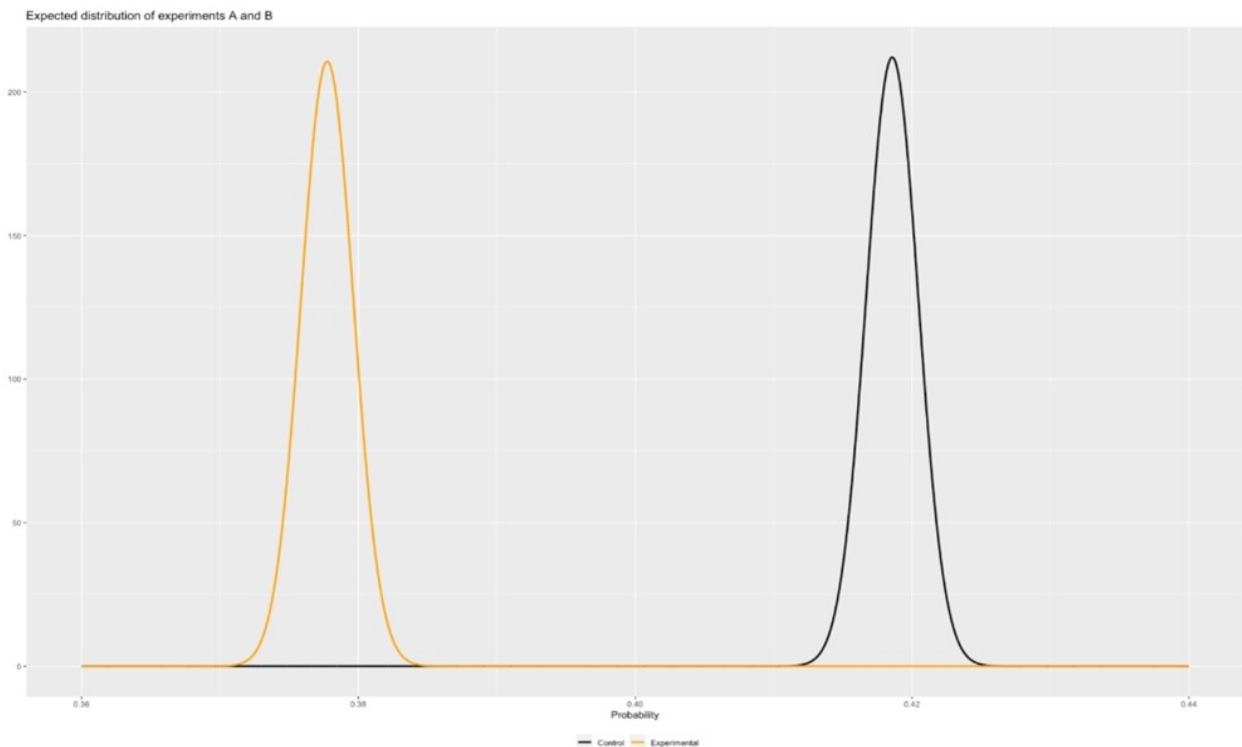
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Figure 75. Expected distribution - Experiment 9 (Step 2)

The overall and step analyses show a significant difference in favour of the control group, leading to the hypothesis's *true* classification. The reason for this classification—despite the difference being in favour of the control group—is that it was hypothesised that the top ten car makes and models significantly affect the form's ability to convert individuals. The control form listed the top ten makes and models first. The experimental group had all cars in alphabetical order instead; the significant difference in favour of the control group proves this hypothesis.

7.13 EXPERIMENT 10

H10 guided this experiment. The original form had a four-step process on the buy lead form. This experiment removed the final step of the form where the user could provide pictures and additional information to the case organisation and added this step to a *WhatsApp* bot. The bot asked questions that could further qualify the lead and requested pictures of the car via *WhatsApp* rather than during the form completion process. The principles that guided this experiment were *simplification*, *ease of use*, *short absolute time* and *timing of information requirements*. These principles were tested by making the initial form as unambiguous as possible, requesting little information during the first interaction with the business and gathering additional information in

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the second interaction, which takes approximately five minutes to complete. This then shortens the absolute time for both interactions and can deliver a higher quality lead to the business.

7.13.1 Results

The control group had a sample size of 151 930 participants, and the experimental group had 78 108 participants. The assignment ratio for this experiment was 66.04% of the population to the control group and 33.95% to the experimental group. This experiment had an intended ratio of 66.04:0.33.95, which was achieved. This was attained via the three servers from which the case organisations operate their buy lead form: Two servers were running the original form, and one server ran the experimental form. The control group had 31 190 conversions, leading to a conversion rate of 20.53%. The control group had 18 956 conversions, resulting in a conversion rate of 24.27%. Upper and lower limits to these conversion rates were established to ensure a 95% confidence interval, as seen in Table 41 below.

Table 41. Experiment 10 results

	Control group	Experimental group
Ratio	0.66046	0.33954
Sample	151930	78108
Converted	31190	18956
Lower Limit (95%)	20.32622	23.96861
Conversion (%)	20.52933	24.26927
Upper Limit (95%)	20.73243	24.56993
Probability of success	0.2053	0.2427
Standard Error	0.00104	0.00153
P value	0	
Se of test	0.001817836	
Relative uplift (%)	18.22	

Table 41 also shows the probability of success for Experiment 10. The control group has a 0.2053 probability of success, which translates to a 20.53% chance of converting any given person into a lead. The experimental group had a probability of success of 0.2427, which translates to the experimental form having a 24.27% chance of converting any given individual into a lead. The

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table also shows the standard error, which is 0.00104 for the control group and 0.00153 for the experimental group. The relative uplift for this experiment (18.22%), and the p-value (0.00), can also be seen in Table 41.

7.13.2 Discussion

The analysis of this experiment showed a 3.74 difference in the conversion rate and 0.037 in the probability of success, favouring the experimental group. The p-value of 0.0 falls far below the maximum p-value of 0.05, constituting a statistically significant result. The results obtained from this experiment can be attributed to the changes made to the experimental form. Figure 76 below indicates the expected distribution for this experiment.
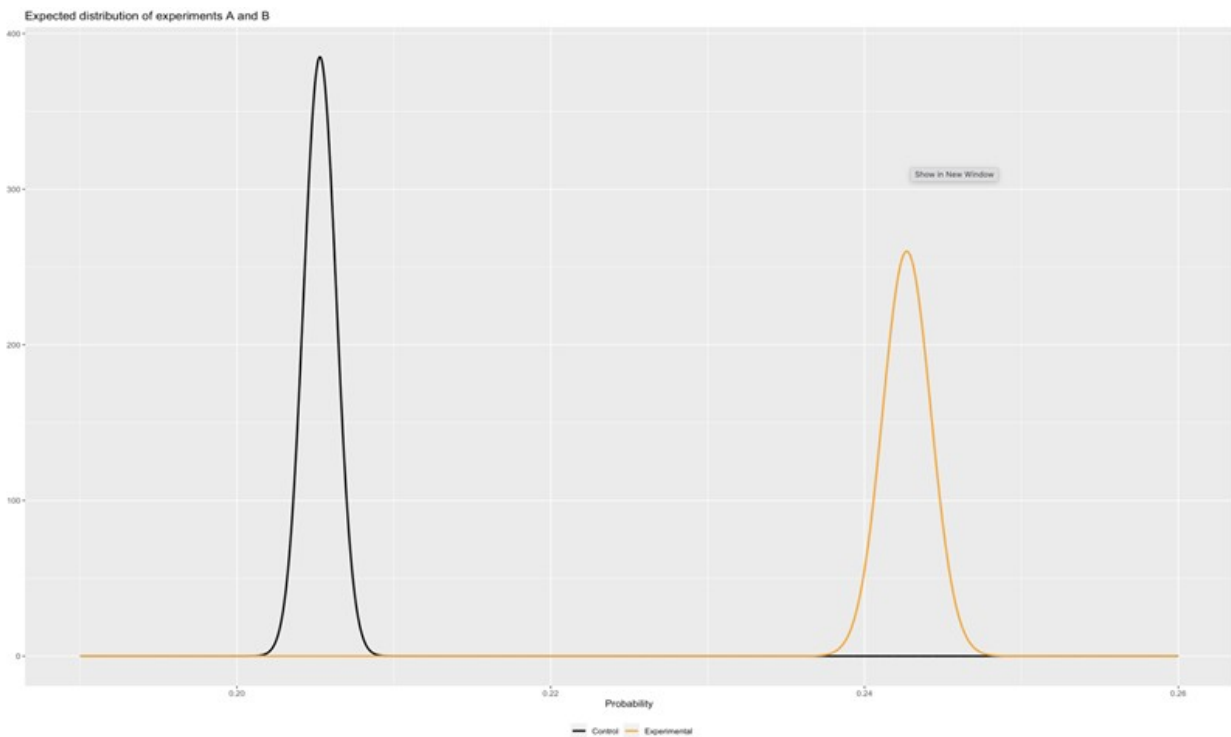
Figure 76. Expected distribution - Experiment 10

The great distance between the two graphs in this figure indicates the statistical significance of this experiment. The statistically significant results in favour of the experimental group led to the *true* classification of the hypothesis driving this experiment. Including a *WhatsApp* bot rather than a fourth step significantly increases the chances of conversion. Figure 77 depicts the funnel for this experiment.

Figure 77. Experiment 10 funnels

Figure 77 also shows the total drop-offs for both groups, which shows that the experimental group (Remove Step 4) has a 3.7% less drop-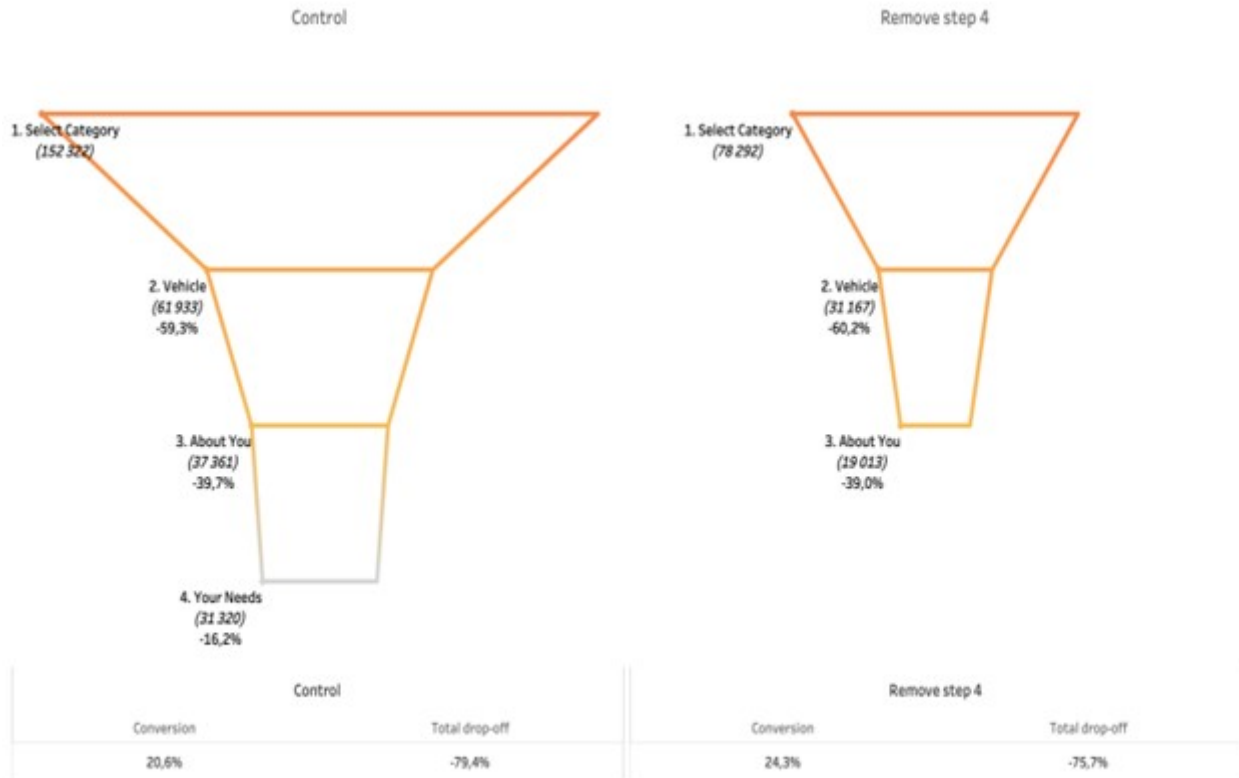off. The funnels also demonstrate that the drop-off percentages for the other steps are very similar. This further substantiates that the difference in the results between the two groups is due to the changes that were made.

7.14 SUMMARY OF EXPERIMENTS

The experiments were all undertaken as a way of demonstrating the created framework. The demonstration was only applied to a section of the framework since demonstrating the entire framework falls outside this study's demarcation. Consequently, this could be an area for future research where other framework areas should be applied within differing business domains to achieve more generalisable results on the framework's effectiveness.

Table 42 lists the hypotheses and their resultant classification. The classification of 'true' was assigned if the A/B test yielded a positive statistically significant difference; if a positive but no significant difference was seen, a classification of 'neutral' was assigned, and if the difference was

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negative, 'false' classification was assigned. Six of the twelve hypotheses were classified as true, five as false, and the remaining one did not show statistically significant results and was classified as neutral.

Table 42. Hypotheses classification

#	Hypothesis	Classification
H1	Changing the button text from 'Get Valuation' to 'Get Price'.	Neutral
H2	Removing the optional text field for car asking price.	True
H3	Placing the customer information before the vehicle information.	False
$H4_1$	Adding a check mark as each section is completed.	False
$H4_2$	Adding a progress bar at the top of the form.	False
$H5_1$	Shortening the form to three steps rather than four.	False
$H5_2$	Creating one longer form rather than the four individual steps.	False
H6	Ensure that all labels coincide.	True
H7	Remove additional number field.	True
H8	Combine label consistency, check marks and remove additional number.	True
H9	List the top ten cars sold first in the car 'Make' dropdown.	True
H10	The use of a *WhatsApp* bot to replace the last step of the form.	True

The possibilities to assess this area of the framework are limitless and could be done continuously over a lifetime fuelled by a continuous stream of hypotheses. However, the scope of this study only allows for 12 hypotheses to be included in the demonstration of the framework.

This area was selected for demonstrating the framework because the form usually has a drop-off of approximately 80.2%, meaning that 80.2% of the individuals who start the form do not complete it and do not offer any value to the business. This significant drop-off shows a diminished return on the investment made by marketing attempting to drive up the traffic on the website. This area also shows the most significant room for improvement. These experiments proved that applying UX principles could decrease the drop-off by 2.1%, which is substantial when applied to the magnitude of individuals who start the form monthly.

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The case organisation buys approximately 19% of the converted leads' cars, meaning that if the number of converted leads can be increased from 13 608 individuals to 14 131, the number of purchased cars can increase from 2 586 to 2 685. This is a difference of approximately 99 cars each month. The results of Experiment 8 show a p-value of 0.00 and indicate the statistical significance and that these changes can significantly increase the value this form could deliver to the business. This means that the money spent on marketing to drive more customers to their website will result in a higher ROI as more cars will be bought, and the supply chain will have increased. The increase in cars bought allows the case organisation to sell more cars, which adds to their business in exchange value.

These experiments proved that applying UX to the buy lead form can significantly affect its conversion ability and increase the number of leads moving on to the nurturing stage of the lead generation process. This ultimately increases the case organisation's number of cars bought, which increases their inventory to sell and increase exchange value, which forms a part of business value (Priem, 2007).

7.15 CONCLUSION

This chapter presented the fourth phase of the DSR: demonstration. The phase included ten experiments on the case organisation's buy lead form. The chapter also discussed the protocol for A/B testing in general and as applied to this study. This is followed by the experimental assumptions, where the assumptions for each experiment were presented. Each experiment was discussed in depth, and its finding was presented. Lastly, an overall experimental summary was provided.

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8. EVALUATION AND FINAL ARTEFACT

8.1 INTRODUCTION

This chapter presents and comprehensively discusses the final version of the framework created by the current research and refined by the PD iteration. Each concept of the final framework will be discussed in-depth by triangulating the findings from the document analysis, academic sources surrounding each topic, and the participatory design session's thematic analysis findings. This chapter starts with a discussion of the participatory design session that evaluated the framework in Section 8.2 and the framework in Section 8.3, with each concept discussed in order of appearance (Sections 8.4–8.14). Section 8.15 provides the framework's methodology, after which the chapter is concluded. Figure 78 below outlines an overview of the thesis structure with the current chapter, highlighted to position it in the research.
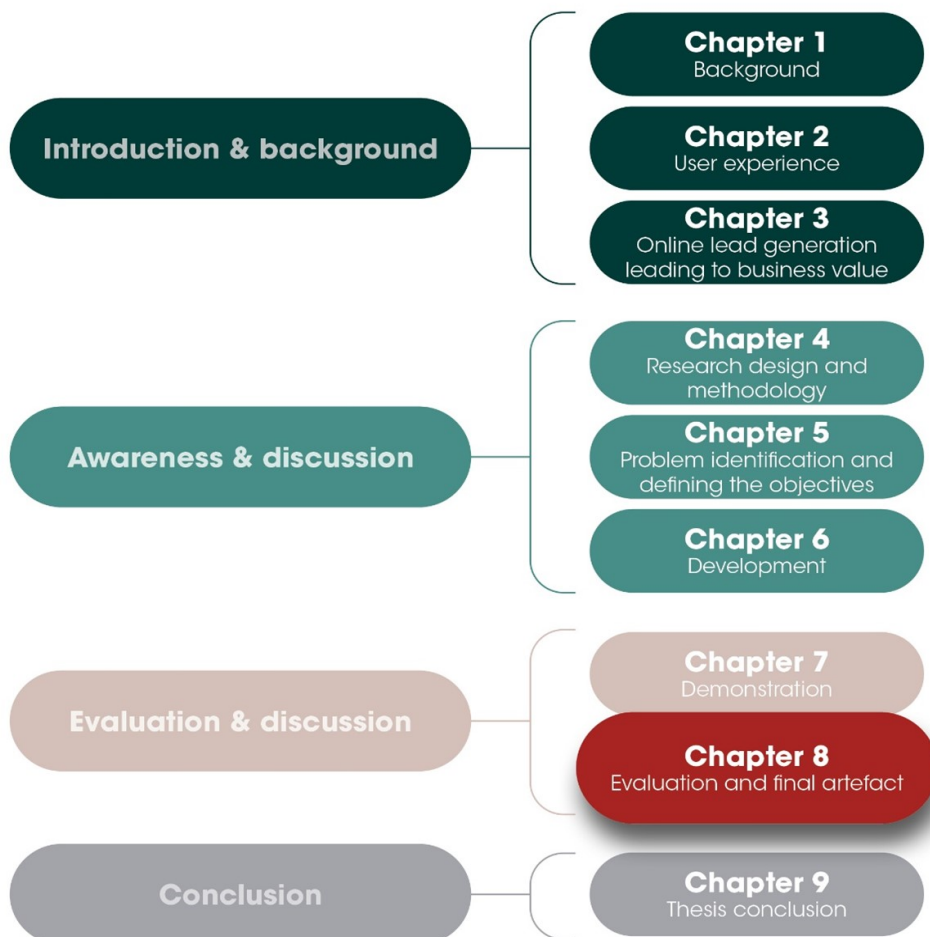

Figure 78. Chapter 8 positioning

8.2 PARTICIPATORY DESIGN ITERATION

This section offers a discussion with six professionals as the iteration of the participatory design session (Chapter 6) to evaluate the second version of the framework with the same individuals involved in its creation. The researcher took meticulous notes on the suggestions and challenges associated with the framework for communicating the session. This session constitutes the first sub-phase of the evaluation phase, namely evaluation, depicted in Figure 79 below.
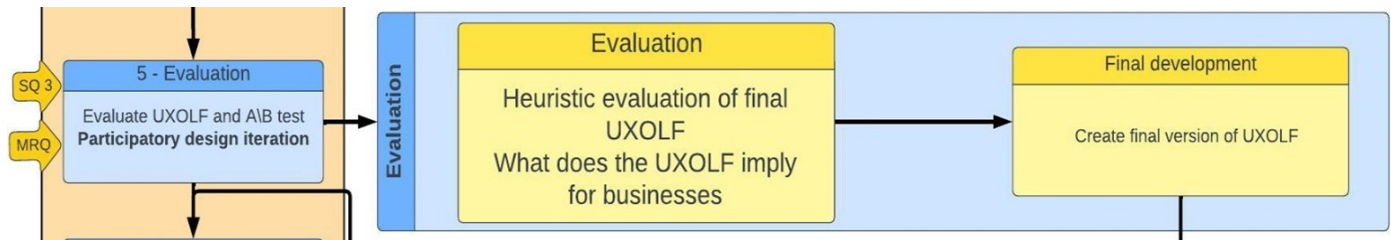

Figure 79. Evaluation sub-phase

The session was conducted virtually over *Zoom*, which has automatic transcription capabilities and allows for full exploitation of the information that arose and is helpful if anything was missed during the session. The researcher started the session with a short recap of the previous session held with the individuals and positioned the framework before presenting the second version of the framework. This part of the session took around 30 minutes as the researcher presented each concept and discussed the importance of each in both UX and online lead generation. This led to the second part of the session, where the researcher posed two questions and asked for suggestions regarding the framework. Since the participants only actively participated in the second part of the session, it is the sole contributor to this discussion section. The researcher posed the following questions:

"Can you see any possible challenges with the implementation of this framework?" and "Do you think the framework is comprehensive enough, or do you think it is missing some key concepts?".

Participants 3, 4 and 6 had suggestions for minor changes to the framework or a discussion of some concepts. The suggested label changes were the lead generation concept and sub-concepts. This was partly due to confusion on the same labels for the process and specific phase and the label not sufficiently relaying the context of the concept. Therefore, the 'lead generation process' label changed to 'online lead generation', and the sub-concepts changed from 'lead generation' to

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'lead conversion' and 'marketing' to 'lead generation marketing'. Additionally, Participants 1 and 3 agreed that online lead generation is where all the preceding concepts converge. After this process, every concept becomes a benefit that a business can gain from implementing the framework.

Participant 3 stressed that some design principles might not be as crucial in all business domains where others might be more important. Participant 4 agreed but added that the principles are relatively general, and the only difference would be the weight of each within different business domains. Participant 1 also stated that more than these nine principles exist and that the user experience design concept can be modified to reflect the most applicable principles for the business.

Participant 4 suggested that the framework could be used as a metamodel that "guides your thinking", which would allow for the acquisition of buy-in from key business executives and stakeholders. It can also be seen as a 'blueprint' to ensure that all facets within a business concur and progress coextensively. The participant stated that implementing the framework would be challenging but that it could be used as a meta-model or monitoring framework. A monitoring framework aids in the identification of weaknesses or shortfalls affecting the lead generation process to be rectified for improved business value. Additionally, all participants agreed that the biggest challenge would be identifying and employing the correct people to drive the execution of the framework.

The discussion session between the six participants was 20 minutes long and yielded two future research suggestions. First, to use this framework and populate it with evaluation methods to use it as a monitoring framework and second, to use this framework and construct additional frameworks for each concept to outline the methodologies of each. Lastly, the researcher's notes were used to reflect the suggested changes in the framework and to add more information to Chapter 9, where the research questions are answered and future research is suggested. The rest of this chapter outlines and discusses the final version of the framework in detail, deconstructed into the concept of the framework.

8.3 FINAL UXOLF

The creation of this final version of the UXOLF forms part of a sub-phase of the evaluation phase, namely Final development, as depicted in Figure 80 below.
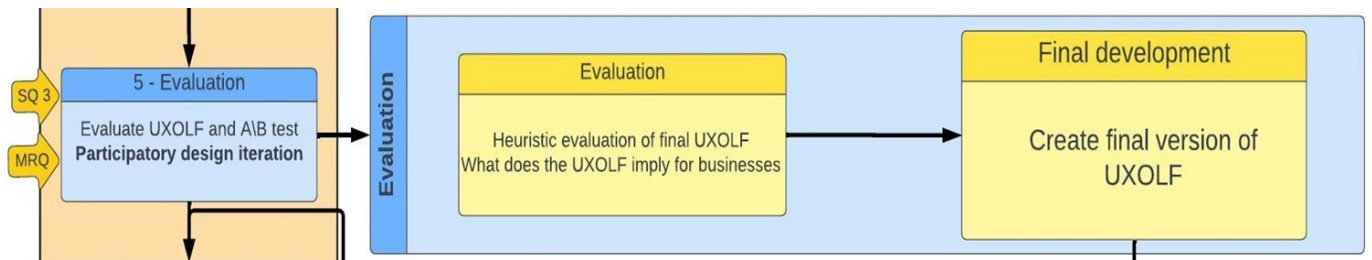
Figure 80. Final development sub-phase

Figure 81 below portrays the final framework created as the artefact of this research. Label changes were made to the second version to create this final version. The previously labelled 'Lead generation' is now 'Online lead generation', 'Marketing' is now 'Lead Generation Marketing', and the 'Lead generation' small block is now 'Lead Conversion'. The lead conversion block is also coloured green to indicate that the preceding steps set a business up for this concept and that the following concepts can be achieved if effectively executed.

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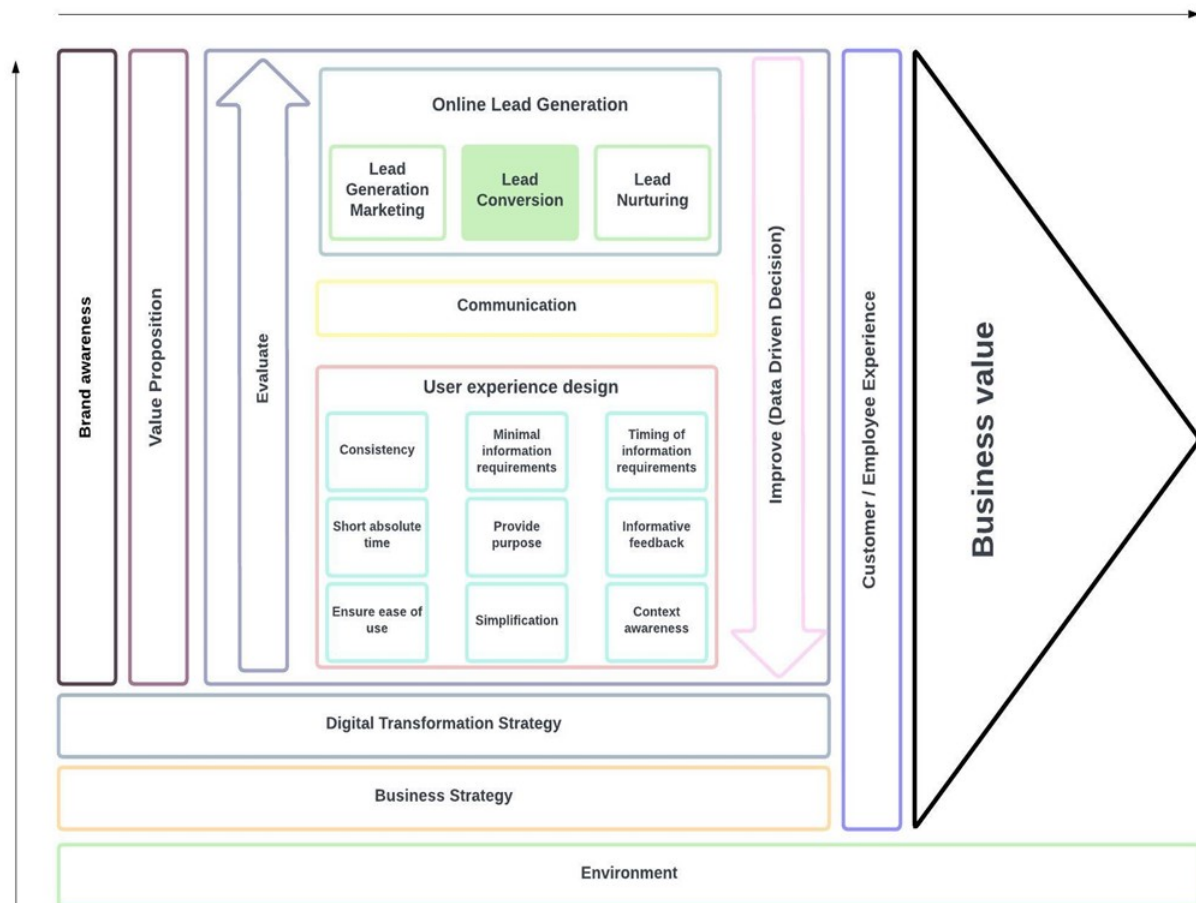
Figure 81. UXOLF Final version

The framework flows from the bottom up and from left to right, meaning the start of the framework is the environment, followed by business strategy, digital transformation, and then brand awareness, which gives way to value proposition, then user experience design, divided into nine design principles. Communication follows this, then lead generation, broken down into marketing, lead conversion and lead nurturing; this leads to customer/employee experience, which can finally deliver business value. The following sections provide in-depth discussions of each concept in order of appearance in the framework.

8.4 ENVIRONMENT

"Business value is created through examining the business environment and market spaces to ascertain opportunities and challenges" (Rainey, 2015: 195).

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The environment is the first overarching concept in this framework. The framework argues that the environment within which the business operates largely dictates the business's capabilities. The environment in this framework encapsulates the internal and external business environment, business domain, country or region of operation, industry norms, consumption environment, and the business's direct and indirect competitors. The consumption environment includes but is not limited to the usage context of touchpoints and cultural and social interaction environments. This concept should be considered in the subsequent concepts of this framework because of its impact on them. This section comprehensively explains the importance of this concept in the framework and indicates why it is positioned as an overarching concept.

This concept is overarching because of the unstable and turbulent environment surrounding all facets of a business that requires improvisational capabilities to manage (Vial, 2019; Pavlou & Sawy, 2010). The highly turbulent environment businesses find themselves in, in the 21st century is partly due to the rapid development of technology, which has led to a digital revolution that is changing how the world works, especially the consumption environment (Berman, 2012; Chanias, 2017; Song et al., 2021). This change in the way the world operates, coupled with the increased intensity of the competitor environment, necessitates the incorporation of current and emerging technologies—thereby undergoing digital transformation (Rodriguez & Peterson, 2012)—as well as the utilisation of critical resources to remain relevant (Woodard et al., 2013).

Furthermore, Frow and Payne (2007) posit that *an* experience needs to be considered within the business's environment. Battarbee and Koskinen (2005) and Forlizzi and Battarbee (2004) state that *an* experience is a temporary construct that results from the interaction between people and their immediate environment—thereby proving the importance of this concept for the study at hand. This gives rise to the consumption environment or the 'servicescape', where users interact with touchpoints (Lehtinen, 2020: 45; Song et al., 2021). Kuniavsky, (2010) and Shneiderman et al. (2018) substantiate this by stating that creating novel information and communication technologies (ICT) requires considering the social and cultural environment in which the touchpoint will be used as well as the people found within these environments.

Additionally, all six participants of the participatory design session during which the framework was created agreed that environment is the most fundamental concept for this framework. They also agreed that the environment affects the business, specifically their business strategy and, ultimately, their digital transformation strategy, which gives way to the residual framework. Thus, after full submersion and familiarisation with the environment, the business can move on to the next concept, business strategy, which will be discussed in Section 8.5.

8.5 BUSINESS STRATEGY

The definition of business strategy, as accepted by this study, is: "the medium that determines the long-term direction and field of the company and determines how the company will obtain the resources needed to meet the needs of the market and stakeholders", which dictates the business' longevity, continuity, competitiveness and improvement (Abdulwase et al., 2021: 136). Koski (2016) posits that customers should be essential to any business strategy to ensure a positive customer experience that can deliver value in many ways. Additionally, as quoted by Hartson and Pyla (2019: 7), the VP of IBM states that the line between a business strategy and user experience design has become increasingly blurred.

The influence of rising digital technologies is affecting many, if not all, businesses in various industries and is profoundly changing key business aspects like processes, capabilities, relationships, strategies and, in some cases, entire industries (Bharadwaj et al., 2013). This rise in changes occurring through digital technologies necessitates the transformation of value-creating pathways, which could be achieved by utilising the dynamic capabilities that these digital technologies bring about and can triumph over turbulent environments (Bharadwaj et al., 2013). Additionally, a business strategy requires submersion in the environment within and surrounding the business to identify business capabilities and possible challenges that might arise. This is where management's strategic thinking is required to mitigate these challenges (Abdulwase et al., 2021).

Using digital technologies can help businesses navigate the turbulent environments in which they operate (Vial, 2019; Pavlou & Sawy, 2010). The rise of digital technologies brought about a digital revolution demanding digital transformation from every business to remain competitive in ever-changing environments (Chanias, 2017). This lays the basis for the next concept in the framework, *digital transformation strategy*, discussed in Section 8.6.

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8.6 DIGITAL TRANSFORMATION STRATEGY

The rise of digital technology demands the fusion of traditional business strategies with IT strategies to bring about a digital transformation strategy (Vial, 2019). This concept is essential as only 30% of digital transformation strategies (DTS) are effectively implemented, and digitally transformed businesses are 26% more likely to succeed (Bucy et al., 2016). The definition of a DTS accepted by this research is an adapted business strategy, incorporating IT strategies and their associated capabilities to establish new value-creating pathways, which inevitably results in a digital business strategy (Bharadwaj et al., 2013).

The purpose of the DTS should be twofold: first, to facilitate the transformation process and to aid businesses in navigating dynamic environments (Chanias, 2017). It aids businesses in the navigation of dynamic environments by providing responses to competitor actions (Pavlou & Sawy, 2010; Bharadwaj et al., 2013), developing novel tools and methods (Graesch et al., 2021) and drives strategic uniqueness delivering a sustainable competitive advantage (Bharadwaj et al., 2013). Second, the DTS should address internal business transformation like operational changes or external actions like responding to competitors and be rooted in the environment within and surrounding the business (Bharadwaj et al., 2013).

Additionally, the digital revolution has left the consumer environment more dynamic than ever, where customers are empowered and always looking for pleasant experiences (Dougherty & Murthy, 2009). This further indicates the need to respond rapidly in a user-centred fashion to the changes in the consumer environment. Due to the meteoric pace at which this happens, the absence of a DTS will leave businesses without the capabilities to adapt (Woodard et al., 2013). Digital transformation should be undertaken continuously to utilise new and emerging digital technologies to remain competitive (Herbert, 2017). Formulating a business strategy and a digital business strategy deeply rooted in the environment will equip a business with the capabilities to execute the remainder of the framework. The first is brand awareness, which is discussed in Section 8.7.

8.7 BRAND AWARENESS

Brand awareness represents a concept of a business creating a brand persona and consistently communicating that to the public to establish a trusted brand (Swieczak & Kukowski, 2016).

Consistent communication of the brand persona increases brand guarantee and customer pleasure (Berman, 2012). Further, the need for a trusted brand is to establish credibility (Lehtinen, 2020). Since a good portion of society are brand loyalists, creating a consistent brand persona will attract loyal customers to the business (Reichheld & Schefter, 2000; Tjiptojuwono & Oetomo, 2022).

Brand awareness elicits emotional connections with the intended customer market, which affects its attitude towards the business as a whole and, consequently, behaviour or intent to act on the business offerings (Rodriguez & Peterson, 2012; Swieczak & Kukowski, 2016). These changes imposed on the user's attitude are usually achieved through the *value proposition* that the brand promises and are next discussed in Section 8.8 (Tjiptojuwono & Oetomo, 2022).

8.8 VALUE PROPOSITION

The value proposition is a business or product's promise to meet customer needs or wants (Tjiptojuwono & Oetomo, 2022). It is, therefore, vitally important to ensure that the value proposition is relayed in a voice that places the customer's solution at the forefront rather than the business creating the solution (Lehtinen, 2020). The value proposition should be clearly communicated and sufficiently unique to differentiate the business from competitors providing similar solutions (Wiley & Getto, 2015). This concept will coax prospective customers into the process of becoming paying customers, provided the value proposition sounds appealing (Tjiptojuwono & Oetomo, 2022).

Considering the highly dynamic nature of business environments, especially competitor environments, businesses must constantly reevaluate and improve their current value propositions to ensure they remain competitively relevant to the market (Safie et al., 2019). The value proposition can attract possible customers to the business' website, which is where the online lead generation process starts, as discussed in Section 8.11. However, some other core concepts should be considered before the lead generation process can commence, i.e., user experience design and communication, which are discussed in Sections 8.9 and 8.10, respectively.

8.9 USER EXPERIENCE DESIGN PRINCIPLES

The concept of user experience is extensively discussed in the second chapter of this study, and a complete description of this concept will not be repeated here. However, the study will provide a

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basic understanding of UX, along with a comprehensive discussion on the principles identified from the participatory design session. UX stemmed from the field of HCI, with the former being the practical application and the latter more academic study of the concepts (Hartson & Pyla, 2019). The definition of UX accepted for this study is a user's all-encompassing perceptions as a result of interacting with a digital interface or system, which includes their mood, emotional response, preferences and beliefs, to name a few (ISO, 2010). Although UX has both hedonic and pragmatic aspects (Bargas-Avila & Hornbæk, 2011; Kashfi et al., 2019), this framework argues that both aspects are essential to maximising UX.

Since UX is the user's perception, it remains highly subjective (Hassenzahl, 2008). This highly subjective nature of UX, combined with a plethora of differing definitions of what constitutes it, makes the design of a positive UX impossible. However, designing *for* an improved UX using specific tools, such as principles is possible (Sharp et al., 2019). The principles forming part of this framework arose from a participatory design session with design principles. These are the nine most essential principles the participants in the PD (Development phase, see Chapter 6) regard as having improved UX: *consistency, minimal information requirements, timing of information requirements, short absolute time, provide purpose and context, informative feedback, ensure ease of use, simplification* and *context awareness*. Sections 8.9.1– 8.9.9 discuss these principles. They are not the only design principles; each principle's weight can be adjusted based on the business environment and needs.

8.9.1   CONSISTENCY

This principle was established after five of the six participants stressed it during the PD session, with the last participant agreeing with it during the discussions. The total number of codes assigned to this principle in the PD analysis was 25 quotes, and 20 codes during the DA analysis. This principle speaks to consistency across a business/brand, between products, and between screens or interfaces of a single product (Frow & Payne, 2007; Shneiderman, 1986; Wang et al., 2020; Mosley, 2007). Consistency is also a principle found in other UX resources, one of which is the eight golden rules of interface design by Shneiderman et al. (2018). Consistency is essential for UX because it can build product and brand credibility (Lehtinen, 2020) as well as increase UX by furthering the value proposition (Berman, 2012). The consistency between and within interfaces

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is crucial as it ensures familiarity, learnability and retainability among users (Shneiderman et al., 2018; Wang et al., 2020). If a user learns how the system or interface works, they spend less time having to decipher how it works at the start of every interaction (Forlizzi & Battarbee, 2004). The consistency principle should be applied throughout the business but should specifically be applied to the language, colour, tone and order of screens in an interface (Kuniavsky, 2010; Berman, 2012; Shneiderman et al., 2018).

If users find inconsistencies, they will experience cognitive discomfort, which hinders their experience and will cause them to place less trust in the business (Wang et al., 2020). System complexity greatly impedes the process of attaining consistency; therefore, the principle of simplification (Section 8.9.8) significantly affects this principle (Mosley, 2007). This principle was tested in three A/B tests (discussed in Chapter 7) during Experiments 3, 6 and 8. Two of the three experiments showed positive statistically significant results (Experiments 6 and 8). They substantiated that consistency can significantly impact the form's conversion rate by improving the UX. Experiment 3 yielded negative statistically significant results, which does not disprove this principle but proves the *timing of information requirements* principle.

8.9.2 MINIMAL INFORMATION REQUIREMENTS

This principle states that as little as possible information should be required of users to reduce their cognitive load and provide more interaction between the user and the business, during which trust can be built to obtain the additional required information. This principle arose substantially from deductive coding done during the thematic analysis of the PD. At least one of each participant's sticky notes of principles was assigned to this principle. Twenty-three quotes were assigned to the theme corresponding to this principle during the PD analysis. The same theme did not arise during the DA analysis, yet the themes that were the most aligned with this principle were 'user control' and 'reduce short-term memory load' (12 quotes), both of which form part of the eight golden rules by Shneiderman et al. (2018).

This principle also states that any information should only be obtained from the user once and stored to allow for easy retrieval once the user returns. This return user's experience would be positively impacted if they do not have to re-enter previously provided information (Shneiderman

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et al., 2018). This aspect was further stressed by a sticky note and noted during the discussion in the PD session. Users easily feel that a lack of attention was paid to a system or interface if redundant information is required, leaving them frustrated (Shneiderman et al., 2018; Bondarenko et al., 2019). The crux remains that the entire lead generation process is gathering as much information about prospective customers as possible to enable lead nurturing and fostering the relationship between the user and the business (Rodriguez & Peterson, 2012; Swieczak & Kukowski, 2016; Bondarenko et al., 2019). The information gathered could indicate users' needs and their point in the buying process, allowing the business to make more educated interactions with such users going forward. Additionally, the information obtained from all users allows for a better understanding of the user audience (Swieczak & Kukowski, 2016).

Therefore, it is essential to identify the user information vital for the business to obtain and only require the most important information during the first interaction with the user. This principle is closely associated with the *timing of information requirements* principle and should be considered when designing a system or interface. This principle was also tested in three A/B tests on the case organisation's lead generation webpage. Experiments 2, 7 and 8 tested this principle. These experiments yielded positive statistically significant results, substantiating this principle's importance in improving UX.

8.9.3   TIMING OF INFORMATION REQUIREMENTS

This principle argues that the point during the journey at which information is requested from users significantly affects their willingness to provide the information and their user experience. Three codes arose that explicitly mentioned this principle, with an additional four quotes assigned to it through deductive interpretation. The reasoning behind this principle is that users are sceptical about providing information to strangers, and a relationship needs to be established before they will trust the business (Rodriguez & Peterson, 2012). Trust is one of the most important considerations for this principle, as it plays an indispensable role in the acceptance of online interactions with a business (Vance et al., 2008). If highly personal and protected information is requested from users during the first interaction with the business (before a trusting relationship has been established), it is improbable that the user will provide the information, which can cause them to cease engaging with the business (Lehtinen, 2020). It is essential to establish what information is critical to advance the lead and determine the optimal part of the journey in which

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to obtain it to ensure that users provide the information and feel safe when providing their personal information to the business. This aspect of the principle could also decrease the absolute time of the process the second time around and ties in with the short absolute time principle discussed in Section 8.9.4.

Additionally, if users continually trust a business through all avenues of interaction, they are more likely to become loyal customers of the business—which would induce continual engagement with the business (Rodriguez & Peterson, 2012). Since the retainment of customers are five times less expensive than the attraction of customers (Zhou et al., 2010), creating a loyal customer base financially enables businesses to create new value-creating pathways. One A/B test on the case organisation's lead generation website tested this principle. Experiment 3, which aligns with this principle, showed negative statistically significant results, which led to the false classification of the hypothesis driving the experiment. The false classification does not disprove this principle but rather substantiates it since the exchange of Steps 2 and 3 on the form requested personal information before vehicle information. It further substantiates the importance of when information is requested from users.

8.9.4   SHORT ABSOLUTE TIME

This principle argues that the absolute time for becoming a customer or using a product should be as short as possible to reduce users' cognitive load and ensure convenience. Although some parts of the process require a longer relative time, the overall time to completion should be as effective as possible. This principle had a total of 18 inductive quotes assigned to it from the PD session. Moreover, the principle aligns with useability's efficiency characteristic (Hartson & Pyla, 2019). The importance of this principle originates from the 'time is money' mentality which makes people unwilling to wait for longer than expected to complete an action (Shneiderman et al., 2018) it has also been shown that time plays a critical role in competitiveness (Bharadwaj et al., 2013). Therefore, the absolute time to complete a process significantly affects the user's experience (Weinman, 2015). Additionally, this principle becomes tremendously crucial in South Africa as connectivity challenges might slow down interfaces, and production teams should comprehensively consider this principle (Bharadwaj et al., 2013).

The speed of the interaction is further elated by the fact that the Internet of Things (IoT) has brought plenty of opportunities for users to do extensive research before attempting to communicate with a business. This makes them experts in their own right and decreases their tolerance for slow and frustrating interfaces (Koski, 2016). The importance of a speedy process depends on the type of process; for instance, within the trade sector, speed can highly impact the success of a trade (Weinman, 2015). In a B2B domain, the speed of the process might be significantly slower as it requires groups of people to make decisions together, and the purchase generally requires substantial financial commitment (Koski, 2016). Specifically, with customer service in lead generation, the speed of reply plays a tremendous role in a business's ability to convert leads, with the fastest response time having the highest probability of success (Oldroyd et al., 2011). These scenarios also stress that the process and business domains dictate the speed required to satisfy users (Shneiderman et al., 2018).

Speedy interaction could be facilitated by the automation of as much of the process as possible (Zumstein et al., 2021), which was also a theme that arose during the PD session. Additional ways to decrease the time taken are to ensure that a flow state is achieved, which not only decreases the time but can also affect a user's perception of time passing (Zhou et al., 2010). Another effective way to decrease interaction time is by simplifying a process as much as possible (Wang et al., 2020)—another framework principle discussed in Section 8.9.8. Lastly, this principle was tested with four A/B tests on the case organisation's website. Experiments 2, 5-1, 7 and 9 tested this principle, of which Experiments 2, 7 and 9 yielded positive statistically significant results; Experiment 5-1 yielded negative statistically significant results. The former proves that a shorter time has a higher probability of converting users into leads, with the latter experiment's results being attributed to oversimplification rather than the reduction of time required to complete the form.

8.9.5   PROVIDE PURPOSE

This principle states that the purpose and context for requiring user information should be explicitly stated or evident to users. This not only allows the business to ask for more personal information at the start of the user journey but also sets the user at ease and builds credibility and therefore, fosters a trusting relationship. The theme that brought about this principle had ten quotes

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assigned to it, and four of the six participants from the PD session explicitly indicated that purpose should be provided for users. If the information the business requires to qualify the lead does not seem related to the user, they might get frustrated and drop off, never to return if they feel like their personal information is at risk (Lehtinen, 2020). An example of such a scenario would be if a person would like a quote on a service and the business requires location information from the user as part of this process—the user might think it is entirely unrelated. However, the reason for the location details could be to construct a more comprehensive quote based on the travel required. At the point where this information is requested, its purpose should be explicit.

Making the purpose explicit can also be achieved by ensuring that headings and labels are consistently named to ensure that the user can navigate to and from specified points in the process (Lehtinen, 2020). The purpose provided to the user should also be concisely communicated with a friendly tone that speaks to the business' credibility (Gupta & Nimkar, 2020). Credibility is vital for this principle as users are reluctant to provide information, and if they feel unsafe, they will not provide their personal information (Vance et al., 2008; Hartson & Pyla, 2019). Lastly, this principle was tested with two A/B tests executed on the case organisation's website. Both experiments (6 and 8) yielded positive statistically significant results, proving that providing a purpose to users when uncomfortable or sensitive personal information must be obtained before a suitable time can increase conversion probability.

8.9.6 INFORMATIVE FEEDBACK

This principle states that it is important to provide users with feedback throughout the process— this includes feedback when an error has occurred and feedback regarding the status of a lengthier process. The theme that led to the formation of this principle had a total of 15 quotes assigned to it. Additionally, this principle aligns with one of the eight golden rules of interface design by Shneiderman et al. (2018). The theme that aligns with this principle from the DA had 13 quotes assigned to it. This principle is fundamental if an error has occurred and a user needs to rectify the problem (Shneiderman et al., 2018). It is vital to ensure that the feedback given to users in the case of an error should be purely informative and not make the user feel bad about themselves or pressure them (Peters, 2022). This type of feedback is also most effective when given as the error

occurs (Peters, 2022). Feedback is also helpful as a guide for novice users if done in a friendly and noncontrolling tone (Peters, 2022).

Feedback should be given so as not to break the flow of the process and should always be friendly and user-centred to ensure that it is congruent with the experience the rest of the interface provides (Wang et al., 2020). The magnitude of the feedback also depends on the situation in which it would be given (Shneiderman et al., 2018). For example, feedback on field acceptance could be as minor as changing the field outline to green. When a significant action is to take place, like deleting an entry, the feedback can take the form of a large pop-up box indicating the irreversible action about to be undertaken. Three A/B tests tested this principle on the case organisation's website. Experiments 4-1, 4-2 and 8 tested this principle. The first two experiments showed no statistically significant results and were attributed to how informative feedback was given to users. Experiment 8, however, showed positive results. The results from all of these experiments substantiated the importance of this principle. It shows that how feedback is given is essential and that providing feedback in a way is necessary.

8.9.7   ENSURE EASE OF USE

This principle aligns with useability, i.e., speaking to the ease of use of a system or interface. It includes the navigational structure, accessibility, level of familiarity and intuitiveness of the interface. The PD analysis theme that gave rise to this principle had 15 quotes assigned to it, with all six participants mentioning a principle that links to this one. During the DA, a total of 36 quotes were assigned to the theme of useability. This principle is called ease-of-use rather than useability due to the interchangeable use of useability and UX (Sauer et al., 2020).

This principle specifically speaks to the effectiveness characteristic of useability, with the rest of the characteristics (efficiency and context of use) also having principles in this framework (Hassenzahl et al., 2021; Minge & Thüring, 2018) Sections 8.9.4 and 8.9.9, respectively. The ease of use of an interface is very important as its lack can negatively impact the user's emotional response and, consequently, their experience with the interface (Lehtinen, 2020; Kashfi et al., 2019; Hassenzahl et al., 2021). Ease of use is especially important to novice users as they are unfamiliar with the interface, and difficulty navigating the process will lead to frustration and possibly even drop-offs (Lehtinen, 2020; Wang et al., 2020; Forlizzi & Battarbee, 2004). The lack

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of tolerance for frustrating interfaces coupled with a variety of competitors available makes the concentration of ease of use tremendously important to a business (Shneiderman et al., 2018).

The interface's useability also affects the interaction's speed and enables users to reach their end goal with the interface (Hassenzahl et al., 2021). One way to improve useability is by giving the users full autonomy and control over the specific parts of the interface (Peters, 2022). Additionally, simplifying the process can significantly benefit all users but more so novice users (Peters, 2022), a principle discussed in Section 8.9.8.

Lastly, this principle was tested with three A/B tests on the case organisation's website. Experiments 1, 5-2 and 9 were guided by this principle, of which Experiment 1 yielded positive results in favour of the experimental group although the difference was not large enough to be statistically significant. Experiment 5-2 showed negative statistically significant results that were attributed to oversimplification. Experiment nine showed positive statistically significant results. The original form had already applied this principle throughout the form, and testing for this principle was challenging as very little could be changed to improve the ease of use of the form. However, the results from experiment nine showed that ensuring ease of use can affect the user's experience as well as their probability of converting.

8.9.8   SIMPLIFICATION

This principle states that the system should be as simple as possible for users as the interface they will interact with forms part of the lead generation process. Friction would not encourage users to remain attentive for an extended period. The theme that gave rise to this principle had ten quotes assigned to it, with all six participants mentioning it as one of their most important principles. It speaks to all aspects of the interface to not distract the user at any point (Lehtinen, 2020). Simplification can be achieved by automating as much of the process as possible (Shneiderman et al., 2018) and applying it is a minimal information requirement for the framework and the consistency principles. The application of automation could also reduce the rate of errors that occur (Shneiderman et al., 2018).

This principle is extremely important for the novel user and, in some contexts, all users (Setia et al., 2013; Peters, 2022). In some cases, high levels of complexity will affect the ease of use and

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can leave some users frustrated, leaving the process before completion (Forlizzi & Battarbee, 2004). In other cases, oversimplification can occur, as is evident by the results of the two experiments done for the simplification principle of this framework, both of which yielded negatively statistically significant results. Therefore, it is very important to consider the context of use (a principle discussed in Section 8.9.9) because, in some cases, a certain level of complexity or good friction is required to keep the users' attention (Peters, 2022). Additionally, simplifying the interface's design can increase the visual appeal to users (Lehtinen, 2020).

Lastly, this principle was tested with various A/B tests undertaken on the case organisation's lead generation website. Experiments 1, 2, 5-1, 5-2, 7, 8 and 9 tested this principle, of which four (2, 7, 8 and 9) of the seven experiments yielded positive statistically significant results, and one (1) produced neutral results, substantiating this experiment's importance. The two experiments (5-1 and 5-2) that yielded negative statistically significant results were attributed to oversimplification, as discussed above.

8.9.9 CONTEXT AWARENESS

The last principle for the UX design concept of this framework is context awareness. The context speaks to the use environment, and this principle argues that the production team should be aware of the use environment when the product is being produced. This ensures that the design can provide users with the right amount of complexity or simplicity, request the right amount of information at the right time, and correctly apply the other eight principles for the intended context.

The reason why this principle is so essential is that environmental factors found around the interaction, the use environment (e.g., social interactions and the physical environment) have a significant effect on the experience of the user (Forlizzi & Battarbee, 2004; Battarbee & Koskinen, 2005; Hartson & Pyla, 2019). An example of social interaction affecting the experience is that the social context dictates how users form opinions of their experiences (Forlizzi & Battarbee, 2004).

The familiarity with the context enables the production team to design the process in such a way as to create a flow state (Forlizzi & Battarbee, 2004). A flow state can reduce the process's absolute time, indicating good useability and, consequently, increasing the user's experience (Shneiderman et al., 2018; Wang et al., 2020). Additionally, UX being context-dependent greatly substantiates

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this principle (Hartson & Pyla, 2019; Kashfi et al., 2019; Pettersson et al., 2018; Luther et al., 2020). Other characteristics found within the context that can affect the user's experience are culture (Peters, 2022), user characteristics (Bargas-Avila & Hornbæk, 2011), psychological needs (Hassenzahl et al., 2021) and usefulness of the product (Santoso & Schrepp, 2019).

Lastly, this principle was tested using one (Experiment 1) A/B test on the case organisation's website, which showed a positive but insignificant result. However, the results from Experiment 3 (Section 7.6) did not explicitly test for this principle but yielded negative statistically significant results and speaks to how vital context awareness is when designing for UX and deciding how to apply the principles of this framework.

8.10   COMMUNICATION

This concept deals with all communication within the business and between the business and its customers. Therefore, the concept also includes information that the business shares via marketing and its website. This concept argues that all design principles should be applied to every part of the communication to ensure continuity across the business. The consistency principle is especially important for this concept as it is critical to ensure consistent communication through all the available channels to improve the overall customer experience (Frow & Payne, 2007; Kuniavsky, 2010).

Setia et al. (2013) suggest that communication should be evaluated for 'completeness', 'accuracy', 'format' and 'currency'. Completeness speaks to the fullness of the information being communicated, accuracy speaks to the correctness of the information, format speaks to how the information is communicated, and currency speaks to how recent the information is. Furthermore, Setia et al. (2013) state that if these four aspects are effectively applied to communication, it can minimise confusion, help the recipient with performance and improve collaborations between business actors. Additionally, Shneiderman et al. (2018) suggest that sharing information with the user should be distinct, honest, comprehensive and appropriate.

The information evaluated against the abovementioned characteristics affects the flow state a user can reach and the credibility of the interface, which can improve or hinder trust and, eventually,

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loyalty (Zhou et al., 2010). Since the business' website is responsible for most of the leads generated, the website becomes the most important communication channel, and special attention should be paid to the accessible information (Lehtinen, 2020). The communication should be tailored to the target audience, and variations should exist for differing target markets (Grubor & Olja, 2018). The tone and format of communication are also vitally important to consider; it should never be threatening or controlling (Peters, 2022; Lehtinen, 2020) but should rather be personalised as much as possible and serve as a guide to the user (Koski, 2016; Shneiderman et al., 2018). In addition to the format and tone of the communication, the layout and visual aspects of the interface also play an important role, not just in the perception of the information but also in the emotional response, experience and consequently, their willingness to convert (Lehtinen, 2020; Shneiderman et al., 2018).

Lastly, communication within the business is also important and can affect how the framework concepts are applied across different departments (Kashfi et al., 2019). Some challenges might arise with implementing UX into a business because of its complex and dynamic nature (Hassenzahl, 2008; Hartson & Pyla, 2019). Open communication can simplify the process and is vital for effective solutions (Mosley, 2007).

8.11 ONLINE LEAD GENERATION

This concept and its sub-concepts were comprehensively discussed in Chapter 3 of this thesis, and an exhaustive discussion of these will not be repeated here. However, this section will provide an introductory discussion of their importance. Lead generation is the process of attracting possible users' attention, enticing them and convincing them to become paying customers (Bondarenko et al., 2019). This process aims to increase the number of logged and converted leads, thereby increasing sales and creating value (Swieczak & Kukowski, 2016). During this process, users provide their personal and contact information to the business voluntarily to yield the value of the product or service that the business offers (Bondarenko et al., 2019). This process is divided into three phases: lead generation marketing, lead conversion, and lead nurturing. All three phases comprise the sub-concepts of the online lead generation process and are discussed in the following sections.

8.11.1   LEAD GENERATION MARKETING

"*The way a site is designed and marketed has a large impact on the type of customer it attracts*" (Reichheld & Schefter, 2000: 110).

This phase of the process is when the business distributes communication and information about a specific product or service that they offer to attract the attention of their target market(s) (Song et al., 2021). It is important to note that the preceding concepts, specifically the user experience design principles and communication concepts, should also be applied to this entire concept. Therefore, it is vital to ensure that the marketing done as part of this process should be user-centred, and the tone and format of the information should reflect this (Koski, 2016).

This phase aims not purely to attract all individuals to the business's website but also to target specific audiences most likely to invest in the product or service (Swieczak & Kukowski, 2016). When effectively done, this phase can lead to increased website visits and, ultimately, more opportunities to make a sale. However, it is vitally important to consider the quality of the lead that is directed to the website (Swieczak & Kukowski, 2016; Grubor & Olja, 2018). Another form of marketing can be referrals and word-of-mouth advertising, which can be achieved by delivering extant users with a great experience. Users acquired through referrals or word-of-mouth marketing are less expensive and can start delivering value to the business from the beginning of the process (Reichheld & Schefter, 2000; Meyer & Schwager, 2007).

8.11.2   LEAD CONVERSION

This phase of the process aims to take the interested user attracted through the marketing phase and convert them into a lead by capturing personal and contact information to take them into the next phase (Bondarenko et al., 2019). The more users the website can convert, the higher the chances are for the business to grow (Lehtinen, 2020). With online lead generation, the internet can bring many benefits and challenges (Porter, 2001). The benefits it brings is the easy access to information for the users, simplifying the process of conducting business and easier communication, yet the fact that all benefits are available to competitors makes it cumbersome to reap (Porter, 2001).

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The overarching determinant of the user converting into a lead is their experience in this phase, specifically on the business' website (Lehtinen, 2020). The experience that the users receive plays a vital role in their loyalty to the business and their behaviour, i.e., submitting their contact information towards being contacted with further information and the rest of this process (Zhou et al., 2010). When the delivered experience is positive, it increases the chance of the user's conversion and affects their attitude towards the brand (Gupta & Nimkar, 2020). The experience on the website can be positively impacted by effectively implementing the user experience design principles stated in this framework. For example, slower interfaces have been proven to decrease the chances of conversion, the experience and the user's life cycle on the website (Weinman, 2015). Once a user has become a lead by providing personal and contact information, they proceed onto the next phase, lead nurturing, which is discussed in Section 8.11.3. Note that this concept in the framework is filled with colour, which differs from the others. The reason is that applying the initial concepts leads individuals to this step, and if the leads are converted, the remainder of the concepts are benefits to be yielded.

The design principles were tested on the case organisation's lead conversion step. These experiments are detailed in Chapter 7 and show that applying the design principles can significantly affect the website's conversion rate. Again, this indicates the importance of the initial concepts in maximising lead conversion.

8.11.3 LEAD NURTURING

This is the last phase of the lead generation process. This phase further aims to convince the lead of the value a product or service can deliver, evoking the need to purchase it (Koski, 2016). This phase can be crucial to the success of the lead generation process, as the retention of customers is correlated with the profitability of the process (Light, 2003). Additionally, the business' customer base greatly dictates its success (Swieczak & Kukowski, 2016) as they contribute exchange value to the business (Priem, 2007).

During this phase, the business initiates and fosters a relationship with the leads that willingly provide their contact information (Gupta & Nimkar, 2020). This relationship can benefit the business by creating a loyal customer, bringing about repeated value for the business (Budac, 2008). Through this relationship, the business will be better able to predict the user's future needs

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and the possibility of providing additional value to the user (Gupta & Nimkar, 2020). Additionally, the relationship between the user and the business decreases the chance of transaction failure (Rodriguez & Peterson, 2012). Lastly, the relationship ensures open communication between the two parties, increasing the success probability (Koski, 2016).

One A/B test on the case organisation's website tested this framework concept. After the lead had been converted, the A/B test was done to test the application of simplification, ease of use, short absolute time, and *timing of information requirements*. The experiment consisted of adding a *WhatsApp* bot asking for more information from the lead and pictures of their vehicle. The experiment yielded a difference of 3.74% in conversion rate and a relative uplift of 18.22%, favouring the experimental group. The results were statistically significant and showed that applying the UX design principles to this phase can significantly impact lead nurturing.

8.12 EVALUATION AND DATA-DRIVEN DECISION-MAKING.

These concepts are combined as they feed into each other. The theme of evaluation that arose from the PD analysis had a total of 84 quotes assigned to it over 18 sub-themes with specific evaluation methods. Due to the dynamic and complex nature of UX, strategies and principles applied in a way that works might not always be practical and require constant evaluation (Swieczak & Kukowski, 2016; Forlizzi & Battarbee, 2004). These evaluations should occur before, during and after the interface is used (Pettersson et al., 2018). Research done on users before use can be used to create user personas and guide how this framework's concepts should be applied (Shneiderman et al., 2018). Additionally, this research will minimise the required changes after the interface has gone live and save the company money (Shneiderman et al., 2018).

The question of what to test becomes very difficult to answer since no standardised test for UX exists (Battarbee & Koskinen, 2005). Thus, it is essential to set success measures or to establish KPIs at the start of the production process to assess if the strategies and principles of this framework are effectively implemented to yield the desired results for the business (Parmenter, 2010). The evaluation result requires action; otherwise, the evaluation process is useless (Shneiderman et al., 2018). This is where the other part of this concept becomes relevant, namely data-driven decision-making. It will allow key decision-makers in the business to use the results from the evaluations to adjust specific strategies or principles to bring about improved results

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(Frow & Payne, 2007). "Perfection is not possible in complex human endeavors … but incremental improvements are possible and are worth pursuing" (Shneiderman et al., 2018: 168 & 193). This quote further stresses the importance of these concepts. The continual changes in user experiences dictate that the design for it should also be continually improved.

8.13 CUSTOMER AND EMPLOYEE EXPERIENCE

This concept in the framework encapsulates both the customer and employee experience, which is the overall subjective perception by the customers or employees of all their interactions with all channels of the business (Nash et al., 2013; Jussila et al., 2020). The best experiences for the employees and customers depend on the business environment and the norms within that domain (Frow & Payne, 2007). Employee experience (EX) also significantly affects the customer experience delivered as a satisfied employee in the service domain, for example, will better communicate with customers (Jussila et al., 2020). Additionally, the improvements in employee experience also greatly impact employee productivity and collaboration between team members who are required to deliver a consistent experience throughout the business (Weinman, 2015).

Businesses constantly attempt to expand their loyal customer base to deliver continuous business value (Budac, 2008). Loyalty results from good customer experiences (Reichheld & Schefter, 2000). Creating a relationship between the customers and the business further increases the customer's loyalty and aims for improved customer experience (Frow & Payne, 2007). Additionally, the relationship also increases communication between the two parties and can create opportunities for different value-creating pathways (Frow & Payne, 2007). This demonstrates that the production of an improved customer experience can bring about innovative solutions to users' problems (Keiningham et al., 2007). Lastly, with UX being encapsulated in CX and EX impacting CX, the UX design principles and all preceding concepts of this framework should be applied to this concept to deliver the best possible CX and EX to bring business value, as discussed in Section 8.14.

8.14 BUSINESS VALUE

This is the end and output of the framework. This research study argues that the preceding concepts are vital and should be applied according to the environment within and surrounding the business to reap the results of business value. Identifying possible value-creating pathways and creating,

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developing and executing the value specific to the environment is important to achieving a competitive advantage (Piccoli & Ives, 2005; Rainey, 2015). This can be a challenge, especially within the B2B domain (Haas et al., 2012); however, carefully considering all the initial concepts and full submersion within the environment make business value attainable.

The pathways for value creation are endless, with various actors within the environment causing and affecting the business' ability to create and capture value from these pathways (Hughes, 2012). Additionally, Hughes (2012) argues that anything within the environment that can improve or deteriorate can affect the business value—directly or indirectly. Ensuring that everything a business does differentiates them from competitors is essential to remaining relevant in the market (Pekuri et al., 2013).

With the rise of the digital age, many new value-creating pathways have been made available for businesses to seize and utilise to gain and sustain an advantage (Porter, 2001; Bharadwaj et al., 2013). Forming a business strategy and a DTS is the first value-creating pathway for the business (Bharadwaj et al., 2013). If sustainability is part of the business model, it can produce more value (Dhanda & Shrotryia, 2021). Here, the definition of sustainability ranges further than the traditional possession of unique capabilities and skills (Barney, 1991) and incorporates the utilisation of these skills in ways that not only ensure current benefits but also do not impede the future existence of humankind and the environment (Rainey, 2015).

After the creation of the business strategies, the customers and other stakeholders of the business become involved and can provide a myriad of value pathways to the business through relationship value (Haas et al., 2012), co-creation value or shared value, (Frow & Payne, 2007; Dhanda & Shrotryia, 2021) and exchange value (Priem, 2007; Vial, 2019), to name a few. This shows the importance of open communication with customers and stakeholders to maximise the value derivable from these interactions (Berman, 2012). Lastly, since the preceding concepts have been proven to impact the business's ability to create and capture value, the efficient execution of these concepts within the business's environment can greatly affect their value creation, performance and their existence.

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8.15 FRAMEWORK METHODOLOGY

This section provides the basic methodology for the application of the framework. First, it is paramount to follow the direction of the framework—as previously discussed—from the bottom up and then from left to right. This is because it follows a narrowing process starting with the environment and moving towards business value derived from increased UX and lead conversions.

The overarching concept environment is outside the control of the business and requires continuous consideration rather than action by the business. The first business action is the creation or readjustment of the business strategy to enable the effective execution of business activities. Following this, a digital transformation strategy should be devised to ensure that online activities can be executed. This leads to the formation of brand awareness marketing, which should align with the overall experience the business wants to deliver. Brand awareness marketing could deliver the value promise that should be tailored to the business's prospective customers and should place the customer at the centre of the message.

The user experience design principles should be evaluated next to establish the weight of each principle based on its importance to the ideal experience the business aims to deliver. Overall, every concept should be aligned with the UX principles to ensure a standardised brand and image. Communication within and from the business is the next activity and should be tailored to the parties involved. The communication between business employees should be professional, consistent and continuous to foster a knowledge-sharing culture. The UX principle is crucial for this communication as a positive employee experience can deliver business value. The communication from the business to its customers or users should align with the UX principles to ensure a universal experience. Additionally, customer service representatives should be trained in conflict resolution and knowledgeable in business resources to ensure effective communication between them and customers.

Online lead generation marketing should exploit the opportunities that the gap in the market brings to draw more traffic to the business's website. This is where the lead conversion and the application of consistent UX principles become vital, as this is where prospective customers provide their details for the business to convert them into value-delivering customers. This will lead them into the nurturing phase, which must be effectively executed to gain customers. The lead generation

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process, communication and UX principles should constantly be evaluated to inform decision-making to improve these concepts and ultimately deliver a positive CX and EX and increase business value.

8.16 CONCLUSION

This chapter outlined and comprehensively discussed the framework deconstructed into individual concepts and sub-concepts. Chapter 8 aimed to demonstrate the importance of each framework element in creating business value. Additionally, this chapter set out to portray the flow of the framework and the effect these concepts can have on each other thereby indicating the importance of the whole framework and not just the isolation of some concepts. To conclude, the framework sets out to prove that despite the dynamic, complex and subjective nature of UX (Hartson & Pyla, 2019), it is possible to utilise principles to improve the experience, increase lead conversions, and deliver value to both the customer and business.

9. THESIS CONCLUSION

This chapter serves as the conclusion to this thesis. The chapter provides the summative research findings along with the contributions, both knowledge and practical, it then makes suggestions for future research. Chapter 9 ends the study with a conclusion.
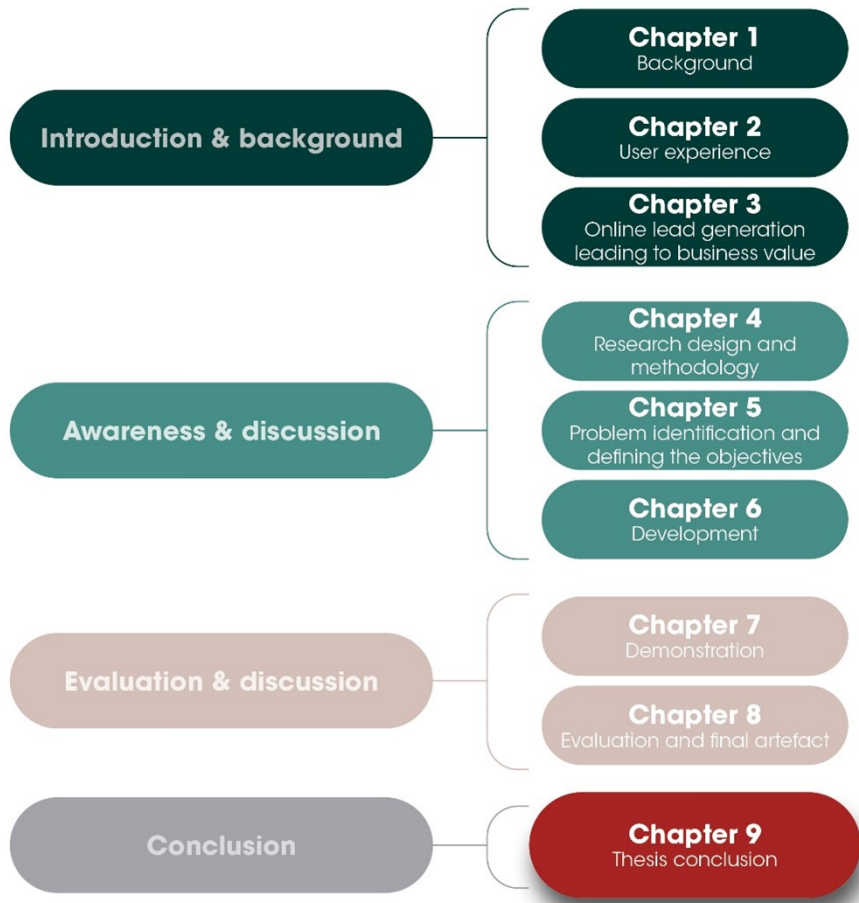

Figure 82. Thesis chapter overview

Figure 82 outlines the chapter overview of the thesis, with the current chapter highlighted for positioning.

- *Chapter 1:* Provided the basic background for this study, along with the problem statement, research questions, purpose of the study, outline of the study's methodology, research assumptions, research limitations and the significance of the study.
- *Chapter 2:* Defined and discussed UX; it explained how UX fits into a business and explored eight principles to use as guidance when designing for UX.

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- *Chapter 3:* Explored lead generation and its importance in a business. It explored all the strategies a business uses to improve lead generation practices and how they can be enhanced. The chapter further discussed how marketing could be done to improve lead generation and how lead generation contributes to business value.

- *Chapter 4:* Discussed in detail the methodology used to achieve the aims of this study. The chapter also discussed the data collection and analysis undertaken in this study.

- *Chapter 5:* Discussed the questionnaire, which was self-administered, and the results from the questionnaire. This chapter also discussed the document analysis in detail, along with its results.

- *Chapter 6:* Discussed the participatory design with design professionals and reported the first version of the UXOLF. The chapter then reports the thematic analysis results and the enhanced version of the framework.

- *Chapter 7*: Discussed the experiments which took the form of A/B testing, and presented their results.

- *Chapter 8*: Discussed in detail the final version of the UXOLF employing triangulation of the findings from the DA, PD and experiments.

- *Chapter 9:* Provides the conclusion of the thesis through the summative research findings, contributions made and suggestions for future research.

9.1 INTRODUCTION

This study aimed to bridge the gap in knowledge between UX literature and practice by constructing a framework that indicates the importance of UX application in any business's online lead generation process to produce business value. This thesis, specifically Chapter 9, forms part of the final phase of the DSR, namely, communication, as depicted in Figure 83 below.
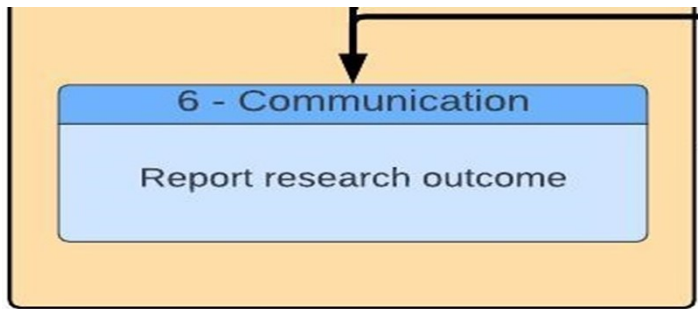
Figure 83. Communication phase

A main research question drove the research:

> What are the components of a UX-based online lead generation framework, contributing to business value within the automotive field?

In addition to the main research question, three supplementary questions were posed to be answered by the research; they are:

> 1. Why is the synthesis of a user experience online lead generation framework (UXOLF) necessary?
> 2. What effect does UX have on online lead generation?
> 3. What are the challenges in implementing the UXOLF?

9.2 RESEARCH FINDINGS

This study embraced pragmatism as a research philosophy, which is highly focused on individual situations at hand and driven by the implications actions would have within such situations (Saunders et al., 2009; Morgan, 2014). The study utilised design science research (DSR) as the research strategy to answer the four research questions posed by this study. Figure 84 below presents the phases of the DSR. Chapter 4 discussed the research approach, choice and timeline of each phase.
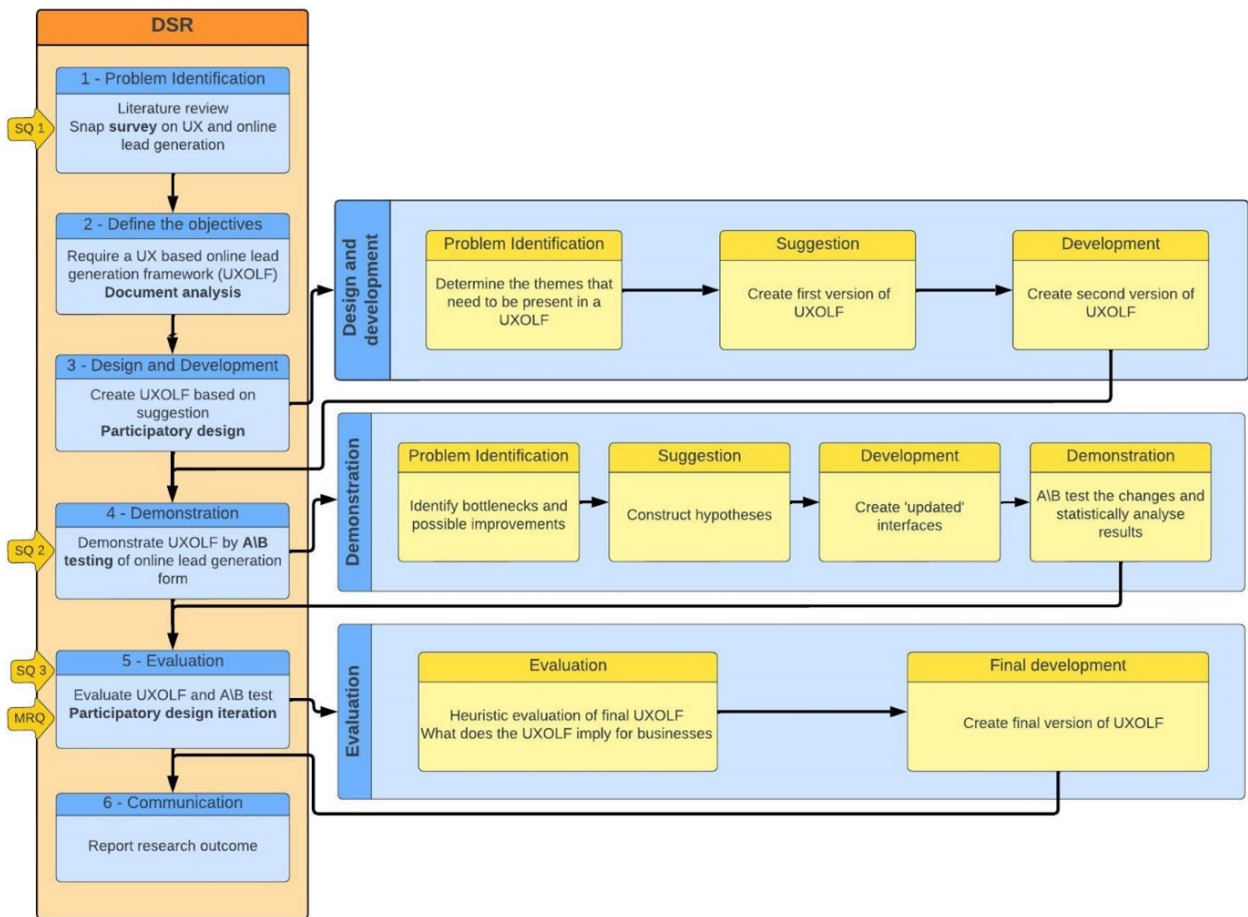
Figure 84. DSR phases

The data collection methods utilised to engender answers to the research questions were, in order of occurrence, a self-administered online questionnaire with design professionals in the problem identification phase. The researcher employed document analysis to define the objectives of a solution phase. A participatory design session to construct the framework with experts in business, design and research fields was subjected to thematic analysis in the design and development phase. Lastly, the case organisation did A/B tests in the demonstration phase. After the scientific analysis of the A/B tests was done, the final framework was presented to the design professionals as a PD iteration in the evaluation phase. These were all done to answer the main research question and the three supplementary questions. These questions and their answers are discussed below, starting with the supplementary question as they aided the answer to the main research question.

First Supplementary Question:

The first supplementary question (SQ1) was answered after the questionnaire results and was further substantiated by the findings of the document analysis after the problem identification and defined the objectives of a solution phase of the DSR. Chapter 5 discussed these two phases.

> **SQ1**: Why is the synthesis of a user experience online lead generation framework (UXOLF) necessary?

The document analysis indicated the discrepancy in comprehending what constitutes UX and how to design for it in a business domain. The questionnaire showed that design professionals could adequately adapt interfaces to improve UX but indicated that no extant framework exists to maximise UX. The results further showed that incorporating UX principles is an effective way of improving a lead generation strategy. The DA and questionnaire further stressed that evaluating UX and lead generation strategies is critical for continual success.

Additionally, the complex nature of both lead generation and UX necessitates the formation of a framework to assist businesses that only recently bought into UX or only recently learnt the importance of their corporate website as a lead generation medium (Hassenzahl & Tractinsky, 2006; Hartson & Pyla, 2019; Kashfi et al., 2019). The success of lead generation and UX strategies depend highly on the management and evaluation of these strategies. A framework can give direction and critical consideration to improve the success of these strategies to deliver business value (Matt et al., 2015; Swieczak & Kukowski, 2016). Chapter 5 contains full discussions and a more in-depth answer to this research question.

Second Supplementary Question:

The second supplementary question (SQ2) was answered after the A/B tests during the demonstration phase of the DSR. The experiments are comprehensively discussed in Chapter 7.

> **SQ2:** What effect does UX have on online lead generation?

Twelve experiments were conducted on the case organisation's lead generation website. The experiments' hypotheses were driven by the nine design principles that arose during the first PD

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session and formed part of the second version of the UXOLF. The success of the experiments was measured and analysed by comparing the conversion rate of the control and experimental groups. All experiments except one yielded statistically significant results, not all positive, but statistically significant, nonetheless. This indicates that disregarding or incorrectly applying UX principles to a lead generation form can greatly affect the probability of the users converting into leads.

The lead generation process entails obtaining personal and contact information from users—something they are usually reluctant to share (Vance et al., 2008). This further necessitates the design for improved UX to set users at ease and increase the probability of them providing the necessary information. This is done by creating a trusting environment—a theme that arose 60 times during the document analysis and the PD session.

Third Supplementary Question:

The third supplementary question (SQ3) was answered after the iteration of the PD session during the evaluation phase of the DSR. The iteration of the PD session is discussed in Chapter 8, specifically Section 8.2.

> **SQ3:** What are the challenges in implementing the UXOLF?

The biggest issue with implementing the UXOLF is how the principle should be applied. Despite proof that the nine design principles greatly affect conversion rate, their application will differ between situations and requires a trial-and-error approach to find the best solution. In truth, UX is highly subjective and dynamic, meaning that no exact implementation of principles can be provided (Hassenzahl & Tractinsky, 2006; Hartson & Pyla, 2019). The highly dynamic and subjective nature of UX also makes the buy-in from business executives rather cumbersome (Swieczak & Kukowski, 2016); if a full buy-in is not achieved, it could hinder the complete application of the framework. The same goes for the communication and lead generation concepts, as there is no such thing as perfection when dealing with people (Shneiderman et al., 2018). Additionally, the constant evaluation and improvement of these concepts can become tedious, and if no significant improvements are made for some time, these might become disregarded.

The fact that no data about the minimum number of fields required to yield a quality lead exists could have contributed to some of the results, specifically Experiment 5_1 and 5_2, where the form was shortened into three steps and made into one long form, respectively. This, in turn, can complicate the simplification principle of the framework. The participatory design iteration used to evaluate the framework resulted in one additional challenge with the implementation of the framework. The challenge is identifying and employing the correct individuals to drive the process. This is also substantiated by Matt et al. (2015), who suggest that a zealous manager is needed to spearhead a digital transformation strategy.

Main Research Question:

The main research question (MRQ) was also answered after the iteration of the PD session during the evaluation phase of the DSR. This can be seen in Chapter 8, where the PD iteration and a comprehensive framework discussion are presented.

> **MRQ**: What are the components of a UX-based online lead generation framework, contributing to business value within the automotive field?

The UXOLF components were established during the PD session, with their refinement after being subjected to thematic analysis. This allowed for concepts to arise from the session that was discussed numerous times but not explicitly named as core concepts during the session. In sum, UXOLF components are environment, business strategy, digital transformation strategy, brand awareness, value proposition, user experience design principles, communication, lead generation, evaluation and improvements through data-driven decision-making, and customer/employee experience. When the subsequent concepts are effectively implemented, they can deliver business value. These concepts depend on the initial concept, e.g., communication is tailored to the user experience design principles, which depend on the value proposition and brand awareness to bring prospective users to a business. The components were combined into the UXOLF, described in Figure 85 below.
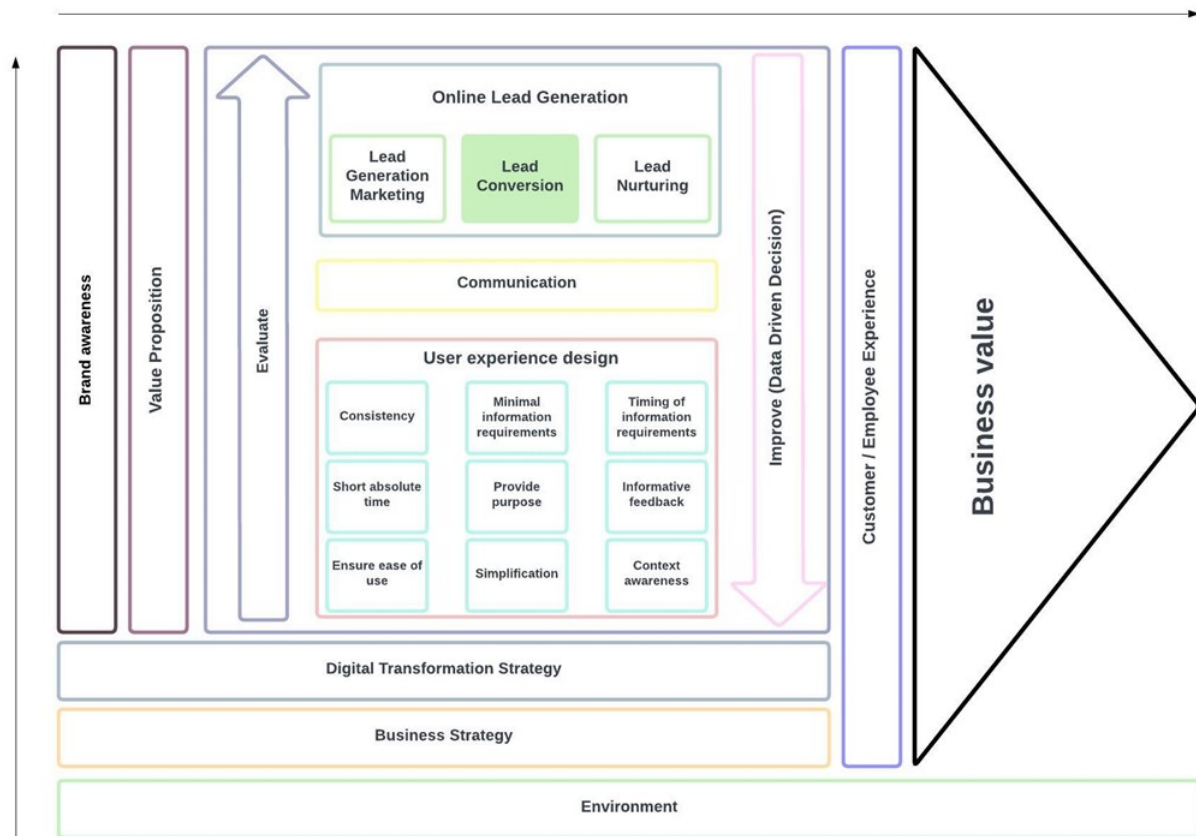
Figure 85. UXOLF

9.3 CONTRIBUTION

The rise of digitalisation allows for easy information obtainment by any person, giving them more decision-making power (Nash et al., 2013). This has also made customers intolerant of unpleasant and rushed experiences (Dougherty & Murthy, 2009). Instead, they seek meaningful, emotionally impactful and useful interactions (Forlizzi & Battarbee, 2004; Swieczak & Kukowski, 2016; Hartson & Pyla, 2019). This rise in digitalisation also brings about heightened competition from other businesses (Woodard et al., 2013). In the fight to remain relevant in today's highly dynamic business markets, businesses still need to grasp the importance of their corporate websites and their role in their lead-generation processes (Lehtinen, 2020). This study set out to prove the importance of user experience in the lead generation process and how combining these two concepts can bring about new value-creating pathways. In so doing, the study brought about both knowledge and practical contributions. These contributions are:

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- The document analysis highlighted the importance of digital transformation (DT) to remain relevant within the highly dynamic and competitive market (Woodard et al., 2013; Schwertner, 2017). It was also established that DT is only successful 30% of the time and requires forming a solid strategy and establishing success measures to constantly evaluate its progress (Bucy et al., 2016; Vial, 2019). Forming a digital business strategy (DTS) is a precondition for forming an online lead generation strategy, as the fusion of information technology with traditional business strategies brings about a DTS (Setia et al., 2013; Vial, 2019). The formation of a DTS is also the goal of DT (Vial, 2019). The importance of DT has been highlighted; this study combines its importance and the implementation of *online* lead-generation strategies. This indicates the importance for businesses to consider digital transformation as a prerequisite for online lead generation.

- This study demonstrated the importance of UX incorporation into business and indicated its realisable competitive advantage (Ebert & Duarte, 2018). Additionally, from the eleven experiments on the case organisation's online lead generation website, only one experiment yielded no statistically significant results, proving user experience's effect on conversion rates, which can bring about value for a business. The study indicated the importance of a framework combining UX and lead generation to engender business value. With the framework's various concepts that affect user experience, increasing business value by implementing UX practices in lead generation is complex. The UXOLF created by this research could guide businesses in this troublesome process.

- The framework formulation using participatory design (PD) allowed this research to explore the experiential knowledge gained from user experience design and business professionals. It allowed for the comprehensive and effective concepts that these professionals had found worked for them in the past to arise. Furthermore, these sessions allowed the eventual end users of the framework to have a say in how the problem this study identified is solved (Spinuzzi, 2005). Additionally, the incorporation of business professionals allowed for the use of terminology that any individual in a business can understand and apply. Therefore, the use of PD in the research design and development phase showed an effective way of co-creation to ensure that considerations are made with prospective users in mind, which increases the chances of successful uptake of the UXOLF.

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- With a plethora of ways in which business value can be created and captured and that the success of a business is dependent on its ability to do so (Haas et al., 2012; Pekuri et al., 2013), business executives need to understand the value drivers within and surrounding their business environment. This study assimilates three distinct ways of value creation: customer value, relationship value and shared or co-creation value (Rodriguez & Peterson, 2012; Haas et al., 2012; Lehtinen, 2020; Dhanda & Shrotryia, 2021). The creation and capture of customer value can start after the first interaction with a prospective lead if a good user experience is delivered (Gupta & Nimkar, 2020). The relationship value can be realised in the lead generation process's lead nurturing phase. The relationship between the business and its customers can yield value for both parties (Haas et al., 2012). One form of value that this relationship can bring about is co-creation or shared value, which gathers input from both parties to create new value-creating pathways (Dhanda & Shrotryia, 2021). The co-creation of the framework in the PD session indicates the value of co-creation firsthand.

- The framework provides business professionals in all positions with an understanding of how important UX and lead generation are for a business to create and capture business value and ensure its continual competitiveness in the market. The framework also positions UX and lead generation within a business by discussing key concepts necessary for the effective execution of UX and lead generation. In addition, the framework provides fundamental user experience design principles and proof from the A/B test of their effect on lead conversion rates. This provides businesses with a starting point and a framework to refer to throughout the process.

- Lastly, the experiments done on the case organisation website delivered that business with some areas of improvement and possible solutions to maximise their conversions by implementing user experience principles. As proven by this research, this can aid them in creating and capturing business value.

9.4 FUTURE RESEARCH

This section recommends areas for future research that stems from the current research results. The recommendations that arose during this research are:

- Research should be undertaken into how many fields constitute the minimum number of fields to yield a quality lead. This was one of the issues that arose while implementing the design principles on the case organisation's lead generation website. Such research could also shed light on the topic of oversimplification that emerged during the experiments and PD session.

- Other concepts in the produced framework can be tested more comprehensively, e.g., applying the communication and user experience concepts to lead generation marketing.

- A study should be conducted on the entire framework to assess and quantify the business value that the framework could deliver.

- A comprehensive survey to identify additional concepts that impact the customer and employee experience.

- Key success measures could be researched and added to the evaluation concept, other than conversion rates and the KPIs identified by this study.

- Evaluation methods can be identified and could expand on the relevant concept.

- The specific experiments of this study can also be replicated within a business that is not part of the automotive field to assess if the framework can be applied to all business fields.

- Each framework concept can be expanded to reflect possible methodologies to make the framework more actionable rather than just thought-guiding.

- The framework can be expanded to add evaluation methods for each concept to utilise the framework as a monitoring/maturity framework.

9.5 CONCLUSION

The primary purpose of this study was to establish the concepts that should form part of the UXOLF, with the secondary objectives of indicating the gap that the framework would fill, exploring the effect of UX on lead generation and identifying challenges with the implementation of the framework. The framework was created through participatory design to procure input from prospective users and was revised twice after the initial formulation to ensure a comprehensive

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and all-inclusive framework. The concepts were successfully identified and substantiated by research findings and agreed upon between the participants of the participatory design session.

The deficiency in the knowledge on the subject that the framework strove to address was identified when most participants in the questionnaire indicated that they would find such a framework beneficial in their line of work. Furthermore, research suggests complete disregard or incorrect understanding of UX (Kashfi et al., 2017; ISO, 2010; Shneiderman et al., 2018; Hartson & Pyla, 2019), further indicating this lack of knowledge.

The experiments on the case organisation's lead generation website indicated that UX could negatively or positively affect the site's conversion rate and, ultimately, the entire lead generation process. Twelve experiments were conducted as A/B tests, proving that UX greatly affects lead generation. Additionally, the research identified possible challenges that might arise during the implementation of the framework and reported it (section 10.2).

The research paradigm, pragmatism, allowed the creation of this framework through PD and literature, which led to the research being evaluated for the effectiveness of the framework principles. The research strategy selected, DSR, allowed for cycling iterations when changes needed to be made to the framework and accommodated a variety of approaches, choices and time horizons to be utilised by this study. This permitted the choice, approach and time horizon to fit the data collection method in each phase and granted more freedom in the process of this research.

Overall, the research achieved its goals, fulfilled its purpose, and formulated a demonstrably functional and comprehensive UXOLF to deliver business value. The framework was specifically tested within the automotive field in South Africa, which has a relatively highly competitive index (Alfaro et al., 2012), and the changes brought by the implementation of user experience principles could add to the ability of an automotive business to attain and sustain a competitive advantage.

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APPENDIX A: Ethical clearance letter

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

19 October 2022

Reference number: EBIT/229/2022

Mr W Beukes
Department: Informatics
University of Pretoria
Pretoria
0083

Dear Mr W Beukes,

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

<u>Conditional approval</u> is granted.

This means that the research project entitled "Towards a user experience based online lead generation framework contributing to business value" is approved under the strict conditions indicated below. If these conditions are not met, approval is withdrawn automatically.

Conditions for approval:

Contacts of the participants are to be sourced with compliance to POPIA.
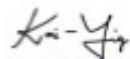
This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Ethics Committee.

If action is taken beyond the approved application, approval is withdrawn automatically.

According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof K.-Y. Chan
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

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APPENDIX B: Informed consent and questionnaire

User experience in lead generation questionnaire ✂

* Required

Informed Consent:

The research study will investigate the effect of user experience on lead generation, after which a framework will be constructed to help business' increase their business value. You as a professional in the design field can benefit from this study as it will ultimately provide you with a more concise framework to ensure success in your designs. You will be required to complete a questionnaire about extant knowledge in this field, as well as focus groups after the data collection phase to assist and deliver an opinion on how the framework should be structured.

By completing this consent form, I

- Am aware that **I may withdraw from this study at any time** without harm and
- agree that my **participation in this study is completely voluntary and**
- agree to the **use of my response** in the research study and
- agree to participate in this study and make **use of my professional rather than personal opinions.**

By completing this consent form, I know that the research team promises

- To treat my **personal information with the utmost care and**
- to **ensure complete anonymity** for me during this study and
- to let me **know before any harm may come to me** and I have the right to withdraw if I feel that the risk is too great and
- to let me know if **any changes occur in how they propose** to use my professional contribution to this study.

By clicking the **NEXT** button, you give informed consent that you agree to the above.

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This questionnaire should be answered as accurately as possible, using your **professional** opinion.

1. I know how to adequately adapt an interface to maximize UX: *

1	2	3	4	5

Strongly Disagree   Strongly Agree

2. I know of an extant **framework** (not principles/rules) that provides guidelines to design an interface with UX in mind: *

The definitions of the term framework and principles for the purpose of this survey are as follows
Framework: "Real or conceptual structure intended to serve as a support or guide"
Principle: "Comprehensive and fundamental law, doctrine or assumption"

1	2	3	4	5

Strongly Disagree   Strongly Agree

3. If you **disagree** with question 2, would you find such a framework beneficial for interface design? *

1	2	3	4	5

Strongly Disagree   Strongly Agree

4. I believe that UX has an impact on online lead generation: *

1	2	3	4	5

Strongly Disagree   Strongly Agree

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5. Effective UX based online lead generation strategies are a necessity for a lead generation business: *

| 1 | 2 | 3 | 4 | 5 |

Strongly Disagree   Strongly Agree

6. A company should have someone in charge of implementing and managing these strategies for online lead generation: *

| 1 | 2 | 3 | 4 | 5 |

Strongly Disagree   Strongly Agree

7. Close collaboration between different departments within a company is an integral part of successful UX implementation: *

| 1 | 2 | 3 | 4 | 5 |

Strongly Disagree   Strongly Agree

8. A/B Testing is an effective way of evaluating changes made to an interface, guided by UX principles: *

The definition of A/B testing and principle for the purpose of this survey is as follows
A/B Testing: The comparison of two interfaces at a time, in its natural environment, to assess their performance.
Principle: "Comprehensive and fundamental law, doctrine or assumption"

| 1 | 2 | 3 | 4 | 5 |

Strongly Disagree   Strongly Agree

9. A company should adjust its interfaces if the desired online lead generation conversion goals are not met: *

| 1 | 2 | 3 | 4 | 5 |

Strongly Disagree   Strongly Agree

10. Lead generation is an effective way to increase business value. *

| 1 | 2 | 3 | 4 | 5 |

Strongly Disagree   Strongly Agree

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APPENDIX C: Case organisation permission letter

We Buy Cars (Pty) Ltd.

1 Pudding Stone Rd

Brakfontein Rd

Centurion, 0122

29 July 2022

Dear Faan van Der Walt

Request to obtain permission for assistance in a PhD study

This letter serves to confirm that myself, Wynand Beukes (Student No:96010399) is presently conducting research in order to complete my PhD at the University of Pretoria. The research title is: *Towards a user experience based online lead generation framework contributing to business value.* In short, the formulation of a framework to aid business' to apply user experience (UX) to their online lead generation platform. UX is a direct driver of business value and the application thereof to online lead generation will increase the business' value and their ability to keep up with or exceed competitors. Prof. Hanlie Smuts is supervising the research.

The purpose of this study is to provide an academically published, UX based online lead generation framework that will not only comply with UX principles, but also be focused on its powerful role in generating and converting online leads. As there is no such publication currently available, this publication aims to bring clarification regarding the optimization of UX on lead generation and aims to guide organizations with their corporate websites.

I would like to conduct research within your organisation and therefore need your permission to conduct experiments on the form completed by potential customers wanting to sell their car to WeBuyCars. The number of participants, the time taken for the completion of the form, and conversion of the form will be obtained from the WeBuyCars organization and statistically analysed to test the framework.

The study will be conducted in an ethically sound and responsible manner. Since information will be obtained from WeBuyCars in a retrospective fashion and will not be collected by the research team it becomes problematic and the correct path forward becomes obstructed. There will be no informed consent obtained from these participants as the data received will be completely free from personal information and only quantitative data will be handed over to the research team.

Address. 1 Pudding Stone Rd, Brakfontein, Centurion, Gauteng, 0122 A
PO Box 40125, Faerie Glen, 0043
Head Office. 012 803 0414 | **Contact.** info@webuycars.co.za | 087 057 0000

#clickyournext

We Buy Cars (Pty) Ltd | Reg no. 2015/130772/07

Directors. ASS van der Walt | DJF van der Walt | J Mills | K Reischhauer | CJ Rein
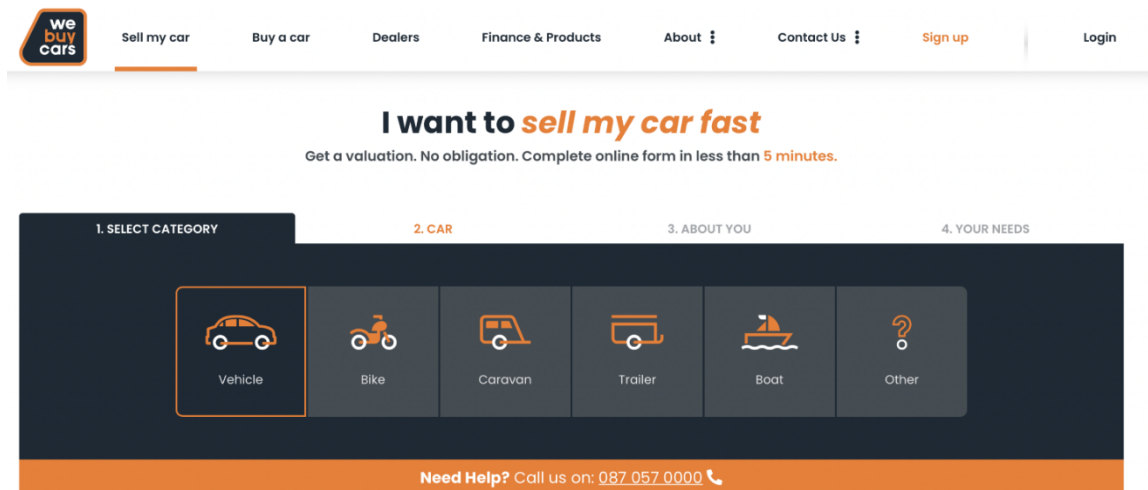DM Hurwitz | TE Kler | MP Mondolowitz (Alternate) | R Rossi (Alternate)

www.webuycars.co.za

Once a participant completed a form on the WeBuyCars website they agree with the privacy policy, website privacy policy and the terms of use of your company. Which can be seen at https://www.webuycars.co.za/privacy, https://www.webuycars.co.za/websiteprivacy, and https://www.webuycars.co.za/terms-of-use respectively. In this each participants agree that WeBuyCars are allowed to give information to a third party (this research team). The third party is then responsible to handle all personal information with the same privacy as WeBuyCars. There is also a clause that no under 18-year-olds are allowed to use the services offered by WeBuyCars so no vulnerable group will be present within this population.

The experiment proposed will be run in an A/B test fashion, which means that any adaptations this research purposes will take up only a fraction of the server space available to your organisation. The aim of the experiments is to test the framework formulated during the research. The results will be beneficial to your organisation as you would be able to assess the difference the framework could make to the number of leads your company is able to convert. This benefit to your organisation remains while allowing me to write up the findings and adapt the framework, if necessary, before its ultimate publication.

The biggest risk with this study is for the case organization (WeBuyCars), as the experiments running on your servers could negatively affect their number of leads you generate. This will be mitigated by not running the experiment on all servers, hence A/B testing.

The research will be done for academic purposes. However, as the study is also deemed to provide useful insight into practice, the researcher will present a summary of the findings to your organisation. All information gathered will be treated as confidential, and findings will be reported with the necessary discretion not to cause any harm to individuals and/or the organisation. The identity of your organisation will remain confidential in any future publications derived from the study unless there is explicit permission from you. Please feel free to suggest any additional restrictions you may deem necessary in respect of the research to protect the interests of the organisation.

Your support is important for the research and it will be highly appreciated if you are willing to allow this research project in your organisation. Please advise whether you would regard the above arrangements as feasible. Please do not hesitate to contact the researcher or supervisor on the numbers listed below should you require any additional information regarding the above arrangements. We look forward to hearing from you and thank you for your kind consideration of this request.

Kind Regards

Wynand Beukes

Researcher

University of Pretoria

Jaan van Der Walt

CEO Webuycars (Pty) Ltd

#clickyournext

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www.webuycars.co.za

	Researcher	Supervisor
Name	Wynand Beukes	Prof. Hanlie Smuts
Institution	University of Pretoria	University of Pretoria
Contact No:	082 453 1777	083 222 1111
E-mail:	wynandb@webuycars.co.za	hanlie.smuts@up.ac.za

APPENDIX D: Document Analysis

APPENDIX E: Participatory Design

APPENDIX F: Experiments original form

we buy cars

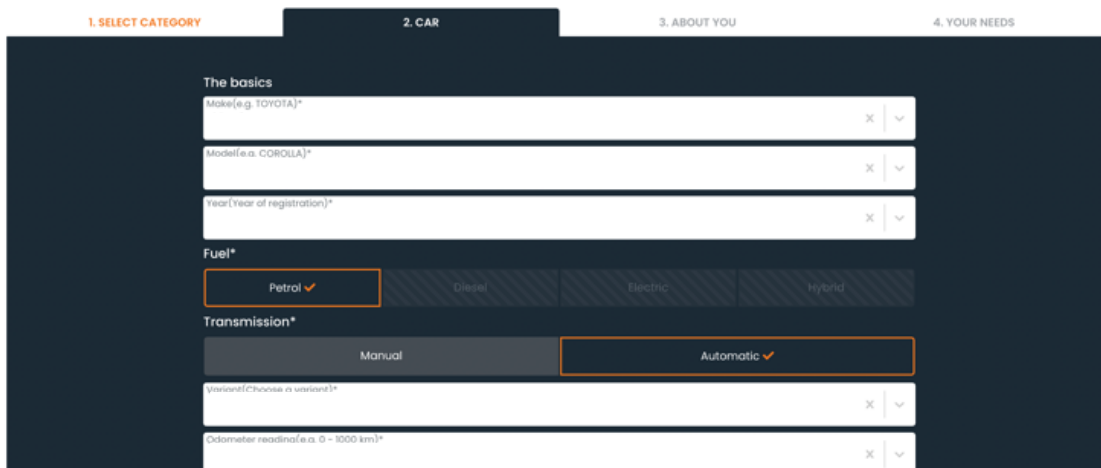Sell my car   Buy a car   Dealers   Finance & Products   About   Contact Us   Sign Up   Login

I want to *sell my car fast*

Get a price. No obligation. Complete online form in less than 5 minutes.

1. SELECT CATEGORY	2. CAR	3. ABOUT YOU	4. YOUR NEEDS

Personal

Name*

Surname*

Email*

Cell Phone number (e.g. 012 123 4567 or 082 123 4567)*

Alternative number (e.g. 012 123 4567 or 082 123 4567)*

Location for viewing purposes

Suburb(e.g. Brakfontein*) ✖

City or Town*