Business Value of Design
Measuring the value of design in elevating the business performances.

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Abstract

In today's competitive business landscape, the power of design as a catalyst for innovation, brand differentiation, and overall business success is becoming increasingly evident. However, the integration of design in realizing these objectives remains limited in many organizations. Even when companies employ designers or design teams, their role often remains confined to a consultative capacity. There is a pressing need to elevate the role of design to the executive and business levels. This research seeks to unveil the strategies and methods in showcasing design’s business value to decision makers and business stakeholders by unravelling the multifaceted nature of design’s impact on businesses. It aims not only to shed light on the vast potential of design but also to provide practical recommendations for design teams striving to harness its full capacity.

This thesis underscores the diverse roles that design plays, ranging from enhancing the customer experience and strengthening brand identity to fostering innovation and serving as a strategic asset to drive business success. Through this research, a comprehensive understanding of design’s influence on business is presented, offering a roadmap for organizations to embrace and maximize the potential of design as a powerful driver of success in today's competitive marketplace.

It is important to note that, in this thesis, the term "design" transcends its traditional interpretation as merely visual aesthetics or process engineering. Instead, it is employed in a broader sense to encompass the principles of design thinking.

Keywords Design, Business Value, Design Impact Assessment
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<td>Design Thinking</td>
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<td>MDI</td>
<td>McKinsey Design Index</td>
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<td>DMI</td>
<td>Design Management Institute</td>
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<td>ROI</td>
<td>Return on Investment</td>
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<td>NPS</td>
<td>Net Promoter Score</td>
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<td>CES</td>
<td>Customer Effort Score</td>
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<td>Key Performance Indicator</td>
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Key Definitions

Design

Design, generally a discipline, focuses on the creation of solutions, often in the form of products, services, or experiences. It typically involves aesthetic, functional, and user-oriented considerations (Heskett, 2005). In business, design is often seen as a final output—a product’s look and feel, the user interface of a software, or the branding of a company. Design is often one of the phases or outcomes of Design Thinking process (Karel, 2016). The term “design” is more expansively used to signify a principle that is integral to the concept of design thinking (Sachdeva, 2022).

Design Thinking

Design Thinking is a broader methodology. A human-centered approach to problem-solving that involves empathizing with users, defining problems, ideating solutions, prototyping, and testing. Design Thinking is often employed in businesses to improve products, services, and internal processes. It is more about the process than the final output. In business, it is often used to innovate and evolve organizational strategies, improve customer experiences, and create new products or services (Brown, 2008; Dorst, 2010).

Business Values

Informal terminology that can be referred as company values or principles that drive the strategy and operation of the company. Business values can be enhancing offering to customers, improving customer experience, elevating employee satisfaction, or enhancing brand reputation (Heinilä, 2023).

Return on Investment (ROI)

A performance metric used to evaluate the profitability of an investment or compare the profitability of multiple investments (Zamfir et al., 2016).

Metrics

Numerical measures that provide data for assessing performance, quality, or other attributes in various contexts (Marr, 2012).

Key Performance Indicators (KPI)

Quantifiable measures used to evaluate the success of an organization, project, or initiative in achieving its strategic and operational goals (Marr, 2012).
1. Introduction

In recent years, the role of design, encompassing various design approaches has received widespread attention within the realm of organizational development. Many companies are recognizing the strategic value of design in thriving the fierce and competitive business landscapes (Brown, 2009). Design, characterized by its emphasis on empathy, iterative problem-solving, and interdisciplinary collaboration, has been explored through a multitude of studies to demonstrate its impact on various facets of business developments (Brown, 2009; Rowe et al., 2015). These studies have highlighted the importance of design in fostering creativity, innovation, brand identity, organizational agility, and the financial performances (Liedtka, 2018; Eradatifam et al., 2020).

Despite the varied interest from scholars, researchers and organizations about design, many organizations struggle to unlock its true potential which includes its capability not only limited to create aesthetically pleasing products but also to solve complex problems, foster innovation, and enable interdisciplinary collaboration (Elmansy, 2016). One of the impediments to achieving this full potential could be the lack of concrete evidences or effective metrics which are used in managing and developing operations in a company (Björklund et al., 2018). Additionally, misconceptions about design, often limited to surface-level aesthetics, persist among non-design stakeholders (Elmansy, 2016), which can be another obstacle.

The concrete advantages of design in business can include increased customer satisfaction due to more empathetic solutions, streamlined internal processes resulting in cost savings, and the fostering of a culture of innovation that can be a sustainable competitive advantage (Brown, 2009; Rowe et al., 2015; Liedtka, 2015; Prorok & Kosicka, 2021). Moreover, design has been shown to reduce the time-to-market for new products and services, which can be a critical advantage in fast-paced industries (Johnson, 2016; Schmiedgen et al., 2016; Sheppard et al., 2018). A lack of effective methodologies for showcasing these concrete advantages, coupled with divergent operational principles and communication norms between designers and business stakeholders, further hampers the widespread adoption of design thinking (Carlgren et al., 2016). Overall, this underscores a requirement to demonstrate the usefulness of design in business contexts.

Considering this, the design community of the sponsor company recognized a pressing necessity to study the business value of design, encompassing various design approaches. The design department within the sponsor company has identified the necessity of integrating design, including design thinking, into strategic business functions. Given its inherent customer-centric nature, it resonates harmoniously with the company’s overarching strategy, which positions the customer at the forefront of all actions, implicitly highlighting its importance. Therefore, the sponsor company has supported this research, aiming to bridge the existing gap between design actions and measurable business outcomes.

From an academic viewpoint, the literature lacks studies that discuss the quantifiable value of design and design thinking. Existing research offers limited insights into methods for measuring the impact of design, as well as the ways to tangibly prove its worth to business
performance. This lack of academic investigation creates a compelling justification for this research. Consequently, a mutual interest emerged to embark on this research journey encapsulated by the overarching topic:

“Measuring the value of design in elevating business performances.”

This thesis seeks to probe the multifaceted dimensions of the business value of design, examining its impact on problem solving, innovation, customer engagement, brand development, and organizational development. Through an exploration of literature, project case studies and empirical analysis, this research aims to contribute to a comprehensive understanding of how design can be measured and quantified.

In addition to drawing insights from the sponsor company and literature, I have utilized personal inspirations from thriving design firms, leveraging valuable lessons from my own professional journey, and integrating knowledge acquired through academics at Aalto University.

1.1 Research Scope

Extending beyond traditional concept of design, this research also encapsulates a broader and more holistic problem-solving approach, design thinking (DT). Design thinking (DT) is a human-centered iterative problem-solving process focusing not only on solutions but on deeper understanding of users and problems themselves, thereby creating a value to the users (Heskett, 2005; Brown, 2008; Dorst, 2010). This is explained further in the theoretical framework section.

In the context of sponsor organization, design thinking translates to creative problem-solving process aiming to deliver exceptional values to customers. The design team in the sponsor organization with industrial design and service design competence operationalizes this principle in their day-to-day workflow. However, despite the focus on design excellence, there has been scant discussion regarding its direct impact on key financial performance indicators which include revenue growth, profitability ratios, customer lifetime value, and even market share within the industry. This research aimed at bridging this gap, exploring the link between design (including design thinking) and these business/financial indicators.

The scope of this research project was open-ended recognizing the complexity of the subject matter that includes bridging two distinct yet interrelated domains within organizational contexts: design and business. The open-endedness of the scope contributed to deep exploration of the intricate relationship between the two domains: design and business. The openness allowed for a broad exploration, including the synergies and tensions between design-centric initiatives and business objectives. For instance, the exploration was aimed to identify the impact of design organization upon several business and market development projects. The study investigates into the suggestions from academic studies and approaches
diverse organizations employ to assess the impact of design-centric initiatives. Specifically, the research examines how these activities correlate with key business metrics, such as customer satisfaction, innovation capabilities, and tangible financial outcomes like revenue growth, market share, and profitability. Additionally, the research investigates the core values, metrics, and Key Performance Indicators (KPIs) used by the sponsoring organization probing the connection between design and these aspects, further, to be used to generate method or framework to measure or assess the impact of design.

1.2 Research Questions

While existing research recognizes the significance of design in enhancing qualitative aspects of organizational performance, there is a distinct lack of comprehensive frameworks that systematically quantify the substantial value contributed by design to key financial indicators. Previous studies have primarily focused on qualitative outcomes, leaving a void in our understanding of the tangible and measurable impact of design initiatives on metrics such as revenue growth, profitability ratios, customer lifetime value, and market share.

This research not only aims to bridge this gap in quantitative exploration but also recognizes an additional challenge in the current landscape—the absence of universally accepted frameworks that effectively communicate the value of design to both design and business stakeholders. Despite the widespread adoption of design approaches by various organizations, the lack of standardized frameworks hinders the establishment of a cohesive language that can facilitate meaningful communication and collaboration between design and business professionals.

By delving into the quantifiable financial outcomes of design practices, our research simultaneously addresses the pressing need for a comprehensive framework that can articulate the value of design in a manner understood by both design and business stakeholders. This dual focus is driven by the understanding that for design thinking to be optimally leveraged within organizational contexts, a shared language must be established, facilitating seamless communication and collaboration across these traditionally distinct domains.

To address this gap, this research focuses on the following main question:

**How might we effectively evaluate the impacts of design initiatives such as product design, user experience design and service design, on various aspects of business performance such as profitability, customer satisfaction using a structured framework containing appropriate metrics and tools?**

To answer this main question, the research is guided by the following sub-questions:

1) What are the immediate and long-term impacts created by design initiatives?

2) Which aspects of business performances (e.g., revenue growth, profitability, customer satisfaction) can be directly or indirectly attributed to the effects of design initiatives?
3) What framework, metrics, or tools are most suitable for analyzing the connection between design activities and business performance?

These questions were devised to understand how the effectiveness of design-centric initiatives, such as product design, user experience design, or service design, can be accurately and comprehensively evaluated. The research aims to establish a robust framework for translating qualitative impacts into quantifiable measures, providing valuable insights into the contribution of design to overall business success.

1.3 Sponsor Company Background

The sponsor company is a global manufacturing company. The company has core businesses in developing, selling, and maintaining mobility equipment worldwide. The company operates in multiple business areas such as manufacturing, maintenance, and modernization of the equipment (extracted from the company’s website). The company has a core focus on providing services process throughout the lifecycle of the equipment which brings substantial recurring revenues to the company. This involves collaborative efforts of engineering R&D, business development, customer insights, service, and digital design team amongst others. Recognizing the significant importance of maintenance business, this research was heavily focused to understand the business values within the maintenance business. This exploration encompasses an in-depth investigation of the role of design team in creating value for the maintenance business but not necessarily being confined to the business line.

The main objective of the research set by the sponsor company was to research about the methods to communicate the identifiable impacts of design into terms or figures understandable for the business stakeholders. The research was intended to explore the possibilities to demonstrate design’s value in quantifiable terms. This high-level objective was supported by several sub-objectives. Firstly, the research aimed to identify relevant metrics across diverse industries. This involved an exploration of the various metrics employed across different sectors to measure the impact of design. The focus was on understanding these metrics in relation to their specific business domains, with a particular emphasis on methods that can adeptly convey the tangible benefits of design. Secondly, the research sought to find effective and commonly used metrics within the sponsor organization. The emphasis was on identifying metrics that are not only impactful but also widely utilized, creating a universal language that could bridge the gap between design and business stakeholders. Lastly, the research aimed to develop a comprehensive framework. This framework would serve in measuring and showcasing the value contributed by design to enhance business performance. The objective went beyond merely acknowledging the existence of this value; it included the development of a robust methodology for the quantification and representation of this value, providing a structured approach to demonstrate the tangible impacts of design in business contexts.

By accomplishing these objectives, the thesis aims to provide a holistic understanding of the role design in enhancing business performance, supported by a structured framework.
2. Theoretical Framework

This chapter provides a comprehensive overview of the theoretical concepts related to design thinking and its benefits. It encompasses reflective discussions derived from various literature sources, emphasizing the advantages of design, methodologies for assessing its impacts, and the encountered challenges in this context.

2.1 Design & Design Thinking

*Keywords: Design, design thinking, design maturity, business value*

In today's dynamic and highly competitive market, design has become a significant driver of success for many companies, influencing the way businesses innovate, communicate, and connect with their target audiences. The term "design" encompasses a multitude of interpretations, depending upon the context and background it can refer to anything ranging from a concept or a strategy, an action, a plan, or a finished outcome (Heskett, 2005). Although often referred to as "design thinking," these two concepts carry distinct meanings. Karel (2016), as illustrated in Figure 1 highlights the critical distinction between design and design thinking. While design encompasses specialized skills like visual design, user experience design, user research and front-end development, design thinking (DT) represents a broader collaborative approach to problem-solving, embracing cross-disciplinary skills and practices. Brown (2008) supports this and argues that design thinking is not just restricted to designers but should be part of every business decision-making process.

![Application of Design Thinking](image)

*Figure 1 Application of Design Thinking (Adopted from Karel, 2016).*

DT is a distinctive way of problem solving where in designers use techniques and methodologies taught in design school to solve design problems (Carr et al., 2010). DT is a creative
and a practical approach that places the user at the centre of the design process. By empathizing with users, understanding their needs, and iterating on solutions, design thinking approach helps tackle complex problems effectively, create products and services that resonate with the users or customers thereby generating long-term value (Brown, 2008; Dorst, 2010). The common perception of DT is that it is limited to traditional design disciplines such as product design, graphic design, or industrial design; while it can be applied to a wide domains such as business, service development, user experience and more (Karel, 2016; Dorst, 2011; Head of Design, Sponsor Organization, Figure 2). An exemplary practitioner of design thinking is IBM, most referred as IBM Design Thinking. IBM enhances cross-disciplinary collaboration, alignment, and transparency within teams. This methodology optimizes the contributions of various specialized disciplines while harnessing the power of design thinking's collaborative problem-solving approach. It is this practice of design thinking by teams, often in conjunction with deep specialized skills, that unlocks opportunities for innovation, enabling each discipline to make unique contributions that ultimately realize the full potential of a project (Johnson, 2016). The success of organizations like IBM exemplifies the transformative impact of design thinking in driving innovation, creating exceptional user experiences, and achieving remarkable business outcomes (Johnson, 2016; Forrester, 2018).

**Figure 2** Overview of Design Disciplines and Use of Design Thinking (Adopted from Design Department, Sponsor Organization)

While the most common perception people have about design is merely concerned with visuals or aesthetics. Design is an Art, Design is a Tool, Design is only about Aesthetics,
Designers do not need a degree, Designers are bad managers are the most common myths people have about design and designers (Elmansy, 2016). Designers work is seen as a way of beautifying products and services (Elmansy, 2016). What often goes unnoticed is that behind designers’ work lies a pivotal principle: design thinking (DT). Designers are often attributed with the task of enhancing the appearance of products and services, but the essence of their work is deeply rooted in design thinking. This dynamic methodology transcends surface aesthetics, focusing on empathetic problem-solving, understanding users’ needs, and iterative solution development (Kimbell, 2011). In fact, design thinking is the bedrock upon which designers craft solutions that resonate with users, generating enduring value across various domains (Kimbell, 2011; Cross, 2023).

These misconceptions about design, designers, and DT, have unfortunately prevented many organizations from harnessing the full potential of design to their advantage (Carlgren et al., 2016). Elmansy (2016) states the primary reasons behind the myths to be the definition of design and on how designers communicate the value of design. There exist several definitions of design leading to confusion amongst non-design professionals to clearly understand the work of designers and the value they bring. The lack of understanding of the value of design in business contexts and the lack of measurable return on investment (ROI) of design also contributes to these myths (Carr et al., 2010). Very few organizations relate design to business and very few organizations have harnessed the business impacts of design (Blanda, 2019). Notably, even academic literature on design and design thinking frequently falls short in addressing the tangible business impacts that stem from design thinking practices.

Several research studies conducted by design agencies aim to quantify the business impacts of design, employing quantitative analyses across companies from various disciplines. In 2019, InVision conducted a noteworthy study titled ‘The New Design Frontier,’ introducing a design maturity model. This model categorized 2229 participating organizations globally into five levels of design maturity. Each level represents a distinct stage of integration and effectiveness of design within an organization. According to the study, reaching Level 5 in the design maturity model signifies the highest level of design integration and impact on business outcomes. Organizations at this level demonstrate an exceptional ability to derive substantial value from design initiatives. However, achieving Level 5 is considered challenging, as it requires not only a comprehensive understanding of design principles but also the successful implementation and integration of design across various aspects of the business. This includes organizational culture, processes, and strategies, making it a rare achievement for only 5% of the participating organizations (Blanda, 2019). While 83% of the organizations are in middle to bottom of the maturity failing to unleash the full potential of design as done by Level 5 organizations. As such, misconception about design is highly likely to exist in these organizations among non-design professionals.

In highly design-matured organizations, non-designers often appreciate design as a problem-solving approach that emphasizes user-centeredness and creativity. They value the ability of design thinking to generate innovative solutions and promote collaboration. (Brown and Martin, 2015). In such organizations, non-designers may initially find design activities unfamiliar and challenging. However, as they participate in the process, they develop a better understanding and appreciation for the value of design, recognizing its impact on
usability and user satisfaction (Greenbaum and Kyng, 1991). While, in organizations with less design maturity, non-design professionals often associate design only with aesthetic appeal, usability, and functionality. In organizations with middle level of design maturity, design is likely to be integrated in different processes but as they fail to integrate design thinking into decision making process at the highest level, they fail to unlock the true potential of design which is to drive innovation and uncover greater business prospects (Blanda, 2019).

![Figure 3 Level of Design Maturity, Adopted from InVision (Blanda, 2019).](image)

*No. of respondents: 2229

According to a study by McKinsey and Company, businesses that effectively integrate design into their operations outperform industry peers in terms of revenue growth and shareholder returns (Sheppard et al., 2018). The study has rated participating companies in an index called McKinsey Design Index (MDI), which shows how good companies are at design and how it links up with financial performances (Sheppard et al., 2018). Similarly, previous study by the Design Management Institute (DMI) reveals that design-driven companies consistently outperform the S&P 500 index, demonstrating the financial benefits of prioritizing design (DMI, 2015). One common thing from these studies is that the participating companies have embraced design as a fundamental driver of innovation, fostering creativity, creating meaningful user experiences, and having a competitive edge in the market. Through these studies, it becomes evident that leading companies like IBM, Apple, and Airbnb have effectively integrated design to enhance their business performance, positioning them as industry frontrunners.
However, there appears to be a noticeable gap in both academic and industry literature when it comes to providing quantitative evidence linking design and Design Thinking to superior business outcomes. The absence of empirical data not only underscores the need for further research but also highlights an opportunity to investigate into uncharted territories, contributing to the development of a more comprehensive understanding of the measurable impact that design and Design Thinking can have on organizational success. Future studies in this area could play a pivotal role in bridging this gap and establishing a robust foundation for evidence-based practices in the realm of design and business integration.

This literature review highlights the growing recognition of design's profound impact on business outcomes, setting the stage for the empirical exploration of quantifiable measures in the subsequent phases of this research.

2.2 The Tangible Benefits of Investing in Design

Keywords: innovation, customer experience, brand differentiation, product innovation, financial benefits.

In common organ culture, investing in design is perceived as an intangible expense as it is extremely hard to quantify the value of design or use metrics to demonstrate the impacts of design. While studies such as Martin (2009) highlight the multifaceted benefits of DT, very few studies probe deep into illustrating a direct correlation between design investments and tangible business results. In a corporate landscape where financial ROI dictates decision-making, any investment that doesn't visibly promise a robust financial return risks being undervalued (Dray et al., 2005). Consequently, it's important to bridge the gap and definitively link design investments to measurable financial outcomes.

Research by Brown (2009) shows that companies across different disciplines that have prioritized design outperformed their competitors in terms of market share. Design impacts on revenue growth and return to shareholders is further supported by studies from McKinsey (Sheppard et al., 2018) and Design Management Institute (DMI, 2015). Although numeric illustrations directly linking design impact on financial factors are not demonstrated in these studies. One can argue that these financial outputs might be due to adoption of different business strategies and innovation developments. However, the role of design cannot be understated as one common denominator between all the companies in the all the reports is that they have adopted design core to their strategy. McKinsey conducted the studies across three different industries: medical technology, consumer goods, and retail banking, which consistently yielded analogous outcomes across all industries (Sheppard et al., 2015).

Similar study from the Design Management Institute (DMI, 2015) over a 10-year period revealed that design-driven companies outperformed the S&P index by 228% (Ravasi and Stigliani, 2012). The study examined the financial performance of top US brands that underwent design improvements. The study revealed that brands with design-led innovation had higher market shares and profitability compared to those without such investments. In a study by Mazzolini and Piccardo (2016), the authors analysed the financial performance
of Apple and concluded Apple's design policy impacted the financial performance of Apple for several years. Apple's design-led strategy resulted in higher sales, premium pricing, and increased customer loyalty. While the research from DMI and McKinsey provided graphical evidence linking design investments to financial outcomes, these studies offer limited explanation upon the methods of financial analysis. However, they do underscore the key idea that design has tangible benefits.

The InVision study from 2019, shows that design impacts product quality, operational efficiency, business profitability and market position (Blanda, 2019). Koivisto (2019) highlights the commercial benefits of design such as financial, market, internal, work culture and organizational competence. The McKinsey study by Sheppard et al. (2015) outlines four key areas to explore the range of advantages that design offers. These areas are analytical leadership, user (or customer) experience, continuous iteration, and cross-functional talent.

Hannukainen et al. (2020) explores the multiple roles and benefits of design within OP (Finland's leading Financial Group) from three different perspectives. The research categorizes the influence of design into three key areas: Vision & Strategy, Business Concepts & Service Processes, and Products & Services. It employs the innovation-horizon framework to describe design's role in driving innovation. This framework allows for the application of various design methods, such as rapid prototyping and co-creation, across different timelines for innovation. The study also notes that a growing awareness of the benefits of design has led to organizational changes. Specifically, there has been an increase in roles for designers, who are now integrated into diverse, cross-functional teams. This shift aims to enhance customer experiences through a more comprehensive application of design through multiple channels. Based on these studies: (Sheppard et al., 2015); (Blanda, 2019); Koivisto (2019) and Hannukainen et al. (2020) the key benefits of design can be derived and summarized into five categories, as illustrated in Figure 4. Further detailed discussions are in subsequent sections.
The tangible benefits of Design. Derived from different literature: Creativity & Innovation (Heskett, 2005; Brown, 2008; Rowe et al., 2015), Customer Satisfaction (Prorok and Kosicka, 2021; Fatma, 2014), Brand Value (Bund et al., 2017), Differentiation (Liedtka and Ogilvie, 2011), Organizational Improvement (Johnson, 2016).

The below mentioned sub-sections probe deeper into these benefits backed by literature evidence:

2.2.1 Design Benefit - Innovation

A large part of the literature, including Heskett (2005); Brown (2008); Isaacson (2011); Liedtka (2015); and Rowe et al. (2015) defines design as an innovative problem-solving methodology and emphasizes the capability of design thinking on innovation and problem solving. Design thinking offers a lens to view challenges in a new light, pushing boundaries to inspire creativity and innovation. Design thinking provides a systematic framework to problem-solving thereby generating ‘out of the box’ solutions. It is a human-centered approach that starts with empathizing with the user and includes experimentation and collaboration with the user which provides a foundation to uncover the unmet needs of the users or customers (Brown, 2008). The exploration process of identifying the unmet needs of users enables discovery of new opportunities, thereby producing new solutions which are oftentimes breakthrough solutions. Brown specifies the ‘mantra of innovation’ which includes inspiration, ideation, and implementation (Brown, 2009). Brown (2009) presents case studies and practical examples of companies like Nokia, Shimano, Toyota illustrating how design thinking can drive innovation.
During early 2000s, Nokia’s transformation from a technology-focused company to a design-driven organization was instrumental to its success. During the time, Nokia focused on understanding the customer’s needs in communication and they sent designers all over the world to look for what was missing. As a result, Nokia produced impressive product portfolio to meet the everyday communication needs of people. Steinbock also claims that Nokia’s approach to design integration in product innovation impacted its product offerings making them a successful telecommunication company (Steinbock, 2001).

However, not long later, Apple came into the scene and disrupted the mobile phone industry. It was design which again played a pivotal role and greatly influenced the development of iPhone, which completely revolutionized the smartphone industry. Steve Jobs and Apple emphasized the importance of user experience and created the first iPhone. Apple’s obsession with user-centric design led to the innovation of the keypad-less aesthetic smartphone. Identifying the needs of the users, picking up the right needs through user testing was fundamental to the development of the device. The hard work put behind understanding the need of phone users was the base behind the ground-breaking innovation (Isaacson, 2011).

Liedtka (2015) provides a different perspective on how design thinking fosters innovation, which is through cognitive bias reduction. Humans have tendency to project their views onto others, ignore disconfirming data, often confident of their assumptions, become overly invested in their own ideas which all contribute to impairment of creative thinking. Design thinking methodology alleviate these human traits paving way to improved thinking process and new ideas generation, promoting innovating outcomes (Liedtka, 2015).

Another aspect of design thinking is that it involves a cyclic process of prototyping and testing rather than solely relying on theories and assumptions. Designers create tangible prototypes early, test and collect feedback from the users to improve the design (Liedtka, 2018). This rapid iterative process helps designers gather accurate feedback at low cost and give an understanding of potential solution’s true value (Liedtka, 2018). Unlike traditional approach where user testing is regarded as fine tuning the design Liedtka explains radical changes can occur after the testing experience with users, leading to complete new designs. By exposing users to the prototypes, designers capture the essential features of proposed user experience which is highly effective in assessing new ideas and identifying changes (Issacson, 2011; Eradatifam et al., 2020). Design thinking is also linked to increase the involvement of multiple stakeholders in innovation process. The inclusive approach of design thinking assists innovation process, by providing a safe space for diverse perspectives to be openly shared, for new insights to emerge and knowledge to be created, while empowering stakeholders in the co-creation of new ideas (Eradatifam et al., 2020).

Hannukainen et al. (2020) explains OP’s (Finland’s leading financial service provider) methodology of visualizing design’s benefits along different layers of innovation horizons. OP uses three horizons framework, particularly focusing on a model where designers are part of multi-skilled, cross-functional teams known as "squads." These squads also include roles like product owners and software developers. The benefits of design are evaluated along different "innovation horizons," a framework popularized by McKinsey. The framework divides innovation into three time-based horizons: short-term (1-2 years), medium-term (2-5
years), and long-term (5-10 years). In the short-term, the focus is on sustaining and incrementally improving existing products or services. In the medium-term, the goal shifts towards extending capabilities and entering new markets. The long-term horizon aims for radical, disruptive innovations. This study evidently depicts the role of design in driving OP’s innovation capabilities.

In a recent study by Cheng and de Bont (2022), their research provides compelling evidence of the multifaceted role of design in fostering innovation across various dimensions. This study was conducted among Chinese firms that have received design awards, and it classifies these firms based on their approach to design utilization and the subsequent impact on innovation, as depicted in Figure 5, Cheng and de Bont (2022). Remarkably, even firms that employ design primarily for aesthetic enhancements or to streamline their processes have demonstrated noteworthy outcomes in terms of innovations related to aesthetics, functionality, and usage improvements. However, the true potential of design in driving innovation emerges when it is integrated into a company’s broader strategic framework. Such an approach has proven to be a catalyst for competitive innovations, enabling firms to stand out in the marketplace Cheng and de Bont (2022). Notably, this study emphasizes that only a minority of firms have fully embraced strategic design to create entirely new meanings and foster typological or radical innovation, as opposed to the more common incremental innovation Cheng and de Bont (2022). This underlines the untapped potential of design as a catalyst for ground-breaking and transformative innovations within the business landscape.

![Figure 5 Link between Design Utilization and Outcome in Innovation (Cheng & de Bont, 2022)](image)

### 2.2.2 Design Benefit - Enhanced Customer Experience

Design is inherently customer centric and serves to provide value to customers. It provides a systematic approach to understanding and addressing customer needs ultimately enhancing the experience (Brown, 2008). It is fundamental in the process of customer experience management as it allows for a better customer understanding, prioritizing activities, measuring new experiences and contributes to building a customer-centric culture (Prorok and Kosicka, 2021). Prorok and Kosicka have extensively researched the connections between
the design thinking tools and methods across different domains of customer experience management.

Customer Experience Management (CEM) is a customer centric and process-oriented management concept dedicated to strategically managing a customer’s entire experience associated with an organization. The purpose of CEM is to gather customer feedback, identify business processes and minimize negative customer experiences all of which is to enhance the business performance of the organization (Fatma, 2014).

<table>
<thead>
<tr>
<th>Design Thinking method/tool</th>
<th>Customer Experience Management Domains</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Customer Understanding</td>
</tr>
<tr>
<td>Persona</td>
<td>x</td>
</tr>
<tr>
<td>Customer journey map</td>
<td>x</td>
</tr>
<tr>
<td>Mind map</td>
<td>x</td>
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<tr>
<td>Ethnography</td>
<td>x</td>
</tr>
<tr>
<td>Brainstorming</td>
<td></td>
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<tr>
<td>Visualization</td>
<td></td>
</tr>
<tr>
<td>Prototyping</td>
<td>x</td>
</tr>
<tr>
<td>Field experiments</td>
<td></td>
</tr>
</tbody>
</table>

Figure 6 Use of Design Thinking tools in Customer Experience Management domains (Prorok and Kosicka, 2021).

Figure 6 illustrates how design thinking tools, when applied across various domains of customer experience management, contribute to fostering customer understanding, ensuring the right design, facilitating delivery, and ultimately shaping the overall customer culture. As all organizations inherently work to serve the customers and make them happy by providing the best customer experience, design thinking tools such as use persona, customer journey mapping, ethnography, mind map can be instrumental in enhancing customer understanding, thereby improving their business performances. Therefore, by focusing on empathy, experimentation, and iteration, DT tools not only enrich the customer journey but also foster a customer-centric culture within organizations, evidently highlighted in multiple studies from Martin (2009); Dorst (2010); Isaacson, (2011).
Forbes (2020) highlights various strategies employed by leaders in seven different organizations to leverage design for enhancing customer experience. These strategies include: (1) Making the interaction useful and usable, (2) Understanding customers’ mindset, (3) Prioritizing the customer, (4) Ensuring user-friendliness, (5) Shifting to the customer perspective, (6) Approaching problems in new ways, and (7) Discarding outdated assumptions (as extracted from an article by Forbes, 2020). Examining these examples reveals common practices wherein designers investigate into the customers’ mindset, empathizing with their concerns and needs. Decisions are driven by customer needs before other business considerations, providing a fresh perspective on problems and proposing solutions aligned with customer desires (Forbes, 2020). Prioritizing customer values over organizational values leads to improved customer experiences, translating into better business outcomes (Martin, 2009; Dorst, 2010). This underscores the inherently customer-focused nature of design.

2.2.3 Design Benefit - Brand Value

Kuchinke et al. (2019) emphasize the pivotal role of a consistent brand identity in influencing brand equity and, consequently, enhancing financial performance. The establishment of brand equity fosters customer satisfaction, loyalty, positive word-of-mouth, and customer trust, collectively contributing to improved business outcomes.

Although the direct literature connection between design thinking and the execution of the Blue Ocean strategy may not be explicitly established, the integration of both approaches into a company’s strategy holds the potential to enhance overall business performance. Blue Ocean strategy, characterized by the creation of uncontested market spaces through unique value propositions (Kim and Mauborgne, 2005), can be complemented by design thinking’s emphasis on innovative solutions and the delivery of unique value and experiences to customers.

In today’s competitive market landscape, companies can leverage design thinking, along with other strategic approaches, to forge a distinctive brand identity and differentiation. Well-designed products, services, or brands that align with customer needs not only build trust and credibility but also capture attention, generating interest among customers (Bund et al., 2017).

Norman and Verganti (2014) argue that design is not confined to incremental changes but can drive radical innovation, enabling companies to disrupt industries and create new opportunities. Successful design strategies, fostering a culture of continuous improvement and innovation, can provide organizations with a sustainable competitive advantage and strengthen customer loyalty. This commitment to good design demonstrates dedication to quality and customer-centricity.

Design thinking’s impact on brand value and identity is also evident in the realm of user experience design. Liedtka and Ogilvie’s (2011) study demonstrates that design thinking enhances the user experience through a focus on empathy, iteration, and continuous improvement. User involvement in prototyping and testing phases contributes to an inclusive and
affinity-building experience, positively shaping the brand's image in the minds of customers. Thus, a well-designed user experience reinforces the brand's identity and perception, fostering positive associations among customers.

2.2.4 Design Benefit - Differentiation

In marketing and business literature, differentiation is defined as a process of distinguishing a product, service, or a business from competitors in ways that make it more attractive to a particular target market (Kotler and Armstrong, 2010). Through differentiation, a company aims to offer a unique value proposition compared to other offerings in the marketplace, creating a competitive advantage (Kotler and Armstrong, 2010).

Numerous literatures point out the role of design thinking in driving differentiation in both products and business model (Brown, 2008; Brown, 2009; Liedtka and Ogilvie, 2011; Kolko, 2015). These studies explain the contribution of empathy, user-centeredness, prototyping, iteration, and cross functional collaboration in problem solving, leading to offerings that distinctly stand out from competitors. A study by Neumeier (2008) reflected the importance of innovation in driving differentiation. While it is certain that innovation drives differentiation, Neumeier (2008) questions what drives innovation? The answer is design. Design’s ability to identify possible futures, inventing exciting products, building bridges to customers, and cracking wicked problems makes it a powerful tool in driving innovation and by extension, differentiation (Neumeier, 2008; Reimann and Schilke, 2011).

Several ground-breaking products exemplify the transformative power of innovative design in creating distinct market identities. Among these, Apple's first iPhone stands out, revolutionizing mobile communication by converging an iPod, phone, and internet browser into a single intuitive device (Mazzolini and Piccardo, 2016). Similarly, the Nintendo Wii, with its motion-sensing technology, reshaped the gaming landscape by inviting a broader, more diverse audience to engage in active gaming. Toyota’s Prius, on the other hand, set a new benchmark in the automotive industry by successfully combining eco-friendly hybrid technology with practical design, appealing to both environmentally conscious consumers and everyday commuters (Verganti, 2009). Each of these products, while diverse in their application and market, underscores the principle of radical differentiation achieved through forward-thinking design, a concept highlighted by Neumeier (2008).

Apart from product and service differentiation, Liedtka and Ogilvie (2011) provide insights into how design thinking can be harnessed to drive differentiation in business models and strategies. Design thinking’s "fail fast, learn faster" mantra means that potential flaws in a business model can be identified early in the process. This not only reduces long-term risks but can also lead to the development of more resilient and innovative business models. By continuously focusing on delivering value to users, design thinking ensures that the business model’s value proposition remains sharp, clear, and distinctively appealing. Embracing ambiguity, a core principle of design thinking (Brown, 2009), empowers businesses to venture beyond traditional boundaries, enabling the exploration of disruptive business avenues that...
can set them apart from the competition which also aligns with the concept of blue ocean strategy (Kim and Mauborgne, 2005).

2.2.5 Design Benefit - Organizational Improvement

Design is intricately connected to organizational improvement, playing a crucial role in identifying inefficiencies in business processes and streamlining operations. One noteworthy study conducted by Johnson (2016) delves into the impact of design on organizational improvement, specifically through a quantitative analysis in collaboration with IBM. In this study, Johnson (2016) explored the application of IBM’s Design Thinking approach, revealing its potential to significantly reduce project costs and development time. The findings suggested a remarkable efficiency improvement, with the Design Thinking approach demonstrating the capability to cut costs and development timelines by up to 75% (Johnson, 2016). This highlights the tangible benefits of integrating design methodologies into organizational processes, showcasing its potential to drive substantial improvements in operational efficiency and resource utilization.

Human-centered approach critical to design thinking ensures value creation and ensures that solution is tailored to meet user needs (Liedtka and Ogilvie, 2011). As design involves user or customer research and identifies right needs to be solved, organizational resources can be utilized in solving right problems, optimized workflows can be developed eventually saving redundant costs. Similarly, Kolko (2015) highlighted the importance of early and frequent customer validation in reducing costly mistakes and promoting operational efficiencies.

Another approach core to design thinking is the iterative approach which promotes rapid cycles of prototyping, testing, and learning which allows refinements, reduces unnecessary activities, promotes efficiency, and encourages flexibility (Brown, 2009). These aspects contribute to cost effectiveness compared to traditional approaches, where valuable organization resources such as time and money are squandered on producing subpar results.

Kimbell (2011) underscores the role of design thinking in encouraging cross-functional collaboration in organizations. The study highlights aspects such as expansive problem framing, inclusive stakeholder engagement, reduced bias in decision making, shared ownership and responsibility as core benefits to cross-functional collaboration. Cross-functional teams bring a richness of perspectives and can spot potential pitfalls or opportunities that a more homogenous team might overlook. In organizational settings, this translates to involving representatives from different departments, ensuring that solutions cater to a wide range of internal needs and challenges. Diverse teams are better positioned to challenge biases and assumptions (Kimbell, 2011). Through design thinking, these teams can engage in constructive debates, thereby refining solutions and minimizing the risks associated with tunnel vision. Cross-functional collaboration through design thinking promote a sense of shared ownership. When solutions are derived from collective effort, there’s increased commitment across the organization to ensure the success of these solutions (Kimbell, 2011).
Tangible benefits of design extend beyond the aesthetics and subjective value. Design has proven to enhance customer experiences, increase financial outcomes, establish competitive advantage, and develop long term brand value (Brown, 2009; Kimbell, 2011; Kolko, 2015). This literature section aimed to provide a brief overview of the tangible benefits of design in business context.

2.3 Measuring the Return on Investment (ROI) of Design

Keywords: ROI, Customer metrics, Performance metrics, Finance metrics, Brand metrics

Measuring the ROI of design is a complex phenomenon as it is difficult to quantify design’s impact on business outcomes. In the previous section, I highlighted the tangible benefits of investing in design: (1) Innovation, (2) Customer satisfaction, (3) Brand Value, (4) Differentiation and (5) Organizational Improvements. However, these results are very difficult to measure accurately and immediately after an investment is made (DMI, 2015). It is mainly because design is often a long-term investment, and the results are shaped by multitude of factors which determines its outcomes (Liedtka and Ogilvie, 2011). Despite the complexity, this literature explores the concept of measuring the ROI of design associated with the tangible benefits of investing in design, as mentioned in previous section and sheds light on different metrics and indexes adopted and developed by design organizations and design scholars for measuring design impacts.

2.3.1 What to measure?

Measuring ROI and utilizing appropriate metrics are crucial aspects for business evaluation and allows organizations to assess financial impact and efficiency of their organizational resources adding valuable insights into the performance and progress of business decisions (Marr, 2012; Kaplan & Norton, 1996). Almost all organizations employ metrics relevant to their business objectives and standards. The most common ones are related to finances comparing the profits and costs and expands to non-financial ones such as customer satisfaction, employee engagement, brand awareness etc. (Marr, 2012).

Several studies (Hertenstein et al., 2005; Roberts, 2004; DMI, 2015;) have established correlation between design and financial performances with extensive and long duration studies tracking financial results and stock performances of design centric organizations. DMI developed DVI (Design Value Index) as a metric to assess financial value of design quantifying the stock performance of design driven companies such as Apple, Coca-Cola, Ford, Starbucks, Walt Disney and compared it to S&P 500 index (DMI, 2015). The comparisons are mostly associated to direct finances outcomes such as profit and returns since these are the most influential to measure stock performances. However, these studies also talk about non-financial outcomes such as customer loyalty and brand awareness which are indirectly associated to returning positive financial results for the companies. Liedtka (2018) highlights about cost related metrics associated with design and business. Efficiency gains and cost savings resulting from design improvements, shortened time to market, streamlined
product development cycles, and effective resource tracking contribute to overall cost and expense management in design (Liedtka, 2018; Venselaar, 2018).

Similarly, in the context of design thinking, several measures or metrics can be utilized in assessing the impacts of design as associated with the design benefits mentioned in previous section (Section 2.2). The metrics are summarized in Table 2.

Table 1 Summary of metrics related to design as extracted from different literature (References below)

<table>
<thead>
<tr>
<th>Design Benefits/Performances</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovation</strong> (Amabile 1996; Eradatifam et al., 2020)</td>
<td>Number of novel ideas generated</td>
</tr>
<tr>
<td></td>
<td>Number of patents achieved</td>
</tr>
<tr>
<td></td>
<td>Identification of New markets</td>
</tr>
<tr>
<td><strong>Customer Satisfaction</strong> (Marr, 2012; Schmiedgen et al., 2016; Kumar and Rajan, 2020)</td>
<td>Customer conversion rates</td>
</tr>
<tr>
<td></td>
<td>Customer lifetime value (CLV)</td>
</tr>
<tr>
<td></td>
<td>Churn rates</td>
</tr>
<tr>
<td></td>
<td>Net promoter Score (NPS)</td>
</tr>
<tr>
<td><strong>Brand Value</strong> (Gu &amp; Lev, 2011; Kuchinke et al., 2019; Norman, 2019)</td>
<td>Brand value (intangible assets)</td>
</tr>
<tr>
<td></td>
<td>Brand loyalty</td>
</tr>
<tr>
<td></td>
<td>Brand perception</td>
</tr>
<tr>
<td><strong>Differentiation</strong> (Porter, 1985; Shenkar, 2010)</td>
<td>Number of unique products/offering introduced</td>
</tr>
<tr>
<td></td>
<td>Sales of new products/services</td>
</tr>
<tr>
<td></td>
<td>No. of products/offering copied by competitors</td>
</tr>
<tr>
<td><strong>Organizational Efficiency</strong> (Björklund, 2018)</td>
<td>Development &amp; Testing Time</td>
</tr>
<tr>
<td></td>
<td>No. of defects in product/offering</td>
</tr>
<tr>
<td></td>
<td>Time to market</td>
</tr>
<tr>
<td><strong>Project Outcomes</strong> (Brooke, 1996; Björklund, 2018)</td>
<td>ROI per project</td>
</tr>
<tr>
<td></td>
<td>Market share of the resulting service &amp; product</td>
</tr>
<tr>
<td></td>
<td>Usability metrics (SUS) of the resulting service &amp; product</td>
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</tbody>
</table>
Further discussion on metrics deployed to demonstrate the design benefits are as follows:

**Metrics to measure Innovation:**

Research from Eradatifam et al. (2020) provided numerical evidence which indicates the impact of design thinking in the context of product, process, and organizational innovation. This study deploys measures derived from Jimenez et al. (2008) which are associated with measuring product, process, and organizational innovation. This study demonstrates how the impact of design thinking on innovation can be measured in numbers. The measures can be categorized as product innovation, process innovation and organizational innovation, as per the study by Eradatifam et al. (2020) which were derived from Jimenez et al. (2008).

In terms of product innovation, the study considers the number of new products/services introduced and the number of hours spent per person on innovation activities. For process innovation, the measures include the number of changes in the process introduced, pioneer disposition to introduce the new process, and the response to a competitor's new process.

Organizational innovation is assessed through measures such as the novelty of the new management system, the search for a new management system, and the pioneer disposition to introduce a new management.

Similarly, Amabile (1996) highlights methods to assess creativity and innovation. The study mentions method used by organizations to track innovation through metrics such as number of patents achieved and number of patents per employee. Additionally, it suggests calculating the percentage of revenue derived from the development of new products and services as an effective approach to quantitatively assess the business impact of innovation. These principles are applicable not only in a general context but also in the realm of design.

**Metrics to measure Customer Satisfaction:**

Design impacts extend beyond cost and financial gains, influencing key metrics vital for user experience, customer satisfaction, and customer base expansion. One significant metric, the Customer Conversion Rate, tracks the ratio of prospective customers becoming loyal customers (Marr, 2012; Schmiedgen et al., 2016), providing insight into design effectiveness. Safari and Safari’s (2020) study in the Iranian banking sector emphasizes the importance of Customer Lifetime Value (CLV) for evaluating design’s influence on customer retention and long-term value. CLV serves as a crucial measurement tool, assessing the overall impact of design strategies in fostering customer loyalty and maximizing long-term customer relationships, a sentiment echoed by Kumar and Rajan (2020). Kolko (2019) underscores the significance of assessing user satisfaction and loyalty, recommending tools like surveys or Net Promoter Score (NPS). NPS, developed by Fred Reichheld in 2003, is widely adopted for measuring customer loyalty and satisfaction across diverse industries. Its straightforward methodology makes it effective for gauging the impact of design on customer satisfaction, while its strong correlation with business outcomes positions it as a valuable tool for organizations aiming to measure customer loyalty and drive profitability (Reichheld, 2003).
In alignment with the research question on evaluating the impacts of design initiatives on business performance, these studies highlight the importance of metrics such as Customer Conversion Rate, Customer Lifetime Value, and Net Promoter Score in assessing the effectiveness of design strategies on revenue growth, profitability, and customer satisfaction.

**Metrics to measure Brand Value:**

Further studies have emphasized the significance of brand-associated metrics. Brand metrics like brand value, brand awareness, or brand equity can be used to track the brand's overall performance (Kuchinke et. al., 2019). Norman (2019) introduces the Brand Perception Metric, a straightforward measure that evaluates the influence of design on brand perception, loyalty, and differentiation. The integration of design-driven branding with the Brand Perception Metric provides a comprehensive understanding of the role of design in shaping customer experiences and brand positioning. Expanding on the measurement of brand value, Gu & Lev (2011) shed light on the significance of quantifying the financial worth associated with a brand's intangible assets, including design elements. This perspective acknowledges that design plays a pivotal role in creating intangible value for a brand, contributing to its overall success and market position. By effectively measuring and evaluating the financial value attributed to design, businesses can gain valuable insights into the return on investment (ROI) and the strategic impact of design on brand performance.

**Metrics to measure Differentiation:**

Imitation in the competitive landscape often serves as a proof to the effectiveness and success of the original product or service. As Shenkar (2010) emphasized, when companies opt to imitate, it can be a strategic move designed to counter the offerings of competitors and prevent them from capturing a significant market share. Analysed from an alternative perspective, this limitation underscores the impact and success of the original product or service.

Design-led initiatives hold substantial impact in this context. When such initiatives introduce a distinct product or service to the market, the occurrence of competitors imitating these designs over time can be an essential metric of success. In essence, the number of products or offerings copied by competitors becomes a tangible measure of differentiation and market impact. Beyond imitation as a metric, another insightful measure of differentiation can be derived from the introduction of unique products or services in the market (Porter, 1985). The revenue generated from these offerings demonstrate their market acceptance. As such, the sales figures of these innovative products or services become crucial indicators. Thus, from a market dynamics standpoint, the sheer volume of sales and revenue generation serves as a proof to the effectiveness of these design-led innovations.

**Metrics to measure Organizational Efficiency:**

A study conducted by Björklund (2018) with OP Financial Group underlines the concept of utilizing organizational internal metrics such as (1) Feature turnaround time, (2) Internal
satisfaction of design projects and (3) Innovation maturity in the organization. OP strives to integrate design core to their strategy and not only a departmental principle and as such systematic tracking of design impacts is more relevant. However, with organizations with lesser design maturity, these metrics might not be relevant and Bjorklund highlighted the usage of metrics such as number of projects and concepts finished, usability metrics (SUS) and concurrency of prototype iterations might be more relevant (Bjorklund, 2018).

Another study upon IBM conducted by Forrester (2018) outlines quantifiable benefits of design thinking practice upon organizational efficiency. Findings from the study highlight the role of design in elevating design processes and execution speed of IBM’s project. IBM utilized metrics such as (1) Time required form design and alignment, (2) Development and Testing durations, (3) Frequency of design defects and (4) Time to market (Forrester, 2018).

A recurring theme across both studies is the emphasis on turnaround time for offerings or, in broader terms, the organization’s agility in delivering customer value. This could be a crucial metric in analysing the design impact.

**Metrics to measure Project Outcomes:**

Bjorklund (2018) identified several project-specific metrics that can serve as direct indicators of a project’s success and impact. These include (1) Return on Investment (ROI) per project, (2) Market value or share of the resultant product or service, and (3) Usability of the product or service as determined by the System Usability Scale (SUS). These metrics, when used in projects influenced by design thinking, can directly quantify the value and impact of design interventions. Project-specific metrics are crucial as they allow organizations to understand the immediate outcomes of their efforts. ROI, for instance, provides a clear picture of the financial efficacy of a project. A high ROI indicates that the design thinking interventions are not only innovative but also commercially viable.

The market value or share of a resultant product or service serves as a measure of its strength in the market (Kotler and Armstrong, 2010). They are hard financial metrics utilized widely in financial realm. A product that captures a significant market share post-launch showcases its acceptance and preference among consumers, signifying its success. As such, this could be a crucial metric to clearly understand the influence of design upon certain projects.

Furthermore, the System Usability Scale (SUS) is a widely recognized tool for evaluating a product’s ease of use. High SUS scores directly correlate with user satisfaction and demonstrate that the product not only meets functional requirements but also provides an enhanced user experience, which is central to design thinking (Brooke, 1996).

In Summary, the metrics associated with assessing the impact of design can be classified into two primary categories: (1) Quantitative Metrics and (2) Qualitative Metrics, shown in Table 2.
Table 2 Categorization of Metrics into Qualitative and Quantitative Metrics (references same as in Table 1)

<table>
<thead>
<tr>
<th>Design Benefits</th>
<th>Qualitative Metrics</th>
<th>Quantitative Metrics</th>
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<tbody>
<tr>
<td><strong>Innovation</strong></td>
<td>Number of novel ideas generated</td>
<td>Number of patents achieved</td>
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<tr>
<td><strong>Brand Value</strong></td>
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<td>Brand perception</td>
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<tr>
<td><strong>Differentiation</strong></td>
<td>Number of unique products/offerings developed</td>
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<td></td>
<td>Usability metrics (SUS) of the resulting service &amp; product</td>
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</table>

2.3.2 How to measure?

In exploring methods for assessing the Return on Investment (ROI) of design, the literature offers various approaches:

**Quantitative Analysis:**
Quantitative metrics are objectively measurable and provide concrete results which are not subject to interpretation or bias. Examples of quantitative metrics include revenue growth, cost savings, and customer retention rates (Marr, 2012). These metrics are straightforward and can be obtained through simple data collection methodologies and numerical analysis. Organizations can implement systems and tools to collect and organize numerical data, making it easier to track and measure key performance indicators. With the availability of technology and automated data processing, businesses can streamline the process of data collection, ensuring accuracy and efficiency in analysing the metrics.

**Qualitative Research:**

Qualitative metrics are more subjective in nature and can be challenging to measure precisely. However, they offer valuable insights into the customer experience and perception of a brand. Qualitative metrics encompass factors such as customer satisfaction, usability, and brand perception. Although they may not have direct numerical values, qualitative metrics provide essential qualitative feedback and inform decision-making processes (Neely et al., 1995; Kolko, 2019). These metrics can be obtained through qualitative research methods like user interviews, usability testing, or surveying focus groups who can provide valuable insights into the impact of design. These insights can help in understanding the ROI of design beyond just numbers and provide subjective interpretation of the effect of design.

**Case studies:**

The Design Value Index (DVI) by the Design Management Institute (DMI, 2015) presents case studies and data on the financial performance of design-led organizations. A fruitful approach for organizations would involve studying case studies of design initiatives from top design-driven organizations that have achieved successful business outcomes. Through case studies organizations can establish baseline metrics and formulate starting point to measure the impact of design thinking (Schmiedgen et al., 2016). By examining case studies, organizations can gain insights into how design thinking, user-centered design, and strategic design have helped organizations solve problems, enhance customer experiences, leverage organizational resources, and achieve competitive advantages (Neely et al., 1995). Analysing these case studies helps organizations relate the contributions of design to their value chain, providing a holistic view of how design impacts various aspects of the organization's operations and performance. In summary, case studies offer real-world examples that showcase the tangible benefits of incorporating design into business strategies.

**Benchmarking:**

A study by Krishnamoorthy & D’Lima (2014). highlighted the importance of benchmarking for companies to improve their competitiveness by learning from industry leaders. Similarly, comparing the performance of design initiatives against industry benchmarks or competitors’ data can help assess the ROI of design efforts. Additionally, Neely et al. (1995) emphasized the use of performance measurement systems in benchmarking leading business initiatives and aligning them with the strategic objectives of the organization. By implementing
effective performance measurement systems, companies can track and evaluate the progress of their design initiatives, comparing them against industry benchmarks or competitors' data. This enables organizations to assess the return on investment (ROI) of their design efforts and make informed decisions regarding design-related factors. Furthermore, benchmarking design projects from design-driven organizations allows for the identification of key design-related factors or measurements. By incorporating these measurements into performance measurement systems, companies can conduct comparative analyses and derive insights that demonstrate the ROI of design. This helps organizations understand the impact of design on their overall performance and justify investments in design initiatives (Neely et al., 1995). Benchmarking can be used by all organizations regardless their size and structure and can benefit all organizations by providing framework for assessing ROI of design efforts.

**Before and After Analysis:**

In educational research and medical science, pre and post analysis are very common methods and holds significant value as it helps gauge the effectiveness and impact of educational innovations and clinical inventions respectively (Dugard and Todman, 1995; O'Connell et al., 2017). In the realm of design, this practice can be transformed to compare user experience, process flows, offering turnaround time and profits before and after implementing a design change or initiative. Studies conducted by Zamfir et al. (2016) and Karan (2020) supports the significance of before and after analysis in management process such as decision making, ROI assessment and process improvements. For instance, Zellner (2011) emphasized the importance of before and after analysis in enhancing business process improvements through restructuring and improving workflows. Zamfir et al. (2016) highlighted how measuring ROI through this analysis can help in evaluating the success of strategic investments. Karan (2020) discussed the benefits of evidence-based decision-making in product management facilitated by before and after analysis. As such, before and after analysis in management, particularly in the context of design, could provide a systematic and evidence-based method to evaluate the effectiveness of organizational decisions and initiatives. By analysing measurable indicators such as customer satisfaction scores, usability ratings, conversion rates, and sales data, design's influence on key performance metrics can be quantified.

**A/B testing:**

A/B testing is a widely used method in decision-making processes related to design, particularly in the realm of User Experience (UX) design (Gardey & Garrido, 2020). This methodology delivers objective evidence on how different design variations affect outcomes. Measured criteria often include user engagement, user experience, and conversion rates among other relevant metrics (Young, 2014). Netflix uses A/B testing in order to analyse member retention and member engagement rates (Gomez-Uribe & Hunt, 2015). Not only confined to variations within UX design A/B testing may serve as a comparative tool between two distinct initiatives: one that incorporates design elements and one that does not. This broad application is instrumental in highlighting the added value of design involvement. Specifically, it can empirically demonstrate how design enhances customer engagement and overall experience. Financial aspects are crucial as well. Metrics like customers’ willingness to pay
can be evaluated in A/B tests, further enriching the comparative study between design and non-design offerings. This makes it possible to align the performance data with the costs of implementing design changes, generating an insightful ROI metric (Kohavi & Thomke, 2017). Moreover, the inclusion of longitudinal analysis adds a layer of robustness to these comparisons. It ensures that the ROI metrics are durable and not merely transient phenomena influenced by short-term variables. Beyond quantitative data, A/B testing offers insights into non-monetary ROI indicators such as user satisfaction and brand equity (Kuchinke et al., 2019). While challenging to quantify, these dimensions are nonetheless integral for a well-rounded ROI analysis. In summary, A/B testing is a powerful tool for organizations aiming to make data-driven decisions. It provides invaluable assurance that investments in design are both effective and financially sustainable. As a result, decision-makers are better equipped with concrete data, offering a more transparent view of the true impact of design changes.

2.4 The Challenges in Demonstrating the Value of Design

*Keywords: Data Accuracy, Time & Resources, Misconceptions on design*

Despite several research findings pointing out the metrics or measures for evaluating the design ROI, accurately measuring the ROI of design initiatives, and demonstrating the impact of design thinking presents significant challenges (Schmiedgen et al., 2016). This section points out few challenges in measuring and proving the value of design as discussed in different literature:

2.4.1 Connection between Design and Business

Identifying the direct link between design efforts and specific business outcomes is a significant challenge in measuring design ROI (Liedtka, 2018). Design is just one factor among many that contribute to the sales and revenue generation for a company, making it difficult to isolate the impact of design initiatives from other variables (Norman, 2019). Many business factors such as marketing campaigns, pricing strategies, and external market conditions such as economical shifts in consumer preferences can influence the ROI, making it challenging to isolate and quantify the design impacts. Consequently, attributing business outcomes solely to design can be inaccurate. As such, the ROI of design must be considered on a broader context by evaluating the combined effect of multiple factors.

Gathering accurate and reliable data to measure design-related metrics poses a challenge in assessing design ROI (Ferguson, 2017). Design metrics often rely on diverse arrays of data sources, including sales figures, user feedback, and market research. Integration of this data points on key performance indicators can be tricky as it segregated into different formats and databases. As design is an integrated function and its influence are scattered across different departments or systems, gathering, and analyzing such fragmented data can provide misleading results. Additionally, obtained data might not be accurate and reliable to be used for further analysis.
Another issue as mentioned by (Micheli et al., 2019) is that there is a lack of standardized process and protocols in accumulating data across the design domain. Obtaining comprehensive and relevant data can be challenging, particularly when data collection methods are not standardized.

### 2.4.2 Subjectivity and Perception

Measuring the impact of design on qualitative aspects, such as user experience and brand perception, can be challenging due to the subjective nature of these evaluations (Gu & Lev, 2011). Quantifying subjective metrics like user satisfaction or emotional response requires appropriate methodologies, such as surveys or user testing, to gather reliable data. Balancing qualitative and quantitative data can enhance the accuracy of design ROI measurement.

A research study by Kim and Mauborgne (2014) discussed the concept of "blue ocean strategy," suggesting that innovation through design can create new markets and uncontested spaces, but its value is not immediately apparent to stakeholders. Design team as such are considered of less value and face challenges in communicating their impact to decision makers. Numerous studies point out the subjective conclusions about the effects of design thinking on innovation (Liedtka, 2015, Meinel et al., 2020; Nakata and Hwang, 2020). However, these studies are conceptual and explanatory which do not provide information about methods to measure the impacts on a concrete level. As such, Schmiedgen et al. (2016) highlights the need of story-based approach in demonstrating the impact of design thinking.

Design evaluations inherently involve subjective judgments, which can pose challenges when measuring design ROI (Kolko, 2019). User satisfaction, brand perception, and aesthetic appeal are subjective aspects of design that may vary among individuals. Different stakeholders may have different perceptions of design ROI and its importance in decision-making, leading to conflicting viewpoints and challenges in aligning objectives (Micheli et al., 2017). Overcoming subjectivity challenges requires establishing clear evaluation criteria and involving diverse perspectives. Defining specific metrics and evaluation frameworks can help minimize subjectivity and provide a more objective basis for measuring design ROI. Engaging stakeholders in discussions and fostering a shared understanding of the value of design can help align perceptions and ensure informed decision-making.

### 2.4.3 Time and Resources Constraints

The process of demonstrating design's business value demands significant investment of both time and resources. Unfortunately, many organizations find themselves constrained in this aspect. One of the primary challenge the face is the scarcity of human resources equipped with proper design education and expertise. Unlike finance and technical fields, where there might be plethora of professionals, the number of qualified designers is substantially low in many organizations (Liedtka, 2011). Another hurdle is the lack of awareness among the management stakeholders in understanding the value of design which results in a shortfall of support and resource allocation in demonstrating the impact of design. These
conditions can hinder organizational ability to measure the ROI of design (Micheli et al., 2017)

Several studies suggest that companies often prioritize short-term profit over investing in design research, leading to difficulties in showcasing its long-term benefits (Sheppard et al., 2018; DMI, 2015). Sheppard et al. (2018) revealed companies with high McKinsey Design Index (MDI) scores assessed their design performance treating it with the same level of scrutiny as their financial metrics. On the contrary, businesses with lower MDI scores fail to value the process of assessing the design performance. Furthermore, the study highlighted the disparity in numbers between designers and non-designers in organizations with lower MDI scores (Sheppard et al., 2018). Designers find themselves outnumbered and unheard while getting over occupied with general tasks making it challenging for them to showcase the impacts of design.

In essence, companies can allocate time and resources to track the design’s business value in the same rigor as they track the sales and revenue. Just as financial performance is routinely monitored and analyzed, dedicating equivalent time and resources to track design's contribution can help understand its impact.

### 2.4.4 Communicating Design Outcomes

In the context of management and business managers, it is fundamental to communicate a service in business terms and show measurable and quantifiable value. Investors and managers rarely invest in domains that cannot be quantified and treat them as risky investments (Marr, 2012).

Designers and business stakeholders possess distinct area of knowledge and expertise. Designers are educated with the principles and practices of design with expertise on user research and experience. On the other hand, business owners are educated with management concepts which includes strategic planning, financial analysis, market dynamics and operational efficiency (Micheli et al., 2017; Sheppard et al., 2018). Successful organizations facilitate collaboration between these groups. However, an inherent challenge exists due to the contrasting nature of these professions. Designers use specialized concepts, tools, and methods unfamiliar to business owners. In contrary, business owners might communicate in business centric language. To bridge this gap, designers need to adopt a business-oriented language that directly correlates design decisions to business outcomes (Carlgren et al., 2016). By pivoting towards methods that resonate with the business stakeholders may be effective in demonstrating design’s business value. Business stakeholders are most familiar with Key Performance Indicators (KPIs) and prefer tracking progress of organization based on these indicators which includes indicators such as customer engagement, conversion rates, operational efficiencies, and time to market (Marr, 2012). In numerous organizations, these metrics serve as key performance indicators (KPIs). As a result, designers can amplify their credibility and hold greater influence over business stakeholders by embracing business-oriented language and leveraging essential tools valued by the business realm.
3. Research Methodology

This chapter provides a comprehensive overview of the research approach, highlights the research actions undertaken, and presents an in-depth explanation of the data collection process which was conducted in the sponsor organization.

3.1 Research Approach

The research approach adopted in this thesis is influenced by the constructive grounded theory framework proposed by Charmaz (2006) & the constructive research approach proposed by Kasanen et al. (1993). Grounded theory and constructive research have been combined, especially because of the complexity and diverseness of this research. This hybrid approach facilitated a comprehensive contextual comprehension during the grounded theory phase, serving as the foundation for proposing a practical solution during the constructive phase.

3.1.1 Constructive grounded theory

Charmaz describes constructive grounded theory as a distinctive research method that involves theory development through inductive analysis of data gathered from research participants. In contrast to conventional scientific research method which typically involves hypotheses derived from pre-existing theories, constructive grounded theory involves the complex task of constructing hypothesis and theories directly from the collected empirical data (Dunne, 2011). Following are the key characteristics of constructive grounded theory as described by Charmaz (2006) and Dunne (2011): 1) Theory Development, 2) Inductive Analysis, 3) Constant Comparison, 4) Theoretical Sensitivity and 5) Collaboration & Co-creation.

Constructive grounded theory involves deriving theories by the mutual interpretations of researchers and participants. Concepts and theories are ‘grounded’ in the research data which are systematically coded and eventually aggregate themes are developed. In my research, theory development was a central focus. I engaged in an iterative process of coding and interpreting data in collaboration with participants. Concepts and theories emerged directly from the data, providing a foundation grounded in the participants’ experiences and perspectives.

In this research approach, there are no prior theory to test therefore it involves an inductive approach to data analysis. It involves systematically coding and categorizing collected data to identify patterns, themes and concepts without any preconceived categories and theories. Inductive analysis played a crucial role in my research. I approached data analysis without pre-existing theories to test. The process involved systematically coding and categorizing data, allowing patterns, themes, and concepts to emerge organically from the collected empirical data.

This process involves concurrent data collection and analysis rather than occurring on a linear sequence. The iterative approach to data collection and analysis helps researchers in
refining the aggregate concepts in building firm concepts and uncover deeper insights in research process. This approach enabled the refinement of aggregate concepts throughout the research, facilitating a deeper understanding and exploration of emerging themes.

This process offers opportunity for researchers to reflect upon their preconceptions and biases. The subject of research is usually familiar for the researcher and allows researchers to bring their perspectives and interpretations in the analysis. Researchers utilize their assumptions, dive into open research environment, and construct coherent theories based on the data elements. I consciously reflected on my preconceptions and biases throughout the study. The familiarity with the research subject allowed me to bring my perspectives and interpretations into the analysis, contributing to a nuanced understanding of the data elements.

Alike design thinking, this research approach involves collaboration and co-creation between the research and participants. Researchers continuously test the derived concepts by aligning with the study participants allowing for corrections and gathering meaningful insights. Collaboration and co-creation were fundamental aspects of my research approach. I actively engaged with study participants, continuously testing and aligning derived concepts with their insights. This iterative process allowed for corrections, ensuring the co-creation of meaningful and contextually relevant theories.

Like numerous grounded theory investigations, this study involved a qualitative research approach that encompassed a comprehensive process of data collection, analysis and literature review that have occurred throughout and iteratively during the research. The data collection process involved two rounds of interviews and extensive study of design projects in the case company. Data collected from the first round of interviews were analysed using the Gioia methodology developed by Gioia et al. (2013). By following the process of open coding, axial coding and selective coding, data collected were analysed. The Gioia method helped in deriving concepts, themes and eventually theories for the theoretical framework. Similarly, this method of rigorous data structuring and thematic analysis was utilized later for the main findings for the research as well.

According to Charmaz (2006), constructive grounded theory empowers researchers to maintain reflexivity and embrace adaptability as theories evolve. This approach acknowledges the potential impact of the researcher’s own perspective and biases on the research process. Consequently, researchers engage in an initial data collection phase, allowing theories to emerge organically from the collected information. When examining the case of a sponsor company, particularly given the open-endedness of the research topic, constraining the subject matter without active engagement with research participants and an understanding of the organizational design contexts would have been challenging. Moreover, this approach acted as a safeguard, preventing my personal biases and assumptions from influencing the research process, thereby facilitating a thorough exploration of the subject matter (Dunne, 2011).
Furthermore, this methodology places a robust emphasis on comprehending the research’s contextual landscape, thereby urging researchers to probe into the multiple layers of interpretation. Likewise, it prioritizes theory development catalysed by interactions with research participants. My decision to adopt this methodology was due to its capacity to facilitate the identification of relevant themes for exploration. This alignment of theoretical deductions from the voices of research participants, predominantly designer and business stakeholders underscores the reason behind using this approach.

Figure 7 Illustration of Gioia Methodology. Adopted from Gioia et al. (2013)

The detailed results of the thematic analysis, as depicted in Figure 8, are presented in Section 4 under Table 8 and Table 9. These tables provide a comprehensive breakdown of the identified themes, offering a detailed insight into the empirical data derived from the research.
3.1.2 Constructive Research

The research methodology adopted in this study combines the constructive grounded theory framework by Charmaz (2006) with the constructive research approach proposed by Kasanen et al. (1993). The hybrid approach leverages both inductive analysis and a systematic progression through key phases, aiming to provide novel solutions to practically and theoretically relevant problems. Following are the key characteristics or phases of constructive research approach as described by Kasanen et al. (1993): 1) Problem Identification & Understanding, 2) Construction & Development, 3) Testing and Validation, 4) Iteration and 5) Application.

The constructive research approach unfolds through several essential phases. It commences with problem identification and understanding, where a relevant problem is identified and comprehensively understood using existing literature and research. The subsequent construction and development phase involve creating a clear conceptual framework or theoretical foundation for the research. This may include generating new concepts, theories, or models that form the basis for further exploration. Ideation and prototype development, akin to design thinking, play a pivotal role. Following this, testing and validation of results occur, often challenging but crucial for validating the effectiveness of the solution. The iterative nature of the process involves refining and improving the constructed solution based on feedback. Finally, the application phase sees the implementation of the solution in real-world contexts, demonstrating its practical value.

The decision to utilize the constructive research approach is due to its ability to leverage insights obtained from grounded theory analysis. Grounded theory not only identifies practical problems within an organization but also furnishes foundational insights, setting the stage for further investigation. Given the uniqueness of organizational challenges, a generic theoretical solution would be insufficient. Constructive research allows for the development of tailored solutions, deeply rooted in the organization's specific context and needs.

In the context of this research, constructive research has been applied by utilizing insights obtained through grounded theory analysis to refine the problem statement. Grounded theory provided foundational insights into a specific problem within the organization, laying the groundwork for further investigation. Recognizing the organization's unique challenges, the constructive research approach facilitated the development of tailored solutions. The iterative process ensured continuous testing, gathering of feedback, and refinement of proposed solutions, aligning them more closely with the organization's evolving needs. Rigorous evaluation processes were implemented, measuring the business value of the design and providing actionable insights for continuous improvement. This dynamic and adaptable approach added tangible value to the organization, effectively addressing the identified problem in a data-driven manner.

In summary, constructive research was chosen for this research because it aligns with the practical nature of the identified problem within the organization.
3.2 Data Collection

The data collection procedure was executed through two distinct phases of interviews in the organization and few additional interviews outside the organization.

Firstly, through open-ended interviews (explained below in Section 3.2.1) conducted at the inception of the research aimed at grasping a contextual understanding of the case company. Subsequently, through semi-structured interviews (explained below in Section 3.2.3) conducted during the middle of the research timeline, designed to gather deeper insights of the formulated research questions. In addition to the interviews, few design projects that have been executed in the case company were thoroughly studied through multiple dimensions and the findings were analysed, which are described in following sub-sections.

3.2.1 Initial Round of Interviews

During the initial phase of the research, a series of open-ended interviews were conducted with participants drawn from the sponsor company. In the context of this study, the interviews were open-ended, indicating that participants were not constrained to specific responses but were instead encouraged to discuss topics related to the research questions outlined in Section 1.2. The open-ended nature of these interviews facilitated a nuanced exploration of participants’ perspectives and contributed to a comprehensive understanding of the research objectives. These participants represented diverse domains within the company, with a predominant presence from the design and business development teams. Table 3 lists the individuals from the sponsor company who were part of the first round of open-ended interviews:

Table 3 List of participants for first round of open-ended interviews.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Professional Role</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(Based on the sponsor company’ divisions)</td>
</tr>
<tr>
<td>A</td>
<td>Senior Expert, Service Design</td>
<td>Design</td>
</tr>
<tr>
<td>B</td>
<td>Expert, Service Design</td>
<td>Design</td>
</tr>
<tr>
<td>C</td>
<td>Senior Specialist, UX Design</td>
<td>Design</td>
</tr>
</tbody>
</table>
The fundamental aim of conducting these open-ended interviews was to gain a comprehensive understanding of the context within which the sponsor company operates. Specifically, the objective was to investigate the company’s value chain dynamics, with a keen focus on the role and positioning of the design organization within this value chain. In pursuit of this objective, an in-depth exploration was undertaken to discover design organization’s role, significance, and interactions within the broader value chain framework.

Furthermore, a pivotal aspect of the investigation was the exploration of the operational dynamics of the business stakeholders and the management team within the context of the value chain. The interviews were aimed at understanding the perceived value of design and the designers from non-design stakeholders’ perspective. The inclusion of interviews with designers further enriched this comprehensive investigation. One main objective here was to trace the evolution of the design team’s contributions throughout the years.

In essence, these open-ended interviews served as a dynamic exploration of design’s role in the value chain of the company.
3.2.2 Design Projects Study

Design organization of the sponsor company have been part of several projects in the past years, which have been highly successful. Amongst many projects, two concluded projects were thoroughly examined. Along with the two released projects, an in-depth analysis of an ongoing project was also undertaken. Table 5 lists the design projects that were examined:

Table 4 Summary of Design Projects examined during the research.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Service &amp; Admin</td>
<td>Service Design project for improving the functionality of Customer Service and Admin Team.</td>
<td>Released</td>
</tr>
<tr>
<td>New Maintenance Offering</td>
<td>New maintenance offering contract for customers.</td>
<td>Released</td>
</tr>
<tr>
<td>Remote Services</td>
<td>Design Project to enhance remote capabilities of the product.</td>
<td>Non-released</td>
</tr>
</tbody>
</table>

The primary aim of this study was to gather insights into the project's influence across three distinct dimensions: 1) Effect on customer experience and satisfaction, 2) Implications for financial performance and metrics and 3) Influence on the brand's identity and reputation.

For completed projects, the focus was on synthesizing existing outcomes, while ongoing project analysis centered on forecasting anticipated outcomes. To examine the project, a Project Canvas was designed and employed. This strategic framework draws inspiration from the renowned Business Model Canvas conceptualized by Osterwalder (2005), thereby enabling a thorough exploration of the project across the three dimensions as mentioned above. Moreover, this structured template encompasses vital components such as scope, objectives, results, actions and details of stakeholders and customers involved in the project. Refer to Appendix A for the Project Canvas.
3.2.3 Final Round of Interviews

As with the constructive grounded theory, the theories were derived through a process of deductive analysis using data obtained from the initial round of open-ended interviews and an in-depth examination of the design projects. To further enhance the robustness of the framework, a second and final round of interviews was carried out. These interviews followed a semi-structured format, enabling me to gather insights beyond my first level of findings.

For the second round of interviews, the questions were carefully developed with guidance from my thesis advisor, who is affiliated with the sponsoring company. This collaborative approach ensured that the interview questions effectively addressed the research objectives and incorporated valuable perspectives from both academia and industry. The questionnaire designed for the final round of interviews are listed in Appendix B (Refer to Appendix B).

The primary aim of this second round of interviews was to gather insights into: 1) Verifying the literature findings upon the context of the organization; 2) Analysing the influence of design upon the five categories (Customer Satisfaction, Innovation, Differentiation, Brand Value and Organizational Improvement (mentioned in Section 2.2); 3) Scrutinize the metrics identified in the literature and assess their suitability within the organizational context; and 4) Identifying more relevant and most used methods and metrics within the organization's context.

Schmiedgen et al. (2016) highlights the effectiveness of using existing metrics to measure the impacts of design thinking compared to developing new metrics. By using existing metrics, the value can be communicated more effectively and therefore, this interview round was focused at identifying those metrics. Table 5 lists the individuals from the sponsor company who were part of the final round of semi-structured interviews:

Table 5 List of participants for final round of semi-structured interviews.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Professional Role</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2</td>
<td>Program Director, Service Offering</td>
<td>Business Management</td>
</tr>
<tr>
<td>B2</td>
<td>Director, Offering Development</td>
<td>Business Management</td>
</tr>
<tr>
<td>C2</td>
<td>Innovation Specialist</td>
<td>Innovation Management</td>
</tr>
</tbody>
</table>
3.2.4 Supplementary Interviews

In addition to engaging with the sponsor organization, a set of supplementary interviews was carried out involving external participants with expertise in the design domain, from diverse industry backgrounds.

These interviews were also open-ended in nature, while the discussions revolved around the research questions mentioned in section 1.2. Participants were not constrained to specific responses and were encouraged to share their opinions relating the research questions. The primary objectives of these interviews were twofold: 1) Verification of Literature and Organizational Findings and 2) Identification of Common Challenges

The first objective was to verify the insights and conclusions drawn from both existing literature and the interviews conducted within the sponsor organization. This verification process aimed to ensure the robustness and reliability of the gathered information. The second goal was to pinpoint common issues and challenges prevailing within the broader design domain. This broader perspective helped in confirming and reinforcing the identified problem statement, thereby strengthening its validity.

In the context of constructive research, the validation of the problem is of great importance. This external validation, obtained through interviews with domain experts, played a critical role in shaping the subsequent steps of the research process. It served as a foundation for constructing a viable solution by confirming that the identified problem was indeed a
relevant issue within the design domain. Table 6 lists the individuals who were part of the final round of interviews.

Table 6 List of Participants for Bonus Interviews

<table>
<thead>
<tr>
<th>Participant</th>
<th>Professional Role</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3</td>
<td>Lead Designer</td>
<td>Airlines</td>
</tr>
<tr>
<td>B3</td>
<td>Design Lead</td>
<td>Banking</td>
</tr>
<tr>
<td>C3</td>
<td>Customer Experience Design Lead</td>
<td>Consulting</td>
</tr>
<tr>
<td>D3</td>
<td>Design Thinking Lead</td>
<td>Telecommunications</td>
</tr>
</tbody>
</table>

Furthermore, these interviews unveiled diverse approaches and strategies employed by various companies to enhance their design maturity and demonstrate design’s value to non-design stakeholders and business stakeholders. These approaches extended beyond mere metrics and numerical measurements.

These revelations served as the foundation upon which additional recommendations were built, contributing significantly to Section 7, which focuses on providing further guidance and insights for the sponsor organization.
3.3 Research Actions and Timeline

This research encompasses stages inspired by the ‘constructive grounded theory’ and the ‘constructive research’. Figure 8 shows a summary of the major actions undertaken showing the chronological progression of the research which spanned from May 2023 to September 2023.

Figure 8 Overview of the Research Actions

Table 7 highlights how the two research approaches were undertaken for the research actions (refer to next page).
<table>
<thead>
<tr>
<th>Research Approach</th>
<th>Timeline</th>
<th>Research Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructive Grounded Theory</td>
<td>June – July -August</td>
<td>First Round of Interviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Literature Draft</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Final Round of Interviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Literature Refining</td>
</tr>
<tr>
<td>Constructive Research</td>
<td>August-September</td>
<td>Final Round of Interviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Solution Framework Draft</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplementary Interviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refining Solution Framework</td>
</tr>
</tbody>
</table>
4. Data Analysis

The data obtained from both round of interviews was analyzed using the Gioia methodology (Gioia et al., 2013), as elaborated in Section 3.1. Through this process, the interview results were deconstructed and organized into distinct thematic categories.

4.1 Initial Round of Interviews

During the initial round of open-ended interviews, the acquired data underwent a coding process, leading to the identification of themes. These themes were then grouped to create aggregate dimensions, serving as the building blocks for the foundational framework in the literature review, as detailed in Section 2. This structured methodology facilitated a comprehensive examination of existing research and knowledge within the context of the identified themes, ultimately enhancing the depth and relevance of the study.

For a detailed overview of the themes and aggregate dimensions, refer to Table 8. This table outlines the data obtained from the interviews, providing a clear snapshot of the organized data resulting from the analysis process.

Table 8 Thematic Coding of the Results of First Round of Open-ended Interviews

<table>
<thead>
<tr>
<th>1st Order – Codes</th>
<th>2nd Order – Themes</th>
<th>3rd Order – Aggregate Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some stakeholders consider design only to be visual design</td>
<td>Perception of Design</td>
<td>Myths and Truths About Design</td>
</tr>
<tr>
<td>Non-design stakeholders have very little understanding of the design process and impacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some teams value design higher compared to others</td>
<td>Position of the Design Team</td>
<td></td>
</tr>
<tr>
<td>Some teams don't see the value of design team</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Some stakeholders see the benefits of involving design team in their operations, especially they value the design methodology&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business owners make assumptions while design teams validate those assumptions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design team bring alternative methods of solving problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design team knows the language to talk to customers</td>
<td>Link between Design &amp; Customers</td>
<td></td>
</tr>
<tr>
<td>Service designers are VERY good at customer interviews</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service designers are ONLY regarded as useful for customer interviews</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designers considered important stakeholders for customer interviews</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designers have good attitude with customers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designers are good at probing customer needs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designers always have customers in mind.</td>
<td>Customer Value &amp; the Role of Design Team</td>
<td></td>
</tr>
<tr>
<td>Designers are needed for customer validation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designers know what customer problems to prioritize.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designers should recognize the ways to improve customer value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design team should collaborate in innovation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designers love to explore and bring additional perspective to service offering creation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;I have also seen great initiatives from the design which drives us forward with new innovations&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing leading solutions that our customers and users love would not be possible without Design Team</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;I find the outcomes of the design process very visually appealing and functional. A ton of time and effort is spent on the user experience, as it should be&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fresh, outside in thinking that is quite different from the typical &quot;engineering&quot; mindset.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The tangible benefits of investing in Design</td>
<td></td>
</tr>
<tr>
<td>Key differentiator in how our products look to the end user.</td>
<td>Experience</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>It is very tricky to measure the impact of industrial design</td>
<td>Difficulty</td>
<td></td>
</tr>
<tr>
<td>Finding concrete numbers is difficult</td>
<td>in showing</td>
<td></td>
</tr>
<tr>
<td>It is hard to tell, what made customers buy our product?</td>
<td>the</td>
<td></td>
</tr>
<tr>
<td>Maybe competitors copying the design can tell something?</td>
<td>impact</td>
<td></td>
</tr>
<tr>
<td>Maybe comparing outputs from non-design process vs design process can measure the impacts of design?</td>
<td>of Design</td>
<td></td>
</tr>
<tr>
<td>Customer satisfactions surveys are regularly conducted</td>
<td>Customers &amp;</td>
<td></td>
</tr>
<tr>
<td>Net Promoter Index (NPI) is also tracked</td>
<td>impact</td>
<td></td>
</tr>
<tr>
<td>Detailed customer feedback or customer feedback loops maybe an effective way to understand the impact of products and services designed for customers.</td>
<td>of</td>
<td></td>
</tr>
<tr>
<td>&quot;How can design team claim that the products and services designed by the team increased the sales for the company?&quot;</td>
<td>design</td>
<td></td>
</tr>
<tr>
<td>There is no metric to determine the profits from design projects</td>
<td>Design &amp;</td>
<td></td>
</tr>
<tr>
<td>Impacts of design projects were never tracked after implementation</td>
<td>it's</td>
<td></td>
</tr>
<tr>
<td>Design team just serve as sounding boards for business teams thinking and don't work in collaboration.</td>
<td>Financial</td>
<td></td>
</tr>
<tr>
<td>&quot;We designers want to work as collaborators not consultants&quot;</td>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>&quot;Like a lot of the times design team talks about their results, they talk about the high-level values which doesn't resonate with business&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Service designers sometimes don't understand business&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Collaboration with Business Owners | |
| Need to understand the reality what sells. Balance between creativity and creating wealth with new offerings is needed. |
| Designers cannot be fully trusted as they don't understand technology. |
| Design and technology team need to work together to meet customer needs |
| Sometimes feel that the design lives a life of its own outside the rest of the organization. |
| Design is often not in position to challenge the assumptions made by other teams. |
| Design team are not in position to utilize the design process fully |
| Designers are ONLY considered usually at the later stage when there is an already existing idea |
| Usually, designers’ step in late and in those cases design process can't be fully implemented |
| Service designers do lot of tasks but all of them don't come to use |
| Designers are usually considered later after decision process or idea and not before. Only used to further develop ideas. |
| Not enough resources, hard to get a design person to your project within a short notice. |
| Uncertainty of getting the needed design resources although typically we have been given the required support. |

& Challenges  

Collaboration with Technical Team  

Challenges in proving the Value of Design  

Challenges for the Design Team  

Consideration & Need Of Design Team
4.2 Final Round of Interviews

Following the initial round of interviews, the design project analysis, and the establishment of our literature framework, the second round of interviews, characterized by a semi-structured approach, yielded valuable insights regarding the fundamental values at the core of the sponsor organization.

Literature review, as detailed in Section 2.2, provided a thorough understanding of the potential benefits of design in the context of Innovation, Customer Experience & Satisfaction, Brand Value, Differentiation, and Organizational Improvement. Additionally, in Section 2.3, the literature review shed light on the most-commonly employed methods and measurement techniques for assessing the impact of design. These insights drawn from the literature formed a foundational basis of generalized deductions and findings, which needed further validation within the specific context of the sponsoring organization.

Building upon this foundation and referring to it, our second round of interviews sought to investigate the applicability and relevance of these literature-based findings to the organization's context. The inquiry was conducted to analyze the influence of design upon the five categories mentioned in Section 2.2. This investigation further revealed the core values that existed within various departments of the organization, which closely aligned with the findings from existing research.

As with the first interviews, the findings derived from the interviews were analyzed using the Gioia methodology (Gioia et al., 2013). The thematic analysis resulted seven different dimensions, which can be categorized as the core values of the organization. These dimensions or the core values represents the fundamental principles and beliefs that drives the organization. Table 9 lists the findings: the core values of the company.

Table 9 Thematic Coding of the Results of Second Round of Semi-Structured Interviews

<table>
<thead>
<tr>
<th>1st Order – Codes</th>
<th>2nd Order – Themes</th>
<th>3rd Order – Aggregate Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Representing the voice of each customer.</td>
<td></td>
<td>Customer</td>
</tr>
<tr>
<td>Enabling all stakeholders to hear customer's voice</td>
<td>Customer Voice</td>
<td></td>
</tr>
<tr>
<td>Having outside/customer perspectives in development works</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Happy customers and always keeping them happy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing superior Customer care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding what customers value the most?</td>
<td>Value for Customer satisfaction is the key</td>
<td>Centricity</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>----------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Gathering customer feedback regularly and systematically</td>
<td>Process Involved</td>
<td></td>
</tr>
<tr>
<td>Solving customer problems</td>
<td>Involved With</td>
<td></td>
</tr>
<tr>
<td>Co-creation with customers</td>
<td>Involved With</td>
<td></td>
</tr>
<tr>
<td>Identifying Customer needs</td>
<td>Involved With Customers</td>
<td></td>
</tr>
</tbody>
</table>

| To ensure brand experience is consistent | Brand Consistency | |
| Develop manage and guard the brand | Elevate Brand | |
| To become the leading brand | Elevate Brand | |
| To increase brand strength | Elevate Brand | |
| Enhance Brand image to increase Business | Elevate Value | |

| Creating novel products and services | Excellent Product & Service | |
| Creating sell-able products | Product & Service | |
| Giving right services to customers | Provider | |
| To have most desired maintenance service | Provider | |
| Designers have good attitude with customers. | Provider | |
| Identifying new Business models | Innovation | |
| Future oriented and visionary actions | Innovation | |

<p>| Quality &amp; Excellency | |
|----------------------| |
| Increasing innovation actions | Centric |</p>
<table>
<thead>
<tr>
<th>Expanding innovation capabilities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying strategic and relevant business opportunities</td>
<td>Growth &amp; Expansion</td>
</tr>
<tr>
<td>Expansion opportunities beyond core business areas</td>
<td>Competitiveness &amp; Differentiation</td>
</tr>
<tr>
<td>Being ahead of competitors</td>
<td>Being Ahead of Competition</td>
</tr>
<tr>
<td>Provide higher value than competitors</td>
<td></td>
</tr>
<tr>
<td>To have best offerings in all business areas</td>
<td>Market Leadership</td>
</tr>
<tr>
<td>To capture market in all geographical areas</td>
<td></td>
</tr>
<tr>
<td>Improving the working efficiency of the teams</td>
<td>Performing as a Team</td>
</tr>
<tr>
<td>Collaboration between teams</td>
<td>Internal Performance &amp; Satisfaction</td>
</tr>
<tr>
<td>Train everybody involved for customer goals</td>
<td>Superior Team Dynamics</td>
</tr>
<tr>
<td>Optimize the chain of activities across different departments</td>
<td></td>
</tr>
<tr>
<td>Employee and stakeholder satisfaction</td>
<td></td>
</tr>
<tr>
<td>Solving each other’s problem and working for the same goal</td>
<td></td>
</tr>
<tr>
<td>Giving service at the desired time</td>
<td>Best Service Provider</td>
</tr>
<tr>
<td>Best service provider in all geographical areas</td>
<td>Performance</td>
</tr>
<tr>
<td>To be successful in providing services to the customers</td>
<td></td>
</tr>
<tr>
<td>To maintain smooth operations throughout the value chain</td>
<td></td>
</tr>
<tr>
<td>To provide offerings consistently</td>
<td></td>
</tr>
<tr>
<td>Maintaining success rate of the services in market</td>
<td>Smoothness &amp; Consistency</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>To create sell-able products and offerings</td>
<td>Business Driven Actions</td>
</tr>
<tr>
<td>To create products &amp; services that can sell in big numbers</td>
<td></td>
</tr>
<tr>
<td>Innovating products and services with market viability in mind</td>
<td></td>
</tr>
<tr>
<td>To maintain a balance between cost and profit</td>
<td>Budget Considerations</td>
</tr>
<tr>
<td>Reduce cost while elevating profits</td>
<td></td>
</tr>
<tr>
<td>To achieve targets being under the budget</td>
<td></td>
</tr>
</tbody>
</table>
5. Findings

This chapter provides a comprehensive overview of the findings from the two rounds of interviews conducted within the organization, supplementary interviews conducted outside the organization and the examination of the three design projects.

5.1 Roles & Responsibilities of the Design Team

Both round of interviews, offered several insightful data, which aligned with the objectives stated in the previous section 3.2.1. First and foremost, these findings provided a comprehensive snapshot of the roles and responsibilities of the design team within the organization’s entire value chain.

“Toady designers at our organization work with physical and digital products as well as omnichannel experiences, offerings, and strategies. We have a big part of the team, working as Service Designers dedicated to developing the maintenance business projects.”

- Designer, Participant D, First Round of Interview

As phrased by Participant D, the organization has a strong history of internal design capabilities in physical and digital product design. Notably, they have also significantly recognized the importance of service design, which is contributing to their most important business line, Maintenance Business. Relating to this, structure of the design organization of the sponsor company was investigated, operating in various facets of product and service development. Figure 9 highlights the structure of the design organization.

Illustrated in Figure 9, the design team is strategically segmented into four distinct areas: industrial design, reference design, Service & Digital design, and experience design. Each segment operates independently yet synergistically, contributing to various facets of the overall design landscape. The industrial design sector focuses on shaping the physical form and aesthetics of products, ensuring they are not only functional but also visually compelling. Reference design involves creating standardized templates or models that serve as a basis for future product development. Service & Digital design underscores the importance of holistic service experiences, seamlessly integrating digital elements. Lastly, experience design encompasses the overarching user experience, aiming to create meaningful interactions between customers and the products or services offered. This multifaceted structure underscores the organization’s commitment to comprehensive design strategies, fostering innovation across industrial, service, and product domains.

Besides, there were personnels with strategic and business design responsibilities working under different departments such as Innovation Management (Participant D2), who were responsible in creating development strategies for new product lines.
Further, the three projects (listed in Section 3.2.2), which were driven by Services and Offering team, provided significant findings about the roles and responsibilities of the design team. Significant resources were utilized in designing user interfaces and user experiences for digital products which were used by internal stakeholders such as maintenance technicians, customer service admin as well as customers.

Further exploration provided insights on how the design team have been contributing to the development of services and offerings. The study revealed the key responsibilities of the design team within the projects: 1) Customer Needs Assessment, 2) Conceptual Development and 3) Concept Validation.

The Design team plays a crucial role in the product or offering development process by conducting a thorough Customer Needs Assessment. This involves effective communication with customers or the customer insights team to investigate into and understand the intricacies of customer requirements. Following this, the team collaborates closely with internal stakeholders to embark on the journey of Conceptual Development. Through brainstorming, ideation, and innovative solution crafting, they ensure alignment with project objectives and meeting customer expectations. To validate the viability and effectiveness of their concepts, the Design Team actively engages with customers in the Concept Validation stage. This includes soliciting feedback, conducting tests, and refining ideas based on customer input, with the goal of creating offerings that resonate with the target audience and fulfill their needs.
Despite the significant contributions made by the Design Team to the overall development of services and offerings, Participant B underscores a critical aspect, the aspiration for a more collaborative role rather than being confined to a consulting role. This reveals the extent of the Design Team’s engagement and their level of influence in decision-making during the business development process. The desire for increased responsibility and collaboration signals that the true potential of the Design Team remains underutilized. Participant B’s perspective suggests an opportunity for organizations to leverage the multifaceted expertise of the Design Team not just as advisors but as integral collaborators, unlocking a broader spectrum of their capabilities throughout the project lifecycle. This shift in perception and engagement could lead to more holistic and innovative solutions, ensuring that the Design Team plays a more central and impactful role in the overall strategic development of business initiatives.

5.2 Challenges Faced by the Design Team

While the responsibilities mentioned in the previous section underscore the significance of the Design Team’s role, certain challenges came to light during the research.

5.2.1 Limited Implementation of Design Principles

Figure 10 Overview of the Design Team's Involvement in the Project Timeline
“I am involved in Maintenance Projects and collaborate with different stakeholders. As a designer, I would prefer more chances to use design process. Designers often enter late in development projects due to which design process can’t be fully implemented. There is little time to explore and research.”
- Designer, Participant A, First Round of Interview

In two of the three projects, namely the New Maintenance Offering and Remote Services initiatives, the Design Team’s involvement occurred during the later stages of the project lifecycle, illustrated in Figure 10. To provide context, the planning and initiating phase is orchestrated by the R&D or business development team, shaping the decision-making process on which projects to pursue. Subsequently, the design phase unfolds, delving into customer needs and formulating strategies to meet specified requirements, a phase where designers play a pivotal role. The development phase follows, translating these plans into practical implementations and fostering collaboration with a diverse range of stakeholders. During this stage, designers contribute through iterative design processes, refining and adjusting their creations based on ongoing feedback. However, a notable gap emerges in the initial phases of project inception. Projects are initiated at a higher management level, and unfortunately, the Design Team finds limited involvement in the initial planning or problem exploration phase. This absence in the early stages constrains their ability to challenge assumptions made by other teams and limits their role primarily to that of consultants for the business teams. Regrettably, this procedural gap translates into an underutilization of the Design Team’s expertise, hindering their capacity to holistically integrate design thinking into the projects. The design process in these instances falls short of its full potential, serving more as a refining tool in the later stages rather than a mechanism to identify and address core problems from the project’s inception. This restricted engagement hampers the seamless incorporation of design principles into the overall project strategy and limits the Design Team’s impact on shaping the fundamental aspects of the projects.

5.2.2 Concerns from Non-Design stakeholders

“Designers bring additional insights to development process, sometime alternative methods of problem solving which bring tangible benefit to concept development. However, designers don’t understand business processes and they talk of creating high level values which often don’t resonate to business.”
- Program Director, Service Offering, Participant H, First Round of Interview

As articulated by Participant H, there seem to be clear indication that design team have had provided significant contribution to the development of service offering. However, a notable challenge surfaces in effectively communicating design values to the business team. Business team are clearly not able to resonate to the language of designers and more importantly the values communicated by the designers. Moreover, there appears to be a disconnect within designers in understanding business process.
“I have been collaborating with designers in steering several engineering development projects. I understand their value but sometimes I feel designer live their own life as they don’t often understand the technology. How can we say that it is design that makes a difference in making the project successful? How can we say that design brings all the money?”
- Expert, Hardware Engineer, Participant L, First Round of Interview

The expert indeed recognizes the importance of designers in engineering development projects, signifying an awareness of the role that design plays in project success. While recognizing the value they bring, there’s a perception that designers may operate somewhat independently, living "their own life," and lacking a comprehensive understanding of the underlying technology. This observation hints at a potential gap in communication or collaboration between designers and engineers.

### 5.2.3 Misconceptions about Design

“How can we say that it is design that makes a difference in making the project successful? How can we say that design brings all the money?”
- Expert, Hardware Engineer, Participant L, First Round of Interview

“We designers are regarded useful ONLY for probing customer needs.”
- Expert, Industrial Design, Participant E, First Round of Interview

“Business team makes assumption and Design Team validates those assumptions.”
- Manager, Offering Development, Participant J, First Round of Interview

The concerns raised by both participants (H and L, Section 5.2.2) regarding the Design team’s challenges in understanding business processes and technology highlight a potential misconception about the true potential of design, as emphasized in the literature framework. This dual challenge further validates the earlier finding of Limited Implementation of Design Principles within the organization. It prompts a crucial question: whether the limited implementation of design principles is a consequence of misconceptions or misunderstandings of design among non-design stakeholders, or vice versa. This reciprocal relationship underscores a broader concern about how design is perceived; whether it is seen merely as a specialized task carried out by a distinct team or as a fundamental guiding principle and mindset woven into the fabric of the entire organization. While the other inputs from participant E & J, suggest that design is viewed primarily as an isolated supportive function, rather than being recognized as the fundamental belief of the organization. As such, it is evident that there are misconceptions about design amongst the wider stakeholder groups within the organization.
5.2.4 Communicating the Value of Design to Non-Design Stakeholders

There were several challenges identified particularly in terms of communicating design’s value to non-design stakeholders, particularly within business domain.

*It is very tricky to communicate the impact of industrial design. It cannot be communicated using numbers that easily.*
- Expert, Industrial Design, Participant E, First Round of Interview

“How can design team claim that the products and services designed by the team increased the sales for the company?”
- Director, Offering Development, Participant I, First Round of Interview

The statements from Participant E, an Expert in Industrial Design, and Participant I, a Director in Offering Development, highlight the challenges in communicating the impact of industrial design in quantitative terms. Participant E specifically notes the difficulty in expressing the impact of industrial design using numbers. This observation points to the inherent challenge of translating the qualitative aspects of industrial design, which often involve aesthetic, functional, and experiential considerations, into measurable metrics that align with traditional business language focused on numbers and sales figures.

Participant I’s question adds another layer to this challenge, questioning how the design team can assert that the products and services they design directly contribute to increased sales for the company. This query suggests a skepticism or lack of clarity among non-design stakeholders about the causal link between design efforts and business outcomes, particularly sales growth.

*“Establishing the impact of a design activity is challenging. Design activities that have a direct impact on the bottom line (such as sales optimization or upselling) are easy to communicate and demonstrate their value. Other activities such as journey mapping, or maintaining an effective design system, or doing exploratory research - these are more tricky because their value is hard to communicate in direct monetary terms.”*
- Lead Designer, Airlines Industry, Participant A3, Supplementary Interviews

A significant challenge lies in conveying the impact of design in a language that resonates with business stakeholders. The unique language of business stakeholders is centered around tangible and quantifiable outcomes, such as bottom-line monetary terms: sales and revenues. This essentially means business stakeholders prefer the impact to be directly tied to financial metrics. Overall, this highlights a communication language barrier that stands between the design team and the business team. This observation was supported by Participant A3, a Lead Designer in the Airlines Industry. The participant acknowledges that design
activities directly impacting the bottom line, such as sales optimization or upselling, are more straightforward to communicate and demonstrate value. However, a notable barrier emerges when dealing with other design activities like journey mapping, maintaining an effective design system, or conducting exploratory research. The difficulty lies in communicating the value of these activities in direct monetary terms.

In essence, these findings, collectively underscore a common challenge within the design domain, the difficulty in clearly articulating and quantifying the impact of design, especially in terms of its influence on sales and other numerical business metrics, preferred by business stakeholders.

5.3 Impacts Created by the Design Team

Despite the challenges, design team has been actively contributing to the development of projects. From the 3 listed design projects and the first round of interviews, several impacts were identified created by the design team.

5.3.1 Immediate Impacts

Design Team has played a pivotal role in the projects through various impactful contributions. Primarily, they have been instrumental in the development of unique concepts and ideas, injecting innovation into the development process. Their ability to go over conventional boundaries has consistently led to the exploration of fresh and unconventional solutions, enriching the overall project outcomes. Furthermore, their problem-solving approach brings a distinct perspective to the table, offering fresh insights and alternative angles to tackle complex problems. The Design Team’s ability for visualizing solutions has proven instrumental in overcoming obstacles and refining project strategies. Beyond traditional customer engagement, the team represents the voice of the customer, engaging in meaningful conversations and feedback collection. This not only refines the project’s offerings but also enhances the overall customer experience. Notably, the team’s involvement in creating usable and practical offerings, particularly in the digital realm, has been highly appreciated across all three projects, underlining their significant impact on the usability of the final deliverables.

“Some stakeholders understand the importance of service designers and we can contribute to the projects. We are seen as stakeholders important in probing customer needs.”
- Designer, Participant A, First Round of Interview

Participant A underscores that some stakeholders understand the importance of service designers and acknowledge their significant contribution to projects. This recognition aligns with the literature framework’s emphasis on the tangible benefits of design, especially in terms of creating innovative solutions and enhancing the overall customer experience.
“Designers always have customers in mind, and they know how to talk to customers. They also have the ability to prioritize the customer needs.”
- Head of Product Management, Participant F, First Round of Interview

This statement suggests that designers possess effective communication skills, particularly in their ability to engage with customers. This is crucial in understanding customer requirements, gathering feedback, and ensuring that the design aligns with the expectations and preferences of the target audience. Additionally, The design team is acknowledged for its ability to prioritize customer needs. This implies that the team not only understands the diverse needs of customers but also has a systematic approach to prioritizing these needs based on their importance and impact on the overall user experience. The emphasis on the design team’s focus on customers and their ability to communicate and prioritize needs suggests that the immediate impact created by the design team is likely to be positive and value driven.

“Designers bring additional insights to development process, sometime alternative methods of problem solving which bring tangible benefit to concept development.”
- Program Director, Service Offering, Participant H, First Round of Interview

Participant H notes that designers bring additional insights and alternative problem-solving methods that offer tangible benefits to concept development. This finding corresponds with the literature framework, which highlights the added value that design brings to the development process through creative problem-solving and generating unique ideas.

### 5.3.2 Long-Term Impacts

Several statements from the interview participants highlight the long-term impacts created by the design team.

“I have also seen great initiatives from the design which drives us forward with new innovations.”
- Vice President, Product Management, Participant G, First Round of Interview

Participant G expresses witnessing great initiatives from the design team that drive the organization forward with new innovations. This aligns with the literature framework, emphasizing the role of design in fostering innovation, a key tangible benefit that contributes to organizational advancement and competitiveness.
"I find the outcomes of the design process very visually appealing and functional. A ton of time and effort is spent on the user experience, as it should be."
- Manger, Offering Development, Participant J, First Round of Interview

Participant J appreciates the visual appeal and functionality of the outcomes of the design process. This aligns with the literature framework’s emphasis on the tangible benefits of design, including differentiation and the creation of brand value through a strong focus on user experience.

“On the strategy side there is an appreciation for the value of design in delivering key strategic goals such as digitalization of product offerings and increasing and improving the sales potential.”
- Lead Designer, Airlines Industry, Participant A3, Supplementary Interviews

Similar impressions were gathered from the supplementary interviews which validated the impacts attributed to the Design team. As highlighted by Participant A3, the acknowledgment of the Design Team’s role in increasing and improving sales potential indicates that design is perceived as a valuable factor in positively influencing customer engagement, satisfaction, and ultimately, sales outcomes. The proactive role of the design team in identifying industry trends is positioned as a key element in maintaining competitiveness within the market.

“Design process involves a feedback mechanism that allows us to iterate and refine our product before building the final product. This saves us a lot of money especially because we don’t end up creating undesirable products. I am saying this because it has happened a lot of times when design teams were not involved.”
- Senior Specialist, Industrial Design, Participant D, First Round of Interview

This statement suggests that the iterative and feedback-driven design process helps in avoiding the creation of undesirable products. This, in turn, saves a significant amount of money for the organization in the long run. By catching and addressing issues early in the design phase, the need for costly redesigns or product recalls is reduced. The emphasis on iteration and refinement implies a commitment to improving the product’s quality. Over the long term, this approach contributes to the development of high-quality products that meet or exceed customer expectations. Involving design teams in the process helps identify and rectify potential problems before the final product is built. This proactive approach reduces the risk of launching products that might not resonate with the market or encounter technical issues.
“I think it is a good design that makes a good brand. Apple has been so successful financially as they have been consistent in the brand experience.”
-Owner, Brand Experience, Participant H2, Final Round of Interview

The reference to Apple’s financial success being tied to consistency in the brand experience highlights the importance of maintaining a cohesive and uniform image over time. Consistency in design, messaging, and overall brand presentation can build trust with consumers and contribute to long-term success. It also suggests that design is not just a superficial aspect of branding but a strategic element. It implies that investing in good design is a key factor in creating a positive and consistent brand image, which, in turn, can contribute significantly to the financial success of the brand.

From different participants, diversified impacts such as customer satisfaction, usability experience, brand experience and resource savings were identified which overall emphasizes the long-term value that the Design team brings to the organization.

5.4 Core Values of the Organization

The final round of interviews focused more in identifying the core values of the organization, more specifically the values associated with the business aspects.

“Keeping customers happy by providing best service and leaving no room for complaints is our main target. At the same time profitability is important for us.”
-Program Director, Service Offering, Participant A2, Final Round of Interview

This emphasizes a primary focus on keeping customers happy by providing the best service and minimizing complaints. This suggests a core value of prioritizing customer satisfaction and excellence in service delivery. While customer satisfaction is crucial, profitability is important for the organization. This indicates a balanced approach where financial success is recognized as essential for the sustainability and growth of the business.

“The main objective of our team is to enhance the company’s brand image in order to increase business for the company.”
-Owner, Brand Experience, Participant H2, Final Round of Interview

This suggests that one of the core values is to increase business for the company through the enhancement of the brand image. This indicates a strategic alignment between brand development and business growth objectives.
"We want to develop sell-able offerings for customers and be the most desired service provider in the industry."
-Director, Offering development, Participant B2, Final Round of Interview

This reflects a core value of creating products and services that meet customer needs and are most differentiable in the market. This suggests the organization is focused on Quality and Excellency.

“Our team goal is to Identify strategic and relevant business opportunities. Expansion opportunities beyond core business areas."
-Strategic Designer, Participant D2, Final Round of Interview

This underscores a core value of proactively identifying strategic and relevant business opportunities. This suggests an emphasis on adaptability, innovation, and forward-thinking as key elements in the business strategy. It also indicates a core value of exploring opportunities for growth, staying ahead of competition and being different in the crowded market.

“As part of enhancing the operations and process our main goal is to develop a company-wide culture where we solve each other’s problem and work for the same goal."
-Owner, Offering Process, Participant F2, Final Round of Interview

The statement reflects a commitment to fostering a collaborative, goal-oriented, and problem-solving culture within the organization. This highlights the company is oriented to improve operational efficiency, employee satisfaction, and long-term organizational success.

“We want to create products & services that can sell in big numbers. Innovating products and services with market viability in mind is our priority."

“Finance wise our objective is to reduce cost while elevating profits."
-Manager, Business Development, Participant J2, Final Round of Interview

This indicates a focus on the commercial success of the offerings, emphasizing their market appeal and the ability to generate substantial sales volumes. This suggests profitability is one of the main values for the organization. The second statement implies the company is focused on profit maximization, cost reductions or achieving maximum efficiency while using the organizational resources.

Overall, the identified core values are tied to business and operational aspects. More detailed data on core values is tabulated in Table 10.
5.5 Commonly Used Metrics

Furthermore, in addition to identifying the core company values, the second round of interviews helped in identifying key metrics used across the organization. The interviews also served as a cross-examination of the metrics and Key Performance Indicators (KPIs) derived from our literature review, which were systematically presented in Table 2.

“We follow Objective and Key Result Framework to measure the outcome of project investments where superior care, desirable service and collaborative working are our 3 main objectives. We carefully track this using 10 different key results.”
-Program Director, Service Offering, Participant A2, Final Round of Interview

This statement highlights the adoption of the Objective and Key Result (OKR) Framework, focusing on superior care, desirable service, and collaborative working. This framework involves meticulously tracking 10 different key results to measure project investments and aligns with the organization's core objectives for service excellence and collaboration.

“No. of patents acquired and number of solutions in the market are probably the major metrics for us.”
-Innovation Specialist Participant C2, Final Round of Interview

According to the Participant C2, key metrics for the innovation team revolve around the number of patents acquired and the introduction of solutions into the market. These metrics serve as major indicators of the team’s success in generating innovative solutions with tangible market impact.

“In Innovation team, we use several leading and lagging indicators depending upon the context of the project to measure project outcomes. These indicators are commonly defined with business stakeholders and mostly include customer related indicators and some business heavy indicators like market share, business volume growth. In addition, patents”
-Strategic Designer, Participant D2, Final Round of Interview

Participant D2 emphasizes the use of both leading and lagging indicators within the Innovation team to measure project outcomes. These indicators, collaboratively defined with business stakeholders, include customer-related metrics and significant business indicators such as market share and business volume growth.
“High level KPIs such as sales and revenues are measured which are broken down into many different types of metrics. While there are many tactical KPIs used such as equipment to maintenance conversion rates, several quality-based and performance-based metrics are used for measuring the performance and efficiency of our services. Overall, these are all linked to sales growth and revenue growth as financial indicators are of great importance.”

- Director, Volume Elevator Offering, Participant G2, Final Round of Interview

Participant G2 outlines the use of high-level Key Performance Indicators (KPIs) such as sales and revenues, which are broken down into various tactical KPIs. These metrics encompass factors like equipment to maintenance conversion rates, quality-based, and performance-based metrics, all intricately linked to achieving sales growth and revenue growth objectives.

“For maintenance business Equipment in Services is probably the most important indicator.”

- Owner, Business Analytics, Participant K2, Final Round of Interview

Participant K2 identifies the critical importance of "Equipment in Services" as a key indicator in the maintenance business. This metric serves as a pivotal measure for assessing the performance and efficiency of services, reflecting the strategic focus on equipment-related outcomes.

While many of the metrics in the organization primarily focus on measuring customer interactions, operational performance, and financial aspects, there appears to be a notable gap in effectively tracking key elements such as brand identity, competitiveness, internal performance, collaboration, and employee satisfaction. These aspects have been identified as fundamental values for the organization, yet they are not currently being comprehensively monitored or evaluated. As the organization’s business model encompasses both products and services, the utilization of metrics is highly context dependent. Due to constraints such as limited interview data and the absence of a comprehensive metrics database, not all relevant metrics have been included in the current list. Nevertheless, the metrics listed are among the most used and highly valued within the organization. Appendix C provides visual representation of the use of metrics on project timeline base (Refer to Appendix C).

The interview process not only provided a more profound understanding of the originally derived metrics but also uncovered additional and contextually relevant metrics that had not been previously identified from the literature. To summarize, these interviews yielded detailed insights into the metrics used, as well as the methodologies employed to measure these metrics within the organization’s context. The metrics are listed in Table 10, with short description of the significance of the metrics in the context of the organization and are categorized based on their alignment with the identified core values of the company.
Table 10 Overview of the metrics used within the organization.

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Description</th>
<th>Impact Area (Core Values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer lifetime value (CLV)</td>
<td>These metrics are used to assess the relationship with the customer to improve their experience and elevate the customer loyalty. Each metric provides a different perspective on customer behaviour and satisfaction.</td>
<td>Customer Centricity</td>
</tr>
<tr>
<td>Net promoter Index (NPI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Satisfaction Scores (CSAT)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Willingness to buy the offering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to Revenue Generation</td>
<td>Time being one of the crucial metrics to determine the efficiency of process and operations, these metrics are very important for business stakeholders.</td>
<td>Performance &amp; Efficiency</td>
</tr>
<tr>
<td>Time to Market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design &amp; Development Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Call Out Rates (FYCOR)</td>
<td>These metrics collectively helps the organization monitor, diagnose, and improve the quality and performance of their offerings while aiming for greater customer satisfaction and operational efficiency.</td>
<td>Quality &amp; Excellency</td>
</tr>
<tr>
<td>Early Failure Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time taken to fix the Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Conversion Rate</td>
<td>All three metrics are related to tracking and evaluating different aspects of customer interactions and relationships.</td>
<td>Performance &amp; Efficiency</td>
</tr>
<tr>
<td>Equipment to Maintenance Conversion Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Retention Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patents Generated</td>
<td>All these metrics relate to growth and expansion of the business. Patents and solutions in market depict the company's competitive nature.</td>
<td>Competitiveness &amp; Differentiation</td>
</tr>
<tr>
<td>No. of solutions in market vs competitors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer volume growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Volume Growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment in Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Resources Cost</td>
<td>These metrics are important in aspects of cost management and financial analysis. These metrics</td>
<td>Profitability &amp;</td>
</tr>
<tr>
<td>Operational Costs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Marketing/Customer Acquisition costs play crucial role in budget and resource allocation.

<table>
<thead>
<tr>
<th>Total Sales</th>
<th>Revenue Generated</th>
<th>Total market share</th>
<th>Total Profits</th>
</tr>
</thead>
<tbody>
<tr>
<td>These are common yet very important metrics used to assess the financial performance and market position of the organization. They are widely used across the organization.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the context of the findings from the design project, it was evident that certain critical aspects, particularly related to the business dimension, have not been subjected to measurement. This absence of metrics extends across key domains, including customer satisfaction, financial performance, and usability assessment. The lack of quantifiable metrics in these areas poses a challenge when evaluating the overall impact and effectiveness of the design interventions.

### 5.6 Methods for Measuring Design’s Value

In addition to interviews from the sponsor organization, supplementary interviews conducted with leaders of design domain from diverse industries provided valuable suggestions regarding the methods for measuring design’s value. There wasn’t any framework in measuring design’s value, but few key strategies and steps used by the Design team that has been utilized to showcase design’s value to wider stakeholder groups.

“Business stakeholders understand design is useful but not fully about just how useful and impactful it can be. It’s why the business perspective on what exactly would prove the value of design to them would be so interesting and be a driver for org change towards being more design centric.”

“Demonstrating the business value of design to stakeholders not inherently design-oriented presents challenges, primarily when the impact of design activities isn’t immediately quantifiable in monetary terms. However, we employ experiential methods, such as involving stakeholders in user research and testing events, to help them recognize the value of design’s contributions.”

-Lead Designer, Airlines Industry, Participant A3, Supplementary Interviews

The emphasis on understanding the business perspective to determine what specifically would demonstrate the value of design indicates a need for methods that can effectively
measure and communicate the tangible impact of design in a language that resonates with business stakeholders.

Participant A3 emphasizes the challenges in demonstrating the business value of design to stakeholders who may not inherently have a design-oriented perspective. This challenge becomes particularly pronounced when the impact of design activities is not immediately quantifiable in monetary terms. However, the participant sheds light on the employment of experiential methods as a strategic approach to address this difficulty. These methods include actively involving stakeholders in user research and testing events. The aim is to provide stakeholders with firsthand experiences to help them recognize and appreciate the tangible contributions of design, especially when conventional monetary metrics may not fully capture its impact.

“Demonstrating the business value of design to stakeholders not inherently design-oriented presents challenges, primarily when the impact of design activities isn't immediately quantifiable in monetary terms. However, we employ experiential methods, such as involving stakeholders in user research and testing events, to help them recognize the value of design's contributions.”

“We have also had a unique way of communicating the importance of design: educating non-design stakeholders in the principles of design, notably through the adoption of the design thinking approach. By imparting insights about end-users and emphasizing the value created for them, we've not only streamlined our work but also elevated a customer-first mindset across various organizational domains.”

-Design Lead, Banking Industry, Participant B3, Supplementary Interviews

Participant B3, from the banking industry highlighted that to quantify and communicate design impact they leverage existing data and analytics to illustrate how design methods can enhance metrics. A/B testing is employed to demonstrate tangible improvements, and design research helps uncover the 'why' behind data trends. Additionally, design is communicated as the voice of the user, using direct user feedback, quotes, and storytelling to showcase its effectiveness beyond mere numbers.

Further, participant B3 introduced a distinctive strategy: educating non-design stakeholders in the principles of design, specifically adopting the design thinking approach. Participant added, educating stakeholders about the end-users and the value creation for the end-user has made the work smoother. This also has elevated the customer-first mindset within different domains of the organization. This innovative approach has produced noteworthy outcomes by fostering enhanced internal collaboration and enabling cross-functional project teams to collectively embrace a design-oriented mindset.
“The best way to demonstrate the value of design is to tie up design effects with business metrics and adopt the language of business stakeholders. Rather than creating a totally new or proxy design thinking metrics, a framework to show design effects on existing metrics can be the best way to go forward. We try to leverage the strategic role of design by connecting business metrics to CX metrics through frameworks such as Journey OPS. It helps align business, tech and design around the same problems or opportunities across holistic end-to-end customer journeys and brings relevant metrics into the picture.”

-CX Design Lead, Consulting Firm, Participant C3, Supplementary Interviews

Participant C3, leading the Customer Experience Design team at a consulting firm, shared their extensive experience collaborating with diverse clients. They highlighted the common challenge of demonstrating the tangible business impacts of design initiatives. However, they offered a valuable solution by advocating for the incorporation of business metrics to illustrate the value of design effectively. This approach found resonance in interviews with sponsor organizations, highlighting a shared perspective on showcasing the value of design through quantifiable measures.

“How can we measure the impacts of the project specific to design?
-To answer this question, first we need to define the impacts of design. It also depends how you want to define the impacts. There isn’t one solution that fits all. And from design point of view, we are enabling a solution that basically accounts company values and customer needs. We act as drivers to accomplish these values and needs.”

-CX Design Lead, Consulting Firm, Participant C3, Supplementary Interviews

The response from the CX Design Lead suggests that measuring the impacts of a design project is a complex task that requires a clear definition of what “impacts” mean in the context of design. The approach to measuring impacts may vary depending on the specific project and its objectives. Design plays a crucial role in aligning the project with company values and meeting customer needs, acting as a catalyst to achieve these goals. The response emphasizes the need for a tailored and flexible approach to measuring the impact of design projects, as they are closely tied to the alignment of values.

In essence, the consistent use of business language emerged as a recurring theme in the interview findings. Furthermore, the solution framework is grounded in a key concept highlighted by most participants: creating a direct link between design outcomes and the organization’s core values which involves identifying relevant metrics to clearly demonstrate this impact.
6. Discussions

This chapter offers a comprehensive summary of the primary deductions derived from the research findings stated in the preceding sections.

6.1 Impacts of Design

This discussion highlights the immediate and long-term impacts of design initiatives revealed through interviews and findings.

6.1.1 Immediate Impacts

The immediate impacts of design initiatives, as identified through interviews, emphasizes the team’s role in injecting innovative ideas, exploring unconventional solutions, and refining project outcomes through active customer engagement. The observed impacts of design align closely with the theoretical discussions on design role in innovation as highlighted by multiple studies (Heskett, 2005; Brown, 2008; Isaacson, 2011; Liedtka, 2015; & Rowe et al., 2015) and discussions on customer-centricity as highlighted in the study by Prorok and Kosicka (2021).

Design thinking, operating as a catalyst, infuses organizations with agility, fostering a culture of rapid adaptability. By empathizing with users, understanding their needs, and iterating on solutions, design approach helps tackle complex problems effectively, create products and services that resonate with the users or customers thereby generating long-term value (Dorst, 2010). Interviews with non-design stakeholders supported this as they expressed the benefits that they had experienced by collaborating with designers. These immediate effects serve as catalysts, instigating a change and setting the stage for long-transformation which was also referred to as the ‘mantra of innovation’ by Brown (2009). Eradatifam et al. (2020) highlighted the inclusive approach of design and designer’s ability to collaborate with diverse stakeholders in driving innovative solutions which resonated with the interview findings where non-design stakeholders explicitly highlighted designer’s ability in suggesting unconventional solutions and bringing in ‘outside-the-box’ thinking in concept development process. These all can be considered as design’s immediate impact on innovation or fostering innovation. While it can be argued that it takes time for something to be innovated and if it can be considered as immediate effect. This argument is valid however this gives us clarity about design’s role in this innovation process.

The immediate impact of design initiatives, particularly in the realm of Customer Experience Management (CEM), is underscored by Prorok and Kosicka (2021). Their framework spans from fostering a deep understanding of the customer to ensuring the right design, facilitating seamless delivery, and ultimately shaping the overall customer culture. The resonance of these theoretical aspects within the interview findings reinforces the immediate impact of design interventions. One key aspect of this immediate impact lies in the ability of designers to effectively communicate with customers. The acknowledgement from non-design
stakeholders underscores the importance of this skill, emphasizing its immediate influence on project outcomes. The capacity to translate customer insights into actionable design elements becomes crucial in ensuring that the design aligns with the genuine needs and expectations of the end-users. Furthermore, the immediate impact is evident in the designer's adeptness at probing customer pain points and prioritizing their needs. This proactive approach not only accelerates the problem-solving process but also cultivates a customer-centric mindset within the design team. While the positive aspects are apparent, one might argue that the long-term sustainability of customer-centric design thinking needs to be thoroughly assessed. The potential risk lies in the challenge of maintaining this immediate impact over time, especially as projects evolve and organizational dynamics shift. Additionally, the question arises whether the immediate customer-centric mindset translates into enduring cultural changes within the organization. In essence, the immediate impact of design interventions on customer experience, as articulated by Prorok and Kosicka (2021) and supported by interviews, is a vital and tangible outcome.

While stakeholders closely working with the design team recognize the immediate value brought by the Design Team, it's crucial to question the extent of this recognition across all organizational levels. The acknowledgment of designers as important stakeholders is positive, but understanding the depth of their influence and the integration of design thinking into decision-making processes requires further exploration. The emphasis on effective communication skills and prioritization of customer needs is noteworthy, but it raises questions about the broader organizational culture. On the project level, a more in-depth investigation is needed to identify specific instances where the engagement of the Design Team may have resulted in extended project timelines or conflicts with other departments. This examination is important for a comprehensive understanding of the Design Team's impact, encompassing both positive and negative experiences. By examining project-level dynamics, we can identify in-depth insights that contribute to a more balanced perspective on the challenges and benefits associated with the Design Team's involvement.

In essence, the immediate impacts observed through interviews align with the theoretical framework, emphasizing the role of design thinking in fostering customer-centricity and innovation.

6.1.2 Long-Term Impacts

Extending beyond the immediate impacts, the long-term impacts of design initiatives extend to shaping organizational identity. Enhanced brand image, sustained innovation capabilities, and a fortified organizational culture were identified as long-lasting effects. These effects were mostly derived from literature and explained in Section 2.2. While the interviews, especially from supplementary interviews conducted among design professionals from varied industries supported these findings.

The acknowledgment by several participants who witnessed "great initiatives from the design" that drive the organization forward with new innovations, aligns seamlessly with Norman and Verganti's (2014) argument. It emphasizes that design, far from being confined to
incremental changes, fostering radical innovation, creating a baseline for long-term organizational advancement and competitiveness. Similarly, business stakeholders appreciate the outcomes of the design process for their visual appeal and functionality. This resonates with the discussions on user experience design, indicating that the continuous improvement embedded in design thinking contributes to a sustained positive perception of the brand, fostering long-term brand value ([Neumeier, 2008; Reimann and Schilke, 2011]). The Lead Designer from the Airlines Industry (Participant A3) highlights the strategic role of design in achieving key strategic goals such as digitalization and improving sales potential. This mirrors the literature’s emphasis on design’s ability to drive differentiation through user-centeredness and innovation, contributing to sustained competitiveness. One of the designers emphasize the cost-saving aspects of the iterative and feedback-driven design process. This aligns with the discussion on differentiation, as it implies that investing in design’s problem-solving capacity can prevent the creation of undesirable products, contributing to long-term differentiation by delivering high-quality offerings (Kotler and Armstrong, 2010). One of the business stakeholders underscore the importance of consistency in design for financial success. This aligns with the discussion on differentiation, highlighting that maintaining a cohesive brand experience over time is crucial for building trust with consumers and contributing to the long-term success of the brand. In short, the interview findings offer concrete examples that substantiate the theoretical discussions on design’s long-term impact.

The value of design has been greatly identified but limited to design professionals and few business stakeholders. The long-term effects of design, although widely acknowledged, face challenges when extending their recognition to non-design and business professionals. The main challenge is to align these perceptions with quantifiable or measurable impacts as positive sentiments may not necessarily correlate with tangible organizational advancements. While the literature robustly emphasizes the transformative potential of design the disconnect between design and mainstream business functions counts as another challenge. This gap impedes the holistic demonstration of design’s value to the broader organizational spectrum. Liedtka (2015) identifies this challenge, pointing to the lack of a direct linkage between design and core business functions. Within non-design and business circles, there is a prevalent perception that design functions as an add-on rather than a strategic, integral component. This perception inhibits the realization of design’s strategic impact and its potential to shape the overall organizational identity. Throughout the interviews, very few participants talked about strategy and design’s role in strategy. This underscores a need for a shift in acknowledging design’s role beyond an auxiliary function.

Literature talks about design’s transformative role and highlights the long-term impacts including not just changing what products or services organization produce but how everyone in the organization works together to create a superior organizational identity. However, there very few discussions talk about elevating design’s role in organization or approaches in showcasing design’s long-term impact. Few studies such as Sachdeva (2022) advocate for a seamless connection between design initiatives and core business objectives. However, it is essential to critically assess the direct causal links between design initiatives and business outcomes. Are there other external factors contributing to innovation and brand success, or can these genuinely be attributed solely to the work of the Design Team? These questions were also raised by several non-design professionals during the interviews. To truly
understand the strategic impact of design, it is essential to detect whether design initiatives are the sole drivers of observed changes or if there are external influences contributing to innovation and brand success. The literature provides a conceptual framework, but real-world complexities demand a nuanced examination of the direct causal links between design efforts and their supposed outcomes.

In conclusion, while the findings suggest a positive impact of the Design Team on projects and organizational success, an in-depth examination is necessary to precisely demonstrate the value of design offering holistic understanding.

6.2 Design’s Connection with Business & Finance

This section discusses about values integral to business and finance that can be linked to design benefits as stated in Section 2.2. First part discusses about the business values and second part discusses about its connection with hard financial metrics, identified from the literature and the interview findings.

6.2.1 Synergy between Business Values & Design Benefits

This section explores the convergence of business values, often referred to as organizational or company values, with the benefits derived from design practices. 'Business values' is an informal terminology which can also be termed as organizational or company values and may refer to the core principles, standards, or priorities that guide the behaviour, culture, and decision-making processes within an organization. These values are foundational to a company's identity, influencing its strategies, goals, and relationships with stakeholders (Heinilä, 2023). Within the scope of this research, 'values' can be referred as 'drivers' that act as a guiding compass for employees, harmonizing their actions and decisions with the overarching business phenomenon.

Sachdeva (2022) conducted a comprehensive study among a diverse group of investors and business managers to identify the primary investment criteria and values they prioritize. The research highlighted the significance investors place on analytics, relying on tangible analytical evidence to ascertain the profitability and value of a service. The study revealed four pivotal criteria that both investors and business managers prioritize when assessing potential investments or business strategies (Sachdeva, 2022). Firstly, a 'Differentiating factor' is emphasized, as it provides businesses with a competitive advantage, making them more appealing as investment opportunities. Secondly, the 'Impact on market size' is crucial. Investors, often being short-term stakeholders, seek companies with promising market growth potential. This criterion is central to their decision-making process. Thirdly, 'Innovation capability' emerges as a key factor. A business’s ability to innovate is considered crucial, as it significantly drives the company’s growth. Investors and managers recognize the importance of staying ahead through innovation. Lastly, the study underscores the importance of 'Employee and customer satisfaction.' High levels of satisfaction among both employees and customers are seen as indicators of a company’s potential for sustained growth and profitability. This dual focus on internal and external satisfaction reflects a holistic approach to
business success. This study outlines the primary business values of investors and managers, which strikingly resonates to the benefits of design as discussed in the literature section.

Another study from Haggège et al. (2017) also identifies customer engagement and internal process optimization as fundamental drivers of business performances. Kaplan and Norton (1996) introduced the Balanced Scorecard (BSC), which is a tool that businesses can use to measure performance in multiple areas, not just financials, highlighting the multifaceted values and targets of businesses. The study talks more about “perspectives” rather than “values” which organizations can use to measure and manage their performances. This again strikingly coincide to the benefits as discussed in the literature section. The four perspectives highlighted in this study are (Kaplan and Norton, 1996): Financial Perspective, Customer Perspective, Internal Process Perspective and Innovation & Learning Perspective. Firstly, the Financial Perspective involves evaluating the financial performance of the organization, encompassing traditional measures such as revenue, profit margins, return on assets, and economic value added. Secondly, the Customer Perspective centres on the organization’s customer-related objectives. This perspective includes considerations of customer satisfaction, retention, market share, and the acquisition of new customers. Additionally, the Internal Process Perspective involves assessing the efficiency and effectiveness of the organization’s internal processes. This encompasses the evaluation of factors such as the quality of products/services, lead times, and operational costs. Lastly, the Innovation and Learning Perspective examines the organization’s ability to learn, innovate, and adapt. This perspective concentrates on various aspects, including employee training, organizational culture, skills, and information systems. The Balanced Scorecard’s incorporation of these perspectives provides a holistic approach to evaluating and managing the overall performance of an organization.

Another popular study from Mozota (2010), makes an interesting connection between design and the BSC. The study mentions about the four powers of design: Design as a differentiator (customer perspective), design as a transformer (innovation perspective), design as a coordinator (process perspective) and design as a good business (finance perspective) and links it to the four perspectives of the BSC. Mozota (2010) argues that the Balanced scorecard is widely known by MBAs and often used by audit and strategy consultants making it a familiar and trusted model. By utilizing the framework, organizations can demonstrate the impact of design through the four design value systems upon translating it into the four business perspectives.

From the interviews, it can be deduced that the company’s core values encompass a range of business aspects, including customer satisfaction, profitability, brand image enhancement, product and service development, identification of business opportunities, operational efficiency, and financial management. Aligning these core values with the literature on design benefits (Section 2.2), we can draw connections between the values driving the organization and the tangible benefits obtained by implementing design.

Deduced from these studies, Table 11 lists some of the key values or drivers relevant to the business domain and that has links to the design benefits mentioned in the (Kaplan and Norton, 1996; Mozota, 2010; Haggège et al., 2017; Sachdeva, 2022).
<table>
<thead>
<tr>
<th>Design Benefits</th>
<th>Values or Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation</td>
<td>Increase capability to develop novel products and offerings</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>Meeting customer expectations</td>
</tr>
<tr>
<td></td>
<td>Optimizing customer experience</td>
</tr>
<tr>
<td>Brand Value</td>
<td>Maintain positive brand perception</td>
</tr>
<tr>
<td>Differentiation</td>
<td>Standing out from competitors</td>
</tr>
<tr>
<td></td>
<td>Unique value proposition</td>
</tr>
<tr>
<td></td>
<td>Creating new market</td>
</tr>
<tr>
<td>Organizational</td>
<td>Employee satisfaction</td>
</tr>
<tr>
<td>Improvement</td>
<td>Waste Elimination</td>
</tr>
<tr>
<td></td>
<td>Operational Efficiency</td>
</tr>
</tbody>
</table>

In conclusion, the exploration of business values, design benefits, and their intricate interconnection has provided valuable insights into the dynamics shaping organizational success. Future research could delve into integrated frameworks merging business values and design principles, conduct longitudinal studies tracking the impact over time, explore cultural nuances in implementation, and investigate employee engagement's role in successful alignment. For businesses, strategic alignment, fostering innovation, adopting holistic performance measurement tools, and prioritizing employee and customer satisfaction are practical implications derived from this study. The collaboration between academia and industry remains key for translating these insights into innovative business strategies, contributing to sustained success in dynamic markets.
Connecting Design Benefits and Business Values to Financial Metrics

While, in the field of finance, market share, profits, returns to shareholders, revenue growth, and cost savings are fundamental financial metrics that businesses and investors closely monitor and use for decision-making process (Kotler and Armstrong, 2010). This section aims to relate business values mentioned in Table 11 to these financial metrics.

Figure 11 provides a comprehensive visualization of the benefits of design (Innovation, Customer Satisfaction, Brand Value, Differentiation and Organizational Improvement) and links them to financial metrics (Cost Savings, Revenue growth, Profitability, Market share and market value) through values mentioned in preceding section 6.2.1. The aim is to show how design benefits influences the values (mentioned in Section 6.2.1 and Table 11) and ultimately the hard financial metrics (Kaplan and Norton, 1996; Mozota, 2010; Haggège et al., 2017; Sachdeva, 2022).

Figure 11 Link between design benefits and business/finance through values/drivers

Plethora of business literature highlights the role of innovation in driving sales and revenue growth for businesses. Drucker and Maciariello (2014) emphasize that by addressing unmet customer needs through innovative products and services, businesses can cultivate an entirely new customer base. Markets that predominantly aim to outcompete peers often overlook these unserved needs. Diverging from mere competition and directing efforts towards customer-centric innovations can unlock fresh opportunities for companies, leading to enhanced sales and revenue. Innovation stands out as a pivotal tool for differentiation and fostering a competitive advantage (Porter, 1985; Kim & Mauborgne, 2004). Companies like Apple and IBM, which heavily invest in R&D and innovation, consistently demonstrate superior competitive positions compared to their counterparts. As demonstrated by Apple with the first iPhone, company first to introduce an innovative product to the market can capture...
large share of market before their competitors (Verganti, 2009). This extends to other industries and not only limited to a product but also service. Notable examples are Netflix which has a strong hold in streaming service industry and American payment service provider Visa which has around half of the total market share (Forbes, 2022). Moreover, companies that offer innovative products and services frequently adopt premium pricing for their exceptional offerings. While this can boost sales, it also increases their market value (Porter, 1985).

Reichheld (2003) emphasized that retaining existing customers is more cost-effective than acquiring new ones. The importance of customer satisfaction and customer engagement cannot be understated. Satisfied customers make repeat purchases and encourages positive word of mouth which contributes to steady revenue stream for organization. Keller and Fay (2012) argued word of mouth is the cheapest and most effective means of marketing. Furthermore, a satisfied customer base enhances the Customer Lifetime Value (CLV) one of the crucial metrics utilized by many organizations. CLV is directly influenced by the longevity of a customer-company relationship (Reichheld, 2003). Customer satisfaction is also associated with reduced churn rates, meaning less resources are spent on re-acquiring lost customers (Marr, 2012). Net Promoter Score (NPS) developed by Reichheld (2003) is a metric utilized across different domains to measure customer satisfaction. In 2005, the London School of Economics conducted a study that found that a 7% increase in NPS correlates with a 1% increase in revenue overall. Another study from Phillips Lighting group linked NPS to revenue growth where the increasing NPS scores had average revenue growth by 70% while decreasing NPS scores saw 24% decrease in revenue. NPS detractors also were responsible for 80% of negative word of mouth, when research was conducted at Dell Inc. to analyse the impact of NPs on revenue (Kurasinska, 2023). These studies explicitly outline the relationship of customer satisfaction on financial metrics.

Similarly, brand value often referred as ‘brand equity’ has significant impact on a company’s profitability and returns. Positive brand perception attracts loyalty, reducing the cost tied with customer acquisition, customer retention, and increasing the probability of repeat purchases (Aaker, 1991). Companies with positive brand image often charge premium pricing from their customers as the risks of customers hesitating due to cost concerns is considerably diminished (Porter, 1985). Drucker and Maciariello (2014) states strong brand equity serve as a barrier to entry for competitors and can act as a strategic asset in competitive markets. As such, brand value plays an influential role in company’s financial success.

In conclusion, the exploration of the relationships between design benefits, business values, and their consequential impact on key financial metrics presents profound insights for both research and business practices. The identified themes underscore the pivotal roles of innovation, customer satisfaction, and brand value in shaping financial success. For future research, there is a need to investigate into developing integrated frameworks that explicitly map the dynamic connections between design benefits, organizational values, and financial metrics. Longitudinal studies tracking the sustained effects of design strategies, exploration of cultural nuances, and understanding the role of employee engagement in successful design implementation present promising avenues for deeper investigation. On the practical front, businesses are encouraged to strategically align design efforts with core values, foster
6.3 Aligning Organizational Values with Design Benefits

The synthesis of literature findings and insights from interviews has illuminated recurring themes, as illustrated in Figure 12. This visual representation intricately maps the interlink between the organization's core values and the diverse benefits attributed to design in the literature. While this attempt to align design advantages with organizational principles is intriguing, a critical examination is required to detect the practicality and depth of these connections. This could be further supported by replicating similar research upon different companies across different industries. Further, in-depth exploration could be conducted with questions such as: 'Do these design advantages genuinely resonate with the day-to-day
operations of the organization?’ or ‘Do they remain theoretical constructs?’ Identifying instances where certain design benefits might not seamlessly integrate into the organizational context is crucial for a more realistic understanding.

The correlations depicted in Figure 12 present a compelling narrative, emphasizing the tangible impact of design across various organizational contexts. However, a context-specific nature of these correlations could be examined for further validation. Organizations vary widely, and what may work for one might not necessarily translate universally. A more nuanced exploration is needed to detect the contextual dependencies that influence the alignment between design benefits and core values.

The discussion acknowledges that the recurring themes align with established principles of the benefits of design. However, a critical perspective is needed to investigate the potential biases within the literature. Are there biased opinions or overlooked perspectives that challenge these established principles? Recognizing the limitations and potential biases in the existing body of knowledge is fundamental for a well-rounded assessment.

The interview findings suggest a shift from communicating high-level values to a deeper exploration of connecting design outcomes with core values. While this shift is portrayed as beneficial, a critical discussion must address the inherent challenges. How can organizations navigate potential conflicts and ensure a seamless integration of design outcomes into core values without diluting authenticity? Examining the practicality and potential stumbling blocks in this refined communication approach is essential.

The refined approach of connecting design outcomes with core values is embraced as enabling a more meaningful and relatable demonstration of the impact of design. However, a critical exploration is needed to uncover potential unintended consequences and limitations associated with this approach. Are there scenarios where misalignment leads to unforeseen challenges? Understanding the potential pitfalls is crucial for a balanced evaluation.

In conclusion, while the alignment of organizational values with design benefits is an intriguing concept, this critical discussion underscores the need for a thorough assessment of practical implications, context-specific considerations, potential biases in literature, challenges in communication shifts, and any unintended consequences. This examination contributes to a more comprehensive understanding of the intricate relationship between design and organizational values.

6.4 Why Value of Design Needs to be Measured?

From both round of interviews, it can be deduced that there is a recognized awareness among business stakeholders about the utility of design, but there exists a gap in fully grasping the extent of its usefulness and impact. The emphasis on understanding the business perspective to determine what specifically would demonstrate the value of design indicates a need for methods that can effectively measure and communicate the tangible impact of design in a language that resonates with business stakeholders. This suggests a potential
focus on developing methodologies that can quantify and showcase the outcomes of design initiatives in terms that align with the business objectives, such as financial metrics, customer satisfaction scores, or efficiency improvements. The aim is to bridge the understanding gap and drive organizational change towards a more design-centric approach by providing concrete evidence of design’s value from a business perspective. However, it also raises critical questions about the feasibility and reliability of translating the qualitative nature of design impact into quantitative terms. The challenge lies not only in developing methodologies that resonate with business stakeholders but also in ensuring that these metrics accurately capture the multifaceted contributions of design.

“Something that can’t be measured in numbers can’t be financed, same applies for design.”
- Design Thinking Lead, Telecommunications Industry, Participant D3, Supplementary Interviews

Contributing to the literature, findings from different layers of interviews, further reinforce the importance of measuring design value. The above statement from Design Thinking Lead from Telecommunications industry emphasizes the practical business reality. It underscores the challenge of securing resources and investment without quantifiable evidence of design’s impact. This also resonates the sentiments expressed in various layers of interviews and underlines the critical role of measurement in securing financial backing and organizational support for design initiatives. However, it also underscores a potential risk of reducing the essence of design to mere numerical metrics. A critical perspective necessitates caution against oversimplifying the intricate and often intangible value that design brings to an organization. Striking a balance between measurable outcomes and the intrinsic, creative nature of design poses a substantial challenge.

Additionally, research studies and industry reports consistently demonstrate that businesses that invest in design outperform their peers in various key performance indicators. For instance, the Design Management Institute’s Design Value Index has consistently shown that design-driven companies outperform the S&P 500 by a significant margin (DMI, 2015). Such empirical evidence highlights that design, when measured effectively, can lead to improved performances. It is essential to question whether design is the sole factor contributing to success or if other contextual factors play a significant role. Moreover, relying solely on industry benchmarks might overlook the unique context and challenges faced by a specific organization, questioning the universality of these correlations.

The alignment between design benefits highlighted in the literature and the core values of the organization is not a mere coincidence; it signifies a unique opportunity. It suggests that design has the potential to significantly influence the core values of the company. However, this potential remains largely unrealized. This raises questions about the practical strategies organizations can employ to integrate design into their core values effectively. There is a risk that, without a clear roadmap, this potential remains aspirational and does not translate into tangible organizational change.
Design, in its current state, lacks the concrete evidence and tangible demonstrations necessary to challenge the status. Without compelling proof of its impact on the core values, the role of design within the organization remains undervalued and underutilized. To bring about a transformation and unlock the full potential of design, it is imperative to measure its value. Measuring design's value could be the most effective way forward. It offers the design department a roadmap to not only recognize the significance of design but also to tangibly demonstrate how it positively influences and enhances the core values.

In conclusion, to unleash the full potential of design, there is a compelling argument for the need to measure its value. The current undervaluation and underutilization of design within the organization persist due to a lack of concrete evidence and tangible demonstrations. By quantifying the value of design, the organization can bridge the gap between its potential and its actual contribution. This measurement becomes the cornerstone for a strategic shift, elevating design's role and reinforcing its influence on the company's core values. The demonstration of the value of design becomes a lethal tool for organizational success, offering a pathway to transform its role from a peripheral function to a strategic function.

6.5 What and to Whom to Demonstrate the Value of Design?

In the context of demonstrating the value of design, it is essential to recognize that there exist diverse stakeholder groups from diverse domains, each having distinct interests and concerns. It's crucial to comprehend the specific needs and priorities of these stakeholder groups and tailor the communication of the value of design accordingly. Table 12 summarizes the different stakeholder groups and their needs, interests.

Table 12 Overview of the Target Stakeholder Groups, their Interest & Design’s Value

<table>
<thead>
<tr>
<th>Stakeholder Groups</th>
<th>Responsibilities</th>
<th>Stakeholder Interests</th>
<th>Demonstrating the Value of Design</th>
</tr>
</thead>
</table>
| Business Development / Management | Primarily focused on the company's growth and profitability through development of the products and offerings. | -Creating New Business Opportunities.  
-Expansion to emerging markets.  
-Increasing the market share in all geographical areas  
-Market Penetration of Products/Offerings | Value of design can be demonstrated through its ability to open doors to new revenue streams, enhance the company's competitive edge, and drive business growth. |
| Customer Management | Focused on building and maintaining strong relationships with customers and other stakeholders. | -Enhancing the customer Experience  
-Satisfaction Level of Customers  
-Positive Word of Mouth | Value of design can be demonstrated through its impact on customer satisfaction, loyalty, and long-term partnerships. |
### Innovation Management

- Tasked with driving the development of cutting-edge solutions
- Continuous Innovation and being ahead of competitors
- Successful products and offerings in the market

Value of design can be demonstrated through its ability to create ground-breaking products and services that address evolving customer needs and drive technological advancements.

### Operation Management

- Responsible for streamlining the internal and external processes to be efficient and effective in meeting targets.
- Cost savings
- Smooth Operations & Performances
- Reduction in Errors, Failures and Complaints

Value of design can be demonstrated through its ability to minimize costs, time, effort, and failures.

### Brand Management

- Focused on shaping and promoting the company's brand identity and reputation.
- Brand image compared to competitors
- Elevating the identity
- Branding to new markets

Value of design can be demonstrated on how design can create a consistent and recognizable brand presence, fostering trust and differentiation in the market.

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Table 12 provides an insightful overview of various stakeholder groups, outlining their responsibilities, interests, and ways in which the value of design can be demonstrated. The selection of these specific stakeholder groups is strategic and aligns with the recognition that various organizational functions play pivotal roles in determining the success and impact of design initiatives. Each stakeholder group represents a distinct business function of the organization and demonstrating the value of design to each of these stakeholder groups is crucial as they are the ones responsible for driving the core values of the organization mentioned in Section 5.4.

Business development and management are at the forefront of driving the company's growth and profitability. They make strategic decisions about financial growth, market expansion, and overall business strategy. Demonstrating the value of design to this group is essential because they hold the key to resource allocation and strategic direction. If design can contribute to creating new business opportunities and expanding market share, it directly aligns with the core objectives of business development and management. For these stakeholders, the emphasis is on creating new business opportunities, expanding into emerging markets, and increasing market share. The feasibility of such attribution faces potential hurdles, and there are limitations in quantifying the direct impact of design on intricate business development objectives. Recognizing these challenges, future studies could delve into the incorporation of industry benchmarks or case studies to provide contextual insights into the potential impact of design on overall business growth.
Customer management focuses on building and maintaining strong relationships with customers. They are directly responsible for customer satisfaction and loyalty. For businesses, customer satisfaction is a key metric of success. By demonstrating how design positively influences customer experience and satisfaction, organizations can establish a direct link between design initiatives and customer-centric success, which is substantial for sustained business growth. The literature section highlighted due to subjective nature of outcomes such as customer satisfaction it is challenging to relate design to these outcomes. Therefore, a critical analysis should explore the challenges in directly measuring the influence of design on subjective factors like customer satisfaction. Consideration of alternative metrics or qualitative research methods can be suggested to supplement quantitative data, providing a more comprehensive understanding of design's impact on customer management.

Innovation management is tasked with driving the development of cutting-edge solutions, ensuring the organization stays ahead of competitors. In the modern business landscape, innovation is a critical driver of competitiveness. Demonstrating the value of design to innovation management is crucial as design plays a central role in fostering creativity, envisioning future possibilities, and delivering products or services that outpace competitors. The connection between design and continuous innovation is well-established. However, a critical discussion should address potential tensions between design's creative nature and the structured demands of innovation management. Adopting strategies to balance creativity and innovation within organizational processes can enhance the practicality of demonstrating the value of design in driving technological advancements.

Operations management is responsible for streamlining internal and external processes to ensure efficiency and effectiveness. Efficiency and cost-effectiveness are essential for organizational success. Demonstrating how design can contribute to operational efficiency, cost savings, and reduced errors directly appeals to the operational goals of this group. However, a critical examination should address the potential trade-offs between efficiency and the creative, iterative nature of design. The discussion could suggest approaches to reconcile these potential conflicts, ensuring that the pursuit of operational efficiency does not compromise the innovative aspects of design.

Brand management is focused on shaping and promoting the company's brand identity and reputation. The brand is an asset for any organization, influencing customer perceptions and market positioning. Design plays a crucial role in crafting a consistent and visually appealing brand identity. Demonstrating the value of design to brand management reinforces its significance in maintaining a strong, recognizable brand presence. The emphasis on creating a consistent and recognizable brand presence is valid. However, a critical perspective should investigate into the challenges of attributing brand success solely to design in a complex market environment. Suggestions could include exploring the integration of design metrics with market research data to provide a more nuanced understanding of the role of design in shaping brand identity.

In essence, these stakeholder groups are chosen because they collectively represent the diverse spectrum of organizational functions, and their engagement with design is instrumental in realizing its value. This conclusion is informed by a synthesis of literature and
interview findings. By aligning design outcomes with the specific interests and responsibilities of these stakeholders, organizations can effectively communicate the multifaceted impact of design on overall business success. However, it is critical to acknowledge the potential challenges in quantifying the direct impact of design on complex business development objectives. Balancing the creative nature of design with the structured demands of strategic decision-making poses a substantial challenge and requires continuous dialogue and long-lasting collaboration between design and business leadership. Addressing potential challenges, suggesting supplementary metrics or methodologies, and exploring the interplay between design and broader organizational goals will enhance the depth and applicability of demonstrating the value of design to diverse stakeholders.

6.6 How to Demonstrate?

While acknowledging the importance to measure the value of design is evident, performing critical analysis poses several challenges and potential risks. The qualitative and creative nature of design includes difficulties in translating its impact into quantifiable metrics. In pursuit of measurable outcomes, it requires special attention to ensure that the oversimplification doesn’t undermine the intrinsic value of design. As organizations navigate this challenge, it is crucial to strike a balance between tangible metrics and the inherent value of design. To enhance the effectiveness of measurement, organizations could consider developing hybrid metrics that capture both quantitative and qualitative aspects of design impact, fostering a more comprehensive understanding. Moreover, there is a need for long-lasting dialogue between design and business stakeholders to refine and evolve these metrics, ensuring they remain relevant and reflective of the dynamic nature of design’s contribution. While essential, these dialogues may encounter resistance due to differing perspectives on the value of design. Business stakeholders, driven by tangible outcomes and bottom-line results, may find it challenging to appreciate the qualitative dimensions of design impact. This potential misalignment in expectations and understanding requires careful negotiation and continuous efforts to bridge the communication gap.

On the practical side and in the context of demonstrating the value of design, there are several crucial aspects that needs to be considered. These aspects not only serve as guiding principles but also represent the foundational elements essential for effectively conveying the value of design. These considerations, when integrated into the approach to demonstrating the value of design, provides concrete evidence of the contributions of design. These aspects are: 1) Target Specificity, 2) Topic or Impact Area Specificity, 3) Robust Framework and 4) Metrics & Measurements Specifications. These aspects not only serve as guiding principles but also represent foundational elements essential for effectively conveying the value of design.

Firstly, the principle of target specificity which essentially means defining the target audience and outlining their expectations. Effective communication of the value of design necessitates a clear understanding of the specific needs and expectations of the target audience. This is summarized in Table 12. Tailoring the message to address these unique requirements ensures that the impact of design is well-understood and appreciated. However, it is crucial
to acknowledge the potential challenge of accurately identifying and aligning with diverse stakeholder expectations, requiring a nuanced and adaptive communication strategy.

Second aspect is the topic or impact area specificity, which means a detailed breakdown of how design is utilized and where it is placed within an organizational context. Sachdeva (2022) argues that for the value of design to be understood, instead of saying design was able to improve the customer satisfaction or assisted in innovation, it should be broken down to exactly how it is being utilized and where is it being placed for example as an ethnographic tool to get on ground insights from customers or improving the performance of a product by merging the development with other studies and streams etc. Therefore, identifying or specifying the impact area within an organizational context adds depth and richness to the understanding of how design contributes to its success. It reveals the intricate web of design's applications, shedding light on the nuanced ways it positively influences diverse facets of the organization's operations and goals. This approach, while providing depth and richness to understanding how design contributes to success, may encounter challenges in articulating the complex and multifaceted nature of design's applications. Further exploration into balancing granularity with clarity is necessary.

Third aspect is a need of a robust framework. A well-structured framework serves as the foundation for assessing and demonstrating the value of design. It provides a systematic approach for data collection, analysis, and presentation, ensuring that the results are both credible and comprehensive. A framework with detailed description of the process and approach further aids the impact assessment. This is explained in detail in succeeding section. Section 2.4.2, derived from literature briefly highlighted the most common analysis methods and these methods can also be included in the framework. While this might help in assessing the value of design there is a challenge relating to this. The challenge lies in developing a universally applicable framework that accommodates the varied nature of design interventions.

Last aspect is the establishment of relevant metrics and measurement specifications. This is vital step for quantifying the impact of design. These metrics offer a standardized way to gauge the effectiveness of design, making it easier to track progress and communicate the value effectively. Metrics are summarized in Table 10 and explained in succeeding section. While simplified metrics can help gauge the value of design there is a risk if gets oversimplified and the risk is that it may not fully capture the holistic impact of design. Striking a balance between simplicity and comprehensiveness in metric selection becomes a critical consideration, as an overemphasis on easily quantifiable metrics may lead to an incomplete understanding of design's true value.

In conclusion, the challenge to demonstrate the value of design is accompanied by complicated challenges and potential risks. Navigating these challenges requires a critical outlook and strategic thinking to ensure that the value of design is accurately represented and appreciated in all its dimensions. This is an area that demands further research and investigations as well.
7. Managerial Implications

The primary goal of this research was to explore the intersection of two distinct domains: design and business, and to develop effective methods for measuring the impact of design on business. The findings unveiled multiple correlations between these domains, which were substantiated by both the literature and interview data. However, the most significant discovery of this research was the profound interconnection between design benefits and the core values of the organization. Yet, the practical demonstration of how these design benefits intricately link with the core values remains a critical challenge. This connection can be effectively established by introducing a medium, referred to in this study as the ‘Values/Drivers,’ as illustrated in Figure 13 and explained in section 6.2.

These 'Values/Drivers' can be defined as intermediary indicators influenced by design, which, in turn, have a significant impact on the business performances. These intermediary indicators are unique to each core value of the organization, and their specificities are summarized in Table 10. They serve as tangible links that showcase the tangible and measurable effects of design on the organization’s core values and, ultimately, its business performance.

![Diagram of Design, Drivers, and Business](image)

**Figure 13 Driver's: Connecting Design and Business**

In this context, the inclusion of values/drivers is essential as they serve as catalyst that underpin and shape the overall performance of a business. Values such as innovation, customer satisfaction, brand value, differentiation, and organizational improvement contribute
significantly to the intangible aspects of a company's identity and strategic positioning. These values not only influence the perception of a business within the market but also impact customer loyalty, employee engagement, and overall organizational culture.

Values/drivers in the discussion are referred to as intangible elements that play a pivotal role in shaping a company's success. Innovation, for instance, fosters adaptability and a forward-thinking approach, directly contributing to revenue growth and market share expansion. Customer satisfaction and brand value, on the other hand, enhance customer loyalty and market positioning, subsequently impacting profitability, and market value. Differentiation and organizational improvement, as values, contribute to creating a unique identity and fostering internal efficiency, leading to cost savings and improved overall performance. Therefore, the presence of values in the analysis is justified as they act as the foundational elements that drive the tangible financial metrics such as cost savings, revenue growth, profitability, market share, and market value. This comprehensive approach, as illustrated in Figure 11 (Section 6.2), aims to establish a clear linkage between these values and the hard financial metrics, providing a holistic understanding of how design benefits influence the overall success of a business.

Proposal for the Sponsor Organization

The proposal section focuses on the first part of the chain: Design – Drivers, illustrated in Figure 13. The reason being there are plethora of research and methods that already offer insights into the connections within the latter part of the chain. Focusing on the connection between design and its impact on the drivers which are linked to the core values of the organization, comprehensive assessment framework is proposed for measuring the value of design. This framework, coined as the "Design Impact Assessment Framework," outlines a systematic five-step process for measuring the influence of design.

About the scope, the assessment framework is tailored for project-based applications, focusing on evaluating the impact of the design team within the project or its specific boundaries. The responsibility for conducting this assessment lies with the project owner or designers who are the direct recipients of the design project. About the assessment method, the methodology commences by identifying the core values of the organization or the project under assessment and establishing a baseline measurement. Data collection involves engaging with relevant stakeholders, including customers, to gain insights into the current situation. The assessment framework is further detailed in five steps, as outlined in Appendix D - Design Impact Assessment Framework.
The assessment comprises several key elements, including core values, the extent of impact on these values, the specific impact area within each value, metrics, or Key Performance Indicators (KPIs), and the baseline measurement for these metrics or KPIs. These elements serve as the foundational building blocks of the framework, facilitating a comprehensive evaluation of impact. Following Table 13 shows the table with all the elements and filled with two common examples.

Table 13 Design Impact Assessment Table with Examples

<table>
<thead>
<tr>
<th>Core Values</th>
<th>Impact Level</th>
<th>Impact Area</th>
<th>Metric or KPI</th>
<th>Baseline Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Centricity</td>
<td>High</td>
<td>Usability of the service</td>
<td>Customer Satisfaction Scores (CSAT)</td>
<td>60% satisfaction score</td>
</tr>
<tr>
<td>Performance &amp; Efficiency</td>
<td>High</td>
<td>Designing offering to ease customer effort</td>
<td>Customer Effort Score (CES)</td>
<td>CES - 85</td>
</tr>
</tbody>
</table>
The assessment follows a Present vs. Future Analysis format, commencing at the beginning of the design project and recurring at specified intervals. The design impact assessment framework utilizes a 'Present vs. Future Analysis' approach, which shares similarities with the 'Before-After Analysis' mentioned in Section 2.3.2 of the literature. The primary distinction lies in its focus: it does not involve the comparison of past states or measurements; instead, it assesses the current state (present) and the projected future state (future) as shown in Figure 15.

![PRESENT VS FUTURE ANALYSIS](image)

**Figure 15 Overview of the Assessment Timeline**

The absence of historical data and comprehensive prior analyses of design impacts makes direct past-to-present comparisons challenging. Nevertheless, by initiating assessments today and maintaining them into the future, a holistic understanding of the design’s impact over time can be achieved.

Refer to Appendix D for the ‘Design Impact Assessment Framework’. The appendix includes step by step guide to assess design’s impact using an example project.

To enhance the effectiveness of the assessment framework, several considerations should be considered. Firstly, providing designers with clear guidelines and comprehensive training on utilizing the assessment framework is crucial. Ensuring their understanding of the significance of tracking metrics and their role in achieving assessment objectives is essential for the framework’s successful implementation. However, the challenge lies in the potential resistance or reluctance from designers who may perceive this additional layer as bureaucratic or time-consuming.

Secondly, incorporating a system of regular updates is vital for maintaining the relevance and accuracy of metrics. Designers should be encouraged to update metrics at specified intervals, such as every 3, 6, 9, and 12 months. This necessitates the establishment of a structured process and data collection mechanisms. However, the potential burden on designers'
time and resources may hinder the seamless implementation of this approach as highlighted in the literature section 2.4.3.

Then another consideration is the establishment of effective data collection mechanisms. This is critical for facilitating designers in gathering and inputting relevant data. The consideration of utilizing digital tools or software to streamline the process is a practical suggestion, but it introduces challenges related to the learning curve and potential resistance to technology adoption within the design team.

Further, creating a feedback loop is essential, allowing designers to review the impact assessment results and integrate them into their design decisions. Encouraging designers to learn from the data fosters a culture of continuous improvement. Nevertheless, the effectiveness of this feedback loop depends on the willingness of designers to embrace a data-driven approach and the clarity of communication regarding how the assessment results can inform their design decisions.

In addition, ensuring that the management awareness and supportive for the Present-Future analysis process. This involves allocating resources for data collection and analysis. However, challenges may arise in securing management buy-in, especially if there is skepticism regarding the tangible benefits of the assessment process or if resources are constrained.

Moreover, adopting an iterative improvement approach as per design thinking philosophy can help build a robust assessment framework. This involves periodically reviewing the assessment framework, impact areas, and metrics to refine the assessment criteria. While this reflects a commitment to continuous enhancement, potential challenges include the need for dedicated resources and time for these reviews, and the risk of changes disrupting the consistency of historical data.

Lastly, integrating the Present-Future analysis into the overall design process to make it a standard practice for designers is an ambitious but potentially challenging goal. Designers may resist integration if they perceive it as an additional layer that disrupts their creative workflow or if they do not see a direct correlation between the analysis and improved design outcomes.

In conclusion, while these considerations offer valuable insights for optimizing the assessment framework, addressing potential challenges related to designer buy-in, resource constraints, and the need for ongoing commitment is critical for the successful implementation and sustainability of the proposed enhancements.
Limitation of the Design Impact Assessment Framework

The Design Impact Assessment Framework, while offering valuable insights into the impact of design initiatives, is not without its limitations. A significant challenge lies in the extensive involvement of designers in multiple steps, ranging from identifying core values to defining metrics and continuous monitoring. This level of engagement can add complexity to the process, making it time-intensive and potentially diverting designers’ focus from their primary creative tasks. The potential resistance from designers who may perceive this as an additional bureaucratic layer and a diversion from their core responsibilities could impede the seamless implementation of the framework. Moreover, the effectiveness of the framework heavily relies on the quality, accuracy, and consistency of data collection. Given the intricate and often decentralized nature of organizational setups, ensuring uniform data collection across diverse projects and teams can be challenging. The potential for variations in data interpretation and collection methods may undermine the reliability of the assessment results. Additionally, the framework is primarily tailored for project-based applications, which may not align seamlessly with the varied work modes of designers. In scenarios where designers are engaged in continuous improvement efforts, working in product mode, or involved in research and development, the framework may not fit perfectly. Designers often contribute to long-term projects that extend beyond the scope of individual projects, making the framework less suitable for capturing their holistic impact. Furthermore, the emphasis on a Present vs. Future Analysis within the framework may limit its ability to capture long-term impacts effectively. Some design projects may have effects that manifest over an extended period, and the framework’s focus on a binary analysis may overlook these gradual, evolving impacts. This raises questions about the framework’s adaptability to diverse project timelines and the dynamic nature of design outcomes.

To address these limitations, redeveloping the framework or creating alternative versions that accommodate the varied work modes of designers and capture long-term impacts could be considered. Additionally, building a culture of impact assessment within the design team and fostering an environment that values the integration of assessment practices into the overall design process could enhance the framework’s effectiveness and mitigate potential challenges.
8. Limitations & Further Recommendations

This research underscores the complex relationship between design and business, presenting a novel approach to quantify the impact of design on business outcomes. This approach introduces 'drivers' as an intermediary medium, intricately linked to an organization's core values, which primarily encompass soft Key Performance Indicators (KPIs) and metrics, such as the Net Promoter Score (NPS) and Customer Effort Score (CES), rather than conventional hard metrics like revenue, profit, or sales. In essence, this research places significant emphasis on the Design-Divers connection but provides limited insight into the subsequent Drivers-Business relationship (Figure 16).

![Figure 16 Design-Divers-Business](image)

Hence, there exists an opportunity for more comprehensive exploration of this innovative approach bridging design with business through an intermediary medium.

Additionally, this research underscores the significance of identifying an organization's core values to effectively showcase the impact of design. Nevertheless, the process of pinpointing all these core values poses a notable challenge. It's crucial to acknowledge the potential risk of inadvertently overlooking essential values, especially as values tend to evolve over time. To address this, involving stakeholders from various organizational departments during the identification process can offer diverse perspectives and lead to a more comprehensive list of values. Consequently, there is a promising avenue for further research within the realm of identifying the most pertinent values for measuring the impact of design.
Similarly, the selection and relevance of metrics or KPIs pose another considerable challenge. Ensuring that the chosen metrics genuinely reflect the impact of design on the identified values can be complex. The limitations associated with the selected metrics necessitate a validation process to affirm their validity, reliability, and direct relevance to the organization’s core values. Further research in this domain can investigate into identifying the most relevant metrics for measuring the impact of design effectively. Besides, future research can focus on providing guidelines for customizing the measurement approach to align with an organization’s unique goals.

Moreover, while this research provides detailed insights into the framework for assessing design’s impact, it offers limited guidance on the eventual communication of the findings to target stakeholders and the methods through which this can be accomplished. There remains ample room for research aimed at identifying the most effective communication methods, critiquing, and refining the framework, and suggesting practical improvements.

Furthermore, an essential avenue for future research lies in investigating deeper into specific design benefits and developing targeted frameworks for assessing design’s impacts on these benefits. This approach can offer a more granular and specialized understanding of how design influences key areas such as innovation and brand value. There is a clear need for research focused on measuring the impact of design on innovation. This could involve identifying how design thinking and principles contribute to creative problem-solving, product development, and overall innovation within organizations. A comprehensive framework tailored to innovation could provide valuable insights. Similarly, investigating the most effective methods for assessing design’s influence on brand value is a significant research opportunity. This research can explore the relationship between design elements, such as branding, user experience, and visual aesthetics, and their direct impact on brand equity and perception. In addition to brand and innovation impact assessment, developing clear and measurable methods for calculating the return on investment for design initiatives is an ongoing challenge. Research could explore how to establish ROI for design efforts, which is often expected in business contexts.

It’s essential to recognize that this research’s foundation in a single organization within a specific industry underscores the need for a more profound understanding of its transferability to a broader context. The question of relevance and scalability to a diverse range of industries and organizations, each characterized by distinct structures, objectives, and levels of design maturity, presents a multifaceted challenge. Several considerations and suggestions warrant attention in this context. Diverse industries may have unique dynamics, market conditions, and customer expectations. Therefore, there is a need to assess how the principles and methods proposed in this research can adapt to these distinct industry factors. This involves exploring how design impacts vary in sectors such as healthcare, technology, manufacturing, and services, among others. Organizations come in varying sizes and levels of design maturity. Smaller businesses may have different constraints and opportunities compared to larger, well-established corporations. Future research should investigate how this approach can be tailored to suit the specific needs and capacities of organizations with different profiles. Cultural nuances and geographic locations can significantly influence the perception of design and the core values that matter most to a given organization. Research
should investigate into the adaptability of the framework across different cultural contexts and regions, acknowledging that design priorities may differ. Longitudinal studies tracking the implementation and impact of the framework across various industries and organizational sizes can yield insights into its long-term effectiveness and adaptability.

In essence, the universality of this research’s findings and the adaptability of its proposed framework to diverse organizational and industrial settings remain open questions. Addressing these considerations and conducting further research in these areas will contribute to a more comprehensive understanding of how design can be harnessed as a strategic asset across a broad spectrum of contexts.

Additional Recommendations – Based on Supplementary Interviews

Supplementary interviews yielded valuable insights into diverse methods for effectively showcasing the impact of design to stakeholders outside the design team, providing avenues for further research. These recommendations encompass various approaches.

Firstly, storytelling emerged as a powerful communication method, as highlighted by a participant from the Airlines Industry. This framework involves narrating the user or customer’s journey post-implementation of the design project, constructing a compelling narrative that effectively communicates the value of design. Secondly, design serves as a crucial bridge between users/customers and the organization. Acting as the voice of the user, design can showcase its value by incorporating direct quotes and feedback, potentially through text, audio, or video recordings. Alternatively, involving stakeholders in user interactions enhances the impact of demonstrating design’s value.

Furthermore, experiential methods for communication were emphasized, as illustrated by a participant from the Airlines industry. Conducting user research and testing events with customers and inviting business stakeholders to observe user responses and feedback, proved to be a unique and impactful approach. Similarly, involving stakeholders in design activities can effectively demonstrate the impact effortlessly. Another effective approach involves organizing design thinking workshops and educational sessions for non-design stakeholders. These initiatives aim to enlighten individuals from various departments about the principles of design thinking and its potential impact on their roles and the organization.

Additionally, there is a suggestion to shift the focus from solely measuring the value of design to elevating overall design maturity. Organizations with high design maturity often prioritize enhancing their design capabilities rather than constantly demonstrating its value, especially when executive-level stakeholders are already well-acquainted with the importance of design. Lastly, focusing on executive-level education was highlighted as critical. Given the influential role of executives in decision-making, developing programs or initiatives specifically designed to educate and raise awareness among executive-level stakeholders becomes paramount. These diverse recommendations provide a comprehensive array of methods for effectively communicating and showcasing the impact of design to a broader audience.
9. Conclusion

The research conducted in this thesis has provided valuable insights into the benefits of design, the prevalent methods for quantifying these benefits, and the challenges associated with such quantification, all of which were drawn from a thorough review of existing literature. Notably, the literature review revealed a gap concerning methods and frameworks for evaluating the impact of design on various business aspects. Consequently, there arose a necessity to develop a strategy or model capable of assessing design's influence on business outcomes. To address this gap, in-depth interviews were conducted with business stakeholders, who serve as the primary audience for showcasing the value of design. These interviews aimed to provide a deeper understanding of both the "what" and "how" related to this solution: What are the stakeholders looking for? & How can this be effectively accomplished?

These interviews revealed crucial insights regarding the most effective means of demonstrating the value of design, which included aligning it with the core values of the stakeholders and emphasizing granularity in the communication of design's value. Consequently, this thesis not only investigates into the core values of organizations and stakeholders but also recommends establishing a meaningful connection between design and these core values.

The study argues that the most effective approach to measuring the business value of design is to measure its impact on drivers or intermediary mediums that significantly influence business outcomes, rather than attempting a direct correlation between design and revenue or profits. Design influences across various dimensions of business, encompassing customer experience, performance, efficiency, and productivity, all of which can be quantified and assessed. Considering these insights, this study introduces a framework for sponsor organization to evaluate design's impact on the drivers or intermediary mediums, which are intricately intertwined with the organization's core values. The framework suggests commencing with a comprehensive understanding of the core values of the company, followed by identifying specific areas within these values where design can exert a positive influence, followed by identifying right and measurable metrics and lastly a systematic assessment of the evolving impact of design on these identified areas and metrics over time. Although a one-size-fits-all framework is not feasible, this framework can be adapted and replicated in other industries and organizations with the necessary adjustments to ensure its relevance and effectiveness.

Moreover, this study not only paves the way for future research but also offers recommendations for exploration. These recommendations extend beyond the scope of merely quantifying the value of design and presenting it to business stakeholders. They encompass the broader objective of educating business stakeholders about design, thereby contributing to the elevation of design maturity within organizations.
10. References


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Marr, B. (2012). Key Performance Indicators (KPI): The 75 measures every manager needs to know. Pearson UK.


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11. Appendix

Appendix A – Project Canvas
Appendix B – Final Round Interviews Questionnaire

(First understanding the fundamental values and metrics)

1. Could you outline the fundamental business values and targets that your team upholds?

2. Being specific to your projects, what key metrics or indicators do you currently use to measure your fundamental values and key targets?

3. Based on your experience what metrics and KPIs do you use when reporting to senior management?

(Understanding the use of metrics)

4. What are the fundamental KPIs that Innovation team utilizes to track their performance? – Innovation

5. How is the Customer Lifetime Value (CLV) assessed and what factors affect this metric? – Customer Satisfaction

6. In what ways Net Promoter Score (NPS) is measured at the company? Any examples of report related to customer conversion rate that could provide hard facts? – Customer Satisfaction

7. The company has a brand value, how is this measured? Through what methods are the brand perception measured and illustrated? – Branding

8. How many unique products and offerings have the company launched throughout the years, how is this tracked? Where do we stand as compared to our competitors? – Differentiation

9. Within the scope of organizational improvement, waste elimination and efficiency in delivery are practices that can yield significant cost savings. How are metrics such as offering turnaround time, time to delivery measured in the context of the company? – Organizational Improvement

(Understanding the influence of design)

10. What methodologies and framework do you utilize in your operations and meeting your targets?

11. How would you describe the integration of Design into your working methodologies?

12. In your opinion, can the use of design influence your core values and key targets?
Appendix C – Metrics on Project Timeline Basis
Appendix D – Design Impact Assessment Framework
Understanding the Core Values, Impacts & Metrics of Measurement

Core Values & Metrics
The assessment timeline may vary depending on the timeline of the project and the deadline of the project.

NOTE

- Establishing teams and partners
- Understanding goals and outcomes
- Reporting and documentation
- Data collection
- Analysis
- Insights reporting
- Insights and analysis
- Establishing teams and partners
- Reporting and documentation
- Data collection
- Analysis
- Insights reporting
- Insights and analysis
- Establishing teams and partners
- Reporting and documentation
- Data collection
- Analysis
- Insights reporting
- Insights and analysis
- Establishing teams and partners
- Reporting and documentation
- Data collection
- Analysis
- Insights reporting

DIFFERENT MILESTONES:
- Baseline measurement:
  From present to future: Analyzing design impact over time.
- Impact assessment timeline:
  - 00 Months
  - 03 Months
  - 06 Months
  - 09 Months
  - 12 Months

DATA COLLECTION
- Continuous data collection through established channels and sources.
- Regular comparison and analysis of the measurements.
- Insights reporting through reports and illustrations.
- Baseline measurement:
  From present to future: Analyzing design impact over time.
### METRICS & IMPACT LEVEL ASSESSMENT

<table>
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<tr>
<th>Metric</th>
<th>Core Values</th>
<th>Impact Areas</th>
<th>Impact Level</th>
<th>Initial Collaboration &amp; Complementarities</th>
<th>Cost Savings</th>
<th>Resource Optimization</th>
<th>Performance &amp; Efficiency</th>
<th>Quality &amp; Exellence</th>
<th>Brand Identity</th>
<th>Customer Centurty</th>
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**Simulation Example Project - Customer Service & Administration**

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**Assessing the Impact Areas, Impact Level and the Metrics**
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