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Customer-Centric Business Process Improvement and Redesign

Master's Thesis (20 ECTS)

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Customer-Centric Business Process Improvement and Redesign

Abstract:

Organizations continually seek to enhance their business processes to maintain competitiveness. Historically, process redesign initiatives have primarily focused on improving internal efficiencies. However, in today's dynamic landscape, mere efficiency-driven improvements no longer suffice for ensuring business success. As individual customer needs and desires increasingly become a competitive advantage, organizations must pivot toward a more customer-centric approach, with a particular emphasis on enhancing digital business processes. Despite extensive research on business process redesign for efficiency and customer experience, there remains a scarcity of studies that effectively intersect these critical aspects. This thesis investigates how companies can integrate customer centricity into the redesign and improvement of digital business processes by leveraging digital technologies.

Through a series of semi-structured interviews with 23 industry experts across 15 different industries in both B2B and B2C context, our study aims to deepen our understanding of key aspects related to managing and developing digital business processes with a customer-centric focus. Specifically, we explore the benefits of pursuing customer-centric initiatives, identify the characteristics that define a digital business process as customer-centric, and examine how companies approach the redesign of such processes. Additionally, we delve into methods for measuring customer centricity within digital business processes.

Key themes of our findings include the identification of customer-centric perspectives, features and principles in digital business processes, the role of emerging digital technologies in supporting redesign of these processes, and the importance of measuring the effectiveness of these strategies through specific business performance metrics. As a result, the thesis provides an understanding summarizing how companies can achieve customer centricity in their digital business processes without compromising on operational efficiency. The contributions of this thesis are beneficial for organizations seeking to transition towards more customer-centric business models by harnessing the power of digital transformation.

Kliendikeskne äriprotsesside täiustamine ja ümberkujundamine

Lühikokkuvõte:

Konkurentsivõime säilitamiseks püüavad organisatsioonid pidevalt oma äriprotsesse täiustada. Ajalooliselt on protsesside ümberkujundamise algatused keskendunud peamiselt sisemise tõhususe tõstmisele. Tänases muutlikus keskkonnas aga pelgalt tõhususe parandamisest enam äriedu tagamiseks ei piisa. Kuna klientide individuaalsete vajaduste ja soovidega arvestamine suurendab üha enam konkurentsieelist, peavad organisatsioonid võtma suuna kliendikesksema

lähenemisviisi poole, pöörates erilist tähelepanu digitaalsete äriprotsesside täiustamisele. Vaatamata ulatuslikele uuringutele äriprotsesside ümberkujundamise mõjust tõhususele ja kliendikogemusele, on endiselt vähe uuringuid, mis neid kriitilisi aspekte tõhusalt lõimiksid. See lõputöö uurib, kuidas ettevõtted saavad digitehnoloogiaid kasutades integreerida kliendikesksuse digitaalsete äriprotsesside ümberkujundamisesse ja täiustamisse.

Uuringu eesmärk on süvendada arusaamist kliendikeskse fookusega digitaalsete äriprotsesside juhtimise ja arendamise põhiaspektidest. Andmeid koguti poolstruktureeritud intervjuudega 23 valdkonnaeksperdiga 15 tööstusharust nii B2B kui ka B2C kontekstis Täpsemalt uurime kliendikesksete algatuste elluviimise eeliseid, tuvastame tunnused, mis määratlevad digitaalse äriprotsessi kliendikesksena, ja selgitame välja, kuidas ettevõtted selliste protsesside ümberkujundamisele lähenevad. Lisaks süveneme digitaalsete äriprotsesside kliendikesksuse mõõtmise meetoditesse.

Tulemuste põhiteemad hõlmavad digitaalsete äriprotsesside kliendikesksete vaadete, tunnuste ja põhimõtete tuvastamist, tärkavate digitaaltehnoloogiate rolli nende protsesside ümberkujundamise toetamisel ning nende strateegiate tõhususe mõõtmise tähtsust konkreetsete äritegevuse tulemuslikkuse mõõdikute kaudu. Seeläbi annab magistritöö ülevaate digitaaltehnoloogiate kasutusvõimaluste kohta äriprotsesside ümberkujundamisel, et need oleksid paremini vastavuses klientide vajadustega tulemuslikkuses järelandmisi tegemata. Selle lõputöö tulemused on abiks organisatsioonidele, kes soovivad üle minna kliendikesksematele ärimudelitele kasutades digitaalse transformatsiooni võimekust.

Võtmesõnad:

Kliendikesksus, digitaalsed äriprotsessid, ümberkujundamine, täiustamine

CERCS: P175 Informaatika, süsteemiteooria

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1. Introduction

A business process is a collection of interrelated events, activities, and decision points that involve a number of actors and objects, and that collectively lead to an outcome that is of value to customers [1]. Internally, they are a series of tasks that collectively drive the functioning of an organization. Business processes can be improved by considering internal or external perspectives. This perspective emphasizes efficiency, cost-effectiveness, and productivity as the driving factors for the business processes. On the external front, business processes are viewed based on their impact on customers. This external perspective places the customer in focus and, therefore, process redesign considers the customers' needs as a starting point [2].

In the 20th century, concepts like Taylorism, TQM, and Six Sigma were introduced and focused on achieving efficiency and cost reduction [3]. Ford's assembly line in the early 20th century [4] and Toyota's Production System (TPS), which became a model for lean manufacturing [5], are examples of companies achieving success through efficiency-driven process improvements. Companies across various sectors, from retail to healthcare, sought ways to streamline operations and reduce costs. While efficiency remains crucial, it is no longer sufficient to ensure success. Customer centricity, a concept underpinned by the fundamental principle of placing the customer at the center, has emerged as a response to the dynamic and evolving landscape of market conditions.

Customer centricity is about understanding, anticipating, and satisfying the needs, desires, and preferences of individual customers, elevating their experience to the forefront of business operations [6]. Customer centricity is often achieved through business processes that deliver value to the customer [7]. Incorporating customer centricity in the design of business processes has not been thoroughly explored [8]. Existing literature identifies the concepts behind customer-centric business processing, key organizational changes needed to underpin these concepts [9], key factors that help organizations move towards customer centricity, and barriers that typically deter organizations from becoming customer-centric [10]. Another direction of research introduces a framework on main antecedents favoring and hindering the adoption of customer centricity in practice [8] or organizational barriers to becoming customer-centric [7]. Existing research has mostly concentrated on theoretical frameworks and implementing organizational strategies rather than reshaping business processes to be more customer-centric [11], [12], [13].

To bridge the transition from the traditional focus to the emerging emphasis on customer centricity, it is important to recognize the role of digital transformation in business processes [14]. A digital business process is a process in which digital technology is applied to reinvent business models and transform a company's products and customer experiences [15]. Digital businesses use technology to create new value in business models, customer experiences and the internal capabilities that support their core operations [16]. Digital businesses are both

digital-only brands and traditional players that are transforming their businesses with digital technologies [16]. Digital business processes can integrate technology, organization, and customer behavior to proactively improve customer experiences [17] and can organize resources around value co-creation, thus enhancing customer-centric value creation [18]. In today's digital age, there is a growing need for dynamic, user-centric business models enabled by digital processes to strengthen customer relationships and adapt to changing user needs [19]. Existing work has yet to provide an understanding of how digital technologies can be used to redesign business processes to become customer-centric. This gap in the literature highlights the problem area that this paper aims to address.

The aim of this research is to gain a deeper understanding of how companies incorporate customer centricity into their digital business processes. Our study focused on companies that manage their end-to-end processes fully online, though they might also have parallel physical processes. We looked at businesses operating digitally, providing value through online services or products in both B2B and B2C sectors across different industries. Thus, the overarching research question of this thesis is how companies can achieve customer centricity in their digital business processes. Therefore, the research questions are as follows.

RQ1: What are the main perspectives when working with customer centricity in the context of digital business processes? Understanding the perspectives that conceptualize and define customer-centric business processes provides the groundwork for distinguishing these processes from traditional or product-centric approaches.

RQ2: Why do companies strive to improve customer centricity in digital business processes? Addressing the motivation behind this need is essential for organizations to justify and tailor their efforts. It offers insights into the benefits and strategic considerations that guide organizations in their pursuit of improved customer relationships.

RQ3: How do companies approach to make the digital business processes customer-centric? By exploring the steps and methods to prioritize the customer in digital business operations, actionable insights can be provided to guide the companies towards best customer-centric practices.

RQ4: What are the principles for customer-centric digital business processes? Establishing an understanding about the principles within the design and implementation of digital business processes ensures that the customer remains at the forefront of all strategic decisions.

RQ5: What features in digital business processes make them customer-centric? Knowing the specific attributes that contribute to the customer centricity of digital processes is the first step for organizations in optimizing their processes in alignment with customer needs.

RQ6: What are the digital technologies used in designing and developing customer-centric digital business processes? Identifying the digital technologies used to enhance customer centricity in digital business processes provides practical insights for organizations seeking tangible tools to improve their business processes.

RQ7: How does digital technologies enable design and development of customer-centric digital business processes? Understanding tangible actions and methodologies provides insights into effective practices that can guide organizations in optimizing their digital business processes to become more customer-centric.

RQ8: How can business processes for digital products and services be measured for customer centricity? Focusing on measuring the impact of customer centricity enables organizations to gauge their success and make informed adjustments to their business processes.

This study will benefit business professionals working on improving and redesigning business processes to become customer-centric by providing them with additional insights. In this research, a qualitative approach will be adopted relying on interviews. The insights gathered from semi-structured interviews with industry experts will form the foundation for the research. Therefore, the contribution of this thesis is how digital technologies can be used to redesign business processes to become customer-centric.

The rest of the thesis is structured in the following way. Section 2 provides background information and discusses related work. Section 3 describes the methodology, while Section 4 presents the results. In Section 5, the results and limitations of the study are discussed. Finally, Section 6 offers conclusions of the thesis.

2. Background and Related Work

2.1 Business Processes

Business processes have been interpreted from both internal and external viewpoints. A business process is a set of one or more linked procedures or activities executed following a predefined order that collectively realize a business objective or policy goal, generally within the context of an organizational structure defining functional roles or relationships [20]. Business processes are performed to serve a customer [21], and they are the core of business process modeling (BPM) [22]. All business processes tend to evolve organically over time [1]. As a result, they grow more complex, and their performance gradually deteriorates [1]. The business landscape evolves with the entry of new competitors and changes in customer preferences, and the need to deliver products or services more efficiently arises [1].
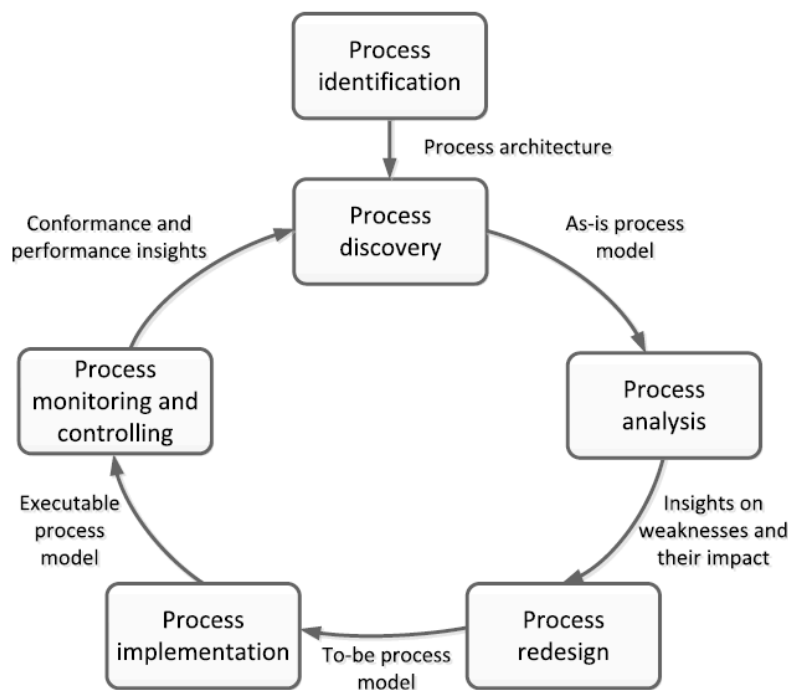
Figure 01. The BPM lifecycle. Image from [1]

In BPM, the business processes of an enterprise are represented in a way that the current ("as is") process can be analyzed and improved in the future ("to be") [20]. Process redesign is one of the most powerful ways to boost business performance and raise customer satisfaction [23]. The goal of this phase is to identify changes to the process that would help to address the issues identified in the analysis phase and allow the organization to meet its performance objectives [1] *(See*

Figure 01). A redesign method could take an inward-looking perspective, which assumes a viewpoint of the organization that undergoes the BPM initiative, or an outward-looking perspective, which takes an outsider's perspective on the process [24] *(See Figure 02)*. The inward-looking redesign approach is focused on improving the firm's internal operations from an operational or organizational perspective. The operational perspective deals with processes where its inputs, and outputs are known [25]. The organizational perspective focuses on the core processes and critical processes such as marketing, delivery, and support [25]. This method only considers company data to change their business processes [24]. This internally focused redesign approach decreases the time required to handle a case and the cost of executing the process [1]. The outward-looking redesign approach has a strategic perspective that deals with the alignment of the service needs of customers and market segments with the resources, capabilities, and technology solutions of the firm, matching them with one another [25]. This method doesn't recognize internal problems with the process but rather listens to their customers and improves their processes accordingly [24]. It improves the quality of the service delivered, and the flexibility of the business process [1]. This makes the business process more transparent from the viewpoint of a customer, positively affecting customer satisfaction [26].
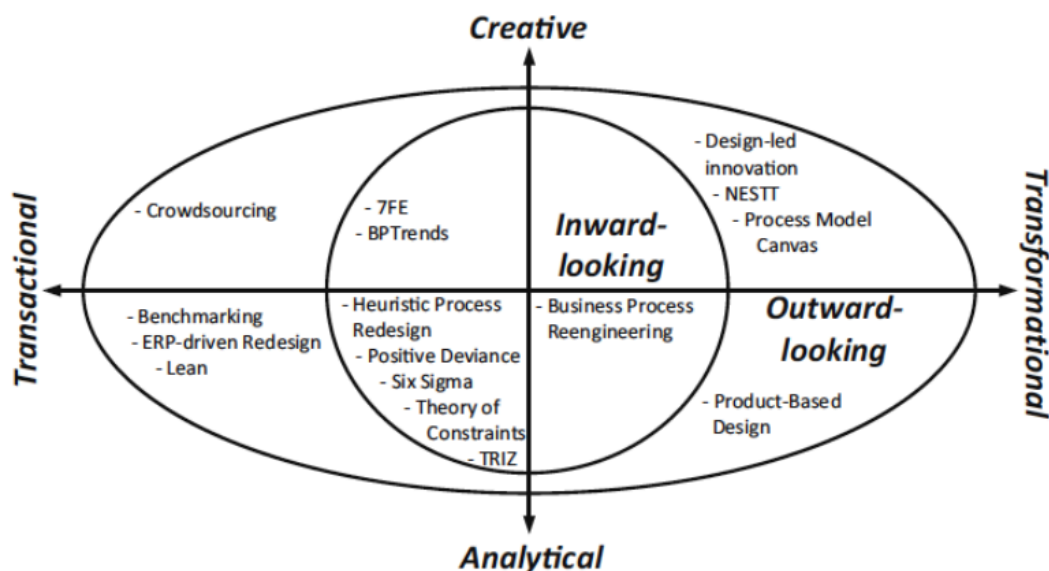
Figure 02. The Redesign Orbit. Image from [27]

Despite the importance of customer centricity, most process redesign approaches still treat customers as second-class citizens, while focusing on process efficiency [28]. Instead of exclusively taking an inward-looking view of business processes, companies should focus more on the customers' perspective when redesigning business processes [28]. Hence, customer orientation is an important aspect of outward-looking business process redesign.

2.2 Customer Centricity

Customer centricity – also referred to as customer focus or customer orientation [7], [28], [29], [30] – has been discussed for many years. The core idea is to put customers at the center of all corporate activities [7], [28], [29]. The basic philosophy of the customer-centric approach is prioritizing customer service, where all decisions start with customers, emphasizing opportunities for advantage [7]. For many companies, customer focus is merely a part of the corporate jargon with no authentic connection to strategy, the business model, or everyday practices [11]. Companies face different challenges in adapting their business models to embrace customer centricity. As the corporate landscape evolves, some companies, previously successful in their niches, struggle to navigate the changing market dynamics [30]. There is a misconception that customer-centric initiatives incur costs without immediately contributing to revenue [30]. Skepticism within management about the profitability of customer-centric strategies, due to the difficulty of quantifying the impact in financial terms, is another difficulty [30]. Factors indicative of customer-centric success, such as customer loyalty, market share, and brand recognition, may not always align with traditional financial indicators and can lead to decision-making challenges [30]. Unclear incentives within organizations and a misperception that Customer Relationship Management (CRM) and business systems can independently drive customer engagement can result in disjointed efforts, making it challenging to foster deep interaction with customers [30].

Emerging digital technologies enable customers to have access to more information than before, allowing them to conveniently compare product and service offerings and determine how they would like to interact with companies [28], [31]. Customers have high expectations regarding product features and their interaction with companies, which is why companies must not only meet but exceed customer needs [28], [29], [32]. Hence, customer centricity has evolved into a success factor for many companies, i.e. customers must be placed at the center of all corporate activities – including business processes [28], [32]. Global consultants and industry associations highlight the need for customer centricity as the new approach for firms to achieve high performance, stronger brand value, and customer loyalty [33]. Customers are treated differently in customer-centric companies than in product-centric companies [28]. In a customer-centric world, the customers' requirements determine a company's offerings i.e. the customer "pulls" those kinds of products and services he or she needs from the company [32]. Products are positioned to highlight their benefits in addressing individual customer needs [7]. In contrast, the product-oriented view follows an inside-out approach forcing the enterprise to "push" products to the customer [32]. To be customer-oriented, companies must shift from selling products toward serving customers and value co-creation and must focus not only on efficiency and product features but also on customer needs [28]. In this context, customer knowledge is considered a valuable asset [7].

The design of customer-centric companies comes along with the question of what customers want, how their needs can be satisfied, and how expectations can be exceeded [28], [32]. A customer-centric organizational structure features customer segment centers, dedicated customer relationship managers, and customer segment sales teams [7]. The organizational focus is outward, emphasizing customer relationship development and profitability through fostering customer loyalty, and employees are positioned as customer advocates [7]. It also involves managing a portfolio of customers, with a selling approach centered on maximizing the number of products sold to each customer [7]. In a customer-centric approach, key performance metrics revolve around factors such as the share of the customer's wallet, customer satisfaction, customer lifetime value, and overall customer equity [7]. A customer-centric business can provide high value for customers and achieve superior customer satisfaction and loyalty [29], [32]. This can positively impact customer retention and a company's firm value and market success [28]. Customer orientation helps organizations incorporate customer expectations and preferences in new product development and product modifications. It also promotes closer interactions with customers, enhancing incremental improvements that move products toward optimal levels of quality, features, and costs [34]. The relevance, importance, and associated benefits of customer centricity may vary across different industries [7]. Customer centricity could provide long-term benefits to a firm selling multiple products compared to a company selling a single product [7]. Customer-focused organizations emphasize the increasing importance of customer satisfaction and loyalty, which stimulates firms to seek organizational ways to better serve their customers and develop strong ties with customers [34].

2.3 Digital Technologies

Customer centricity in organizational process redesign can be achieved using digital technologies [35]. Currently, there is no consensus on the definition of digital technologies [35]. Digital technologies comprise knowledge, skills, and know-how for the creation, processing, transmission, and use of digital data as well as systems and procedures for practical implementation [36]. The impact of digital technologies on enterprises can be either in the value creation dimension, which includes the technology's influence on business processes, the general organization of an enterprise, and its workforce, or in the customer interaction dimension which includes types and mechanisms of interaction with customers [37]. From an inbound perspective, digital technologies can impact process alignment i.e. transparency, speed, efficacy, efficiency, integration, and automation of business processes within an organization; and exploitation of data resulting in identifying new opportunities, establishing key performance indicators, and accurate testing of processes [37]. Digital technologies contribute to changing the behavior of employees, the existing ways of doing work, and the way of making decisions and changes in the organizational structure [38].

From an external standpoint, transformation activities in organizations backed by digital technologies can influence customer behavior, customer relations, and channel management,

which involves communication, interaction, and transaction with the customers [37]. Because of the resulting connectivity, mobility, and social networks that digital technologies are equipped with or enable, tech-savvy connected customers across all facets of society have completely changed their behaviors and expectations from the companies they interact with [39]. The use of digital technologies such as artificial intelligence, cloud computing, data mining, and IoT in companies leads to major business advances such as increased customer experience and interaction, the establishment of better connections, simplification of operations, and business innovation [38], [40]. In summary, companies converge multiple new digital technologies, enhanced with ubiquitous connectivity, with the intention of reaching superior performance and sustained competitive advantage, by transforming multiple business dimensions, including the business model, the customer experience (comprising digitally enabled products and services), and operations (comprising processes and decision-making), and simultaneously impacting people (including skills talent and culture) and networks (including the entire value system) [39].

2.4 Related Work

Customer centricity has been explored in terms of its effects in different fields [41], [42], [43], [44]. Putting the guest at the center of all business efforts contributes to generating customer value and enhancing a firm's competitiveness in the hospitality field, and results show an increase in customer ratings, leading to possible profit implications and a cultural shift within the organization [41]. In public sector organizations, customer solution orientation weakens the relationship between technological capabilities and time efficiency but strengthens the relationship between technological capabilities and technology performance [42]. Product-centric aftermarket logistics organizations encounter obstacles in transitioning to customer centricity, emphasizing the need to strike a balanced centricity rather than solely customer centricity [43]. In the mobile banking sector, organizations create utilitarian value for customers by replacing other services, offering financial benefits, influencing consumption behavior, and providing ease of use [44]. Hedonic value is provided to customers via mobile banking applications through game-like features, personal emotional attachment, visuality, a sense of control, trust, entertainment, and a sense of security [44]. In the retail industry, the nature of the customer experience is multidimensional and retailers need to consider this when adapting customer-centric strategies [45]. A customer-centric view helps organizations understand customer journeys as dynamic interactions that aid in achieving personal goals and the firms should adjust their value propositions to better align with the individual goals and life contexts of customers [46]. Structural alignment of an organization with customer-centric principles has proven to improve organizational performance [47] and financial performance [48]. Firms with low organizational granularity (bottom 25%) that had the highest structural alignment (top 25%) performed 23% better than the companies with the lowest structural alignment (bottom 25%) [47]. Also, firms with a customer-centric structure performed 8% better than peer firms with an internally aligned structure [48]. The results show that structuring around the customers pays off well for firms that serve a broad set of end customers, while it has little

effect on performance for focused firms [47], [48]. Furthermore, aligning organizational culture with customer-centric values is key to overcoming digital transformation challenges and enhancing customer experiences [49]. The results of [34] suggest that customer-centric strategies are a source of innovations for export firms, which in turn boost business growth. The research [50] finds that active communication and involvement with user communities can facilitate exploiting new product development opportunities and enhance innovation diffusion from a consumer perspective. Authors of [51] identified that a customer-centric strategy in the supply chain has a positive effect on the top and bottom-line growth of the firm by adapting to the rapidly changing environment, matching organizational resources with customer value, forecasting, product planning, decreasing the time to market, trimming overall costs and optimizing productivity. However, none of these studies have explored customer centricity from the perspective of organizational business process, which is what we will focus on, in this paper.

Business processes have been discussed from the perspective of design heuristics that help process analysts create innovative ideas to increase customer satisfaction with interaction-intensive core processes [28] and artefacts that allow to better understand customer processes and provide higher value to customers [52]. These artefacts contribute to website personalization, recommendation systems, predicting conversion probabilities and sales amounts, detecting customers' indecisiveness based on their previous clicks, and adjusting product recommendations accordingly [52]. The paper [53] explains the use of a data-driven business process management approach to achieve more efficient process excellence and evidence-based decision-making by integrating Industry 4.0-induced tools and models such as process mining, business process model and notation (BPMN) 2.0, and digital twin of an organization (DTO) and creating a direct link between goals, objectives, and strategies regarding key performance indicators (KPIs). In addition, businesses are increasingly operationalizing predictive analytics within their regular processes, which allows them to make real-time or near-real-time decisions based on predictive insights [54]. Business process improvement has been discussed in the context of product-centric organizations [55] and the impact of product-centric continuous improvements on competitive capabilities and business performance [56]. According to [55], business process management enhances performance results for product-centric service companies by establishing process objectives and tasks, and business process maps can be used to improve process flexibility. Findings from [56] indicate that product-centric continuous actions have a positive association with both quality improvement and cost reduction and, in turn, have a positive impact on business performance. Despite technological advances in process mining and monitoring, business process redesign predominantly remains a manual endeavor due to the complexity of redesign tasks which often demand breaking away from established routines and structures to foster innovation or improvement [57]. These papers focus on the product and data centricity and the characteristics of business processes but not on the customer-centric aspect of them, which is what we will focus on, in this research.

The authors of [28] proposed 15 expert-approved and literature-backed design heuristics for customer-centric business processes together with real-world examples. The first category of design heuristics includes channel flexibility, locational flexibility, temporal flexibility, customer self-service, and privacy presence that enable customers to shape the interaction, embedded in business processes in line with their preferences and context [28]. First-contact problem resolution, informed point of contact, consistent brand experience, customer support, customer process integration, and customer-friendly control flow are included in the second category, and they facilitate coordinated and integrated processes with customers [28]. The third category of design heuristics enhances social and emotional links with customers [28]. Examples are customer excitement, personalized interaction, customer feedback, and customer community [28]. The heuristics aim at increasing customer satisfaction with interaction-intensive core processes, which is an important driver of corporate success [28]. While the findings of [28] are based on existing literature and the validation of experts in academia and industry, our work will focus on the perspective of business people and companies. Also authors of [28] do not explore the connection of customer-centric process redesign with digital technologies and the use of metrics to evaluate the end goal of the companies tending to make their business processes customer-centric. These are the aspects that we will explore in this research.

3. Methodology

In order to understand different perspectives of companies on how they employ digital technologies to make their digital business processes customer-centric, we conducted a qualitative interview study [58]. This approach is suitable because the research aim was to gain a deeper understanding of how companies incorporate customer centricity into their digital business processes. We chose semi-structured interviews because they enable a more open conversation between the interviewer and interviewees, which allows for novel topics to emerge while providing sufficient structure for a focused conversation on specific topics related to our research focus [59]. In the below sections, we will elaborate on the specifics of our research questions, study setup, data collection, and analysis procedure.

3.1 Research Questions

This research aimed to understand how companies incorporate customer centricity into their digital business processes. Therefore, the overarching research question, that ties all individual research questions (RQs) together, was how companies can achieve customer centricity in their digital business processes. Exploring these questions helped us get a complete picture of the motivations and efforts that go into making digital business processes more customer-centric. During the interviews, we gathered responses addressing the following individual research questions (RQs).

RQ1: What are the main perspectives when working with customer centricity in the context of digital business processes? This question focused on clarifying the aspects that conceptualize and define customer-centric digital business processes. This understanding helped portray the specific elements that separated these processes from traditional, product-centric processes, serving as a foundational knowledge base for further exploration.

RQ2: Why do companies strive to improve customer centricity in digital business processes? This question aligned with the aim by addressing the motivation behind organizations' efforts to have customer-centric digital business processes. It uncovered the incentives that drive service providers to be more customer-focused.

RQ3: How do companies approach to make the digital business processes customer-centric? This question unveiled how companies consider various aspects while redesigning and improving the business processes to be more customer centric. The findings from this question can guide organizations to effectively align their strategies to obtain optimal results in customer centricity.

RQ4: What are the principles for customer-centric digital business processes? This question explored the underlying principles that guide the development of customer-centric digital processes, which is critical for ensuring that they are aligned with organizational goals.

RQ5: What features in digital business processes make them customer-centric? This question helped to identify the key attributes that contribute to customer centricity in digital processes

hence providing a direct link to practical applications for companies seeking to enhance their processes.

RQ6: What are the digital technologies used in designing and developing customer-centric digital business processes? This question provided an understanding of the current and emerging technological tools and methods that service providers use to achieve customer-centric objectives in their operations.

RQ7: How does digital technologies enable design and development of customer-centric digital business processes? This question was relevant as it focused on the practical implementation of digital technologies in reshaping business processes for customer centricity thus providing a bridge between theoretical potential and practical implementation.

RQ8: How can business processes for digital products and services be measured for customer centricity? In this question, we focused on measuring the impact and effectiveness of customer-centric digital business process redesign efforts.

Overall RQ1 and RQ2 laid the foundation for the research focusing on the main aspects and the rationale of improving customer centricity in the digital business processes. Building on that, RQ3, RQ4 and RQ5 explored the actual design and implementation of customer centricity within digital business processes. RQ6 and RQ7 focused on the technologies used and how they enable customer centricity. Finally RQ8 addressed the measurement of the customer centricity in the digital business processes.

3.2 Study Setup

The companies that fell into our scope of study were companies that provide end-to-end processes fully online. This implies that the entire process was carried out digitally, without the requirement for human interaction. Examples of such processes are online purchasing, digital customer support, financial activities, mobile app transactions, subscription services, online booking systems and e-commerce. This didn't exclude the possibility of parallel physical processes being carried out in these companies; however, such aspects were considered beyond the scope of this research.

These kinds of processes exist within Business-to-Business (B2B) interactions, and Business-to-Customer (B2C) interactions across various industries such as financial services, retail, e-commerce, travel and hospitality, healthcare, manufacturing, gaming, and information technology (IT) services *(See Figure 03)*. Additionally, distinctions were made based on whether companies offered services or products as their primary value proposition. In our interviewee selection process, we reached out to individuals who are actively involved in or possess expertise in these types of business processes *(See Figure 04)*. These experts occupied roles such as business intelligence analysts, process improvement specialists, innovation and design leads, customer centricity/ experience managers, and customer experience strategists within their respective organizations. We reached out to these professionals through LinkedIn, email contacts,

and referrals from personal connections. Each sector was represented by 4-5 interviews that lasted between 17 and 70 minutes each, allowing us to comprehensively cover the different aspects of customer-centric business processes in the digital realm. To this end, we recruited a total of 23 participants for our study *(See Table 01)*.

Table 01. Interview Participants

Participant ID	Role	Business Model	Industry	Company Type	Country	Experience
I-01	Innovation Lead	B2C	Financial Services	Bank	Estonia	9+ years in product development
I-02	Group Product Manager - Customer support	B2C	Financial Services	Non-bank payment provider	Hungary	1+ year in customer-focused product development
I-03	Business Intelligence Analyst	B2C	Public Services	Government-issued digital identity provider	Estonia	2+ years in business analysis
I-04	Director - Customer Centricity	B2B	Financial Services	Interbank network	Canada	2+ years in customer-centric business
I-05	Digital Sales Channel Content Lead	B2C	Travel / Hotel/ E-commerce	Passenger and cargo shipping company	Estonia	2+ years in customer experience management
I-06	Vice President of Customer Support	B2C	Medical Services	Women & family care virtual clinic	The United States	8+ years in customer experience management
I-07	Product Manager - Responsible Gaming	B2B	Online Gaming Software, Platform and Services	Gambling & sports betting software developer	Estonia	3+ years in product development
I-08	Customer Centricity Manager	B2B	Manufacturing	Appliances, Electrical, and Electronics	Germany	6+ years in customer experience & product management
I-09	Senior Customer Service Manager	B2C	Manufacturing	Jewellery	Germany	3+ years in customer service
I-10	Senior Customer Experience	B2C	Utilities	Electricity Provider	Denmark	8+ years in customer

	Specialist					experience
I-11	Head of Customer Support	B2B	Software-as-a-Service (SaaS)	Cloud-Driven Inventory Management	Estonia	5+ years in customer support & experience
I-12	Design Lead	B2C	Travel	Airlines	Finland	8+ years in product design
I-13	Customer Centricity Manager	B2C	Utilities	Energy Company	Finland	8+ years in customer experience
I-14	Experience Strategist	B2C	Media & Entertainment	Television station	Denmark	5+ years in customer experience
I-15	Customer Centricity Manager	B2B	Manufacturing	Cosmetics	Brazil	5+ years in customer centricity management
I-16	Operations Specialist	B2C	Hospitality	Hotel	The United States	4+ years in operations
I-17	Chief Information Officer	B2C	Retail	Consumer cooperative	Estonia	19+ years in information management
I-18	Senior Customer Success Leader	B2B	Software-as-a-Service (SaaS)	Customer Success Management	The United States	15+ years in customer success
I-19	Director, Customer Experience Digital Marketing and Ecommerce	B2C	E-commerce	Consumer Lifestyle & Lighting products	Netherlands	15+ years in customer experience & process improvement
I-20	Senior Product Manager	B2B	Software-as-a-Service (SaaS)	Business Process Mining & Digital Twin Simulation	Australia	3+ years in product management
I-21	Enterprise Customer Success Manager	B2B	Creative-as-a-Service (CaaS)	Brand design & marketing solution	The United States	3+ years in customer success & CRM
I-22	Global Head of Digital Product - Customer Support & Remote Selling	B2C	Retail	Consumer Lifestyle products	The United States	4+ years in customer support & product management
I-23	Senior	B2B	Software-as-a	Customer	Portugal	7+ years in

	Continuous Improvement Specialist		-Service (SaaS)	Relationship Management software		customer solutions & process improvement
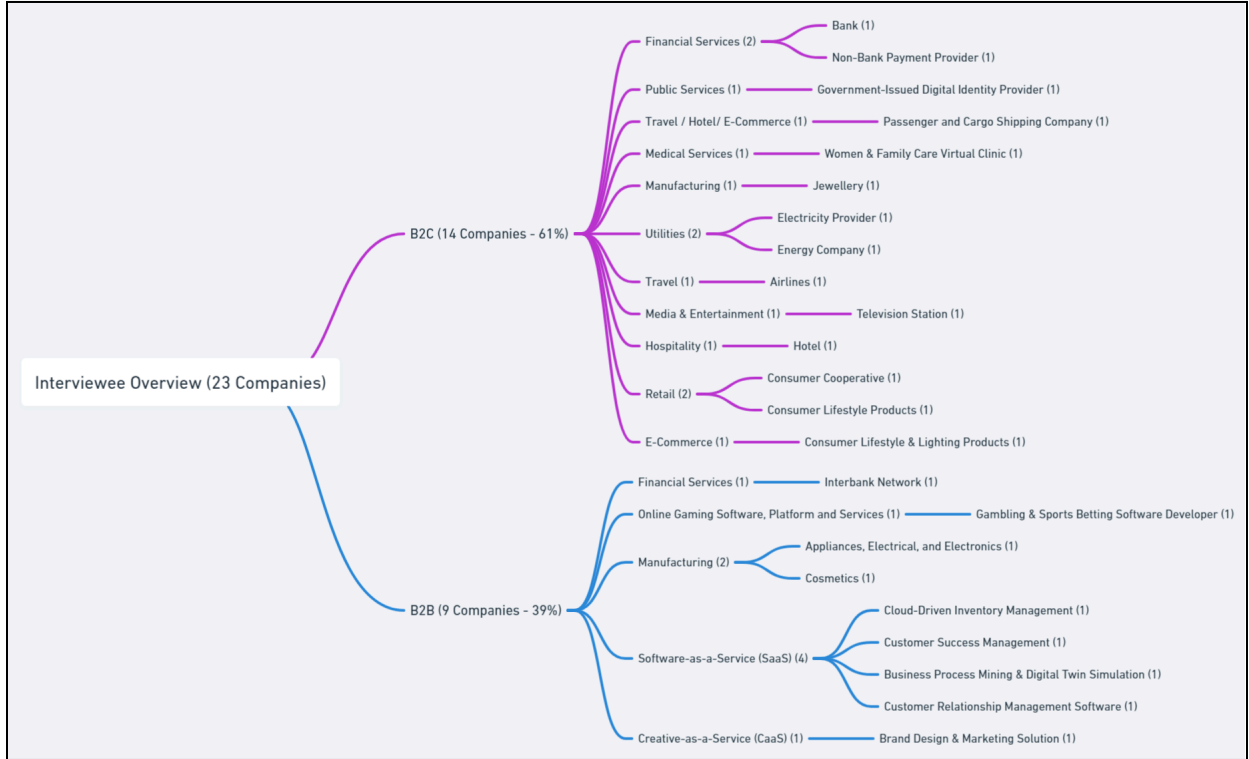
Figure 03. Interviewee Overview with Industry Breakdown
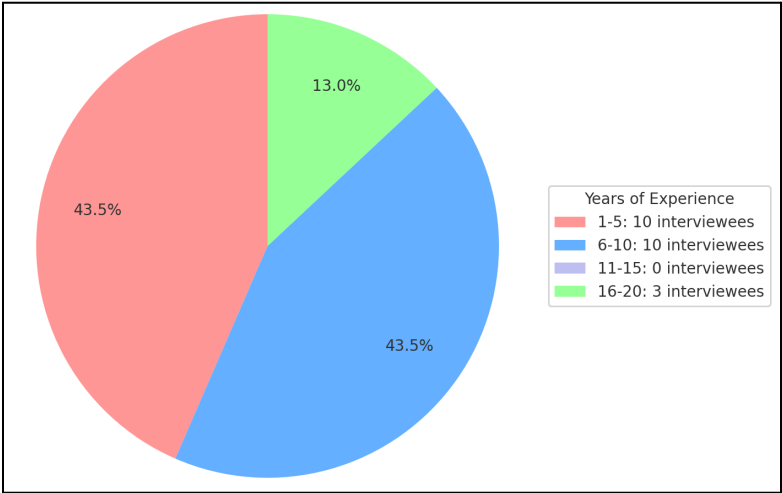
Figure 04. Interviewee Distribution by years of experience

3.3 Data Collection

We asked for the consent of the interviewees to record the interview in the beginning. The interviewees conditioned the interviews on the collected data not being made publicly available due to the sensitivity of the contents. In cases of data privacy and sensitivity, we reassured them that the collected data would only be used for research and analytical purposes. We initiated discussions with the participants about their viewpoints and experiences incorporating customer centricity into digital business processes. The interviews were conducted in an open-ended manner, allowing participants to share their thoughts organically, ensuring a comprehensive understanding of their perspectives. During the interviews, we did not always stick to the sequence of questions as included in the interview guide but instead followed the flow of the interview while making sure to cover all research questions.

Prior to conducting the interviews, we developed an interview guide based on our eight main research questions. RQ1 relates to clarifying the customer-centric digital business processes within an organization. To that end, we first needed to understand what the companies meant by a customer-centric digital business process. Therefore, we asked how they would describe or define a customer-centric digital business process (c.f. RQ1). To get a clearer understanding, we also asked the interviewees to provide examples of digital business processes that are recognized as customer-centric (c.f. RQ1). RQ2 aims to understand the motivation behind companies adopting a customer-centric approach. To get this insight, first, we sought to get to know what factors or motivations drive the organization's efforts to establish and maintain customer-centric digital business processes (c.f. RQ2). In addition, we asked to provide examples of specific benefits or advantages that the organizations have experienced by prioritizing customer centricity in those processes (c.f. RQ2). In RQ3, we aimed to understand how companies approach to make the digital business processes customer-centric. Therefore, we asked to share insights into the decision-making process behind selecting and adopting these digital technologies to support customer-centric initiatives (c.f. RQ3). RQ4 focuses on understanding the principles of customer-centric digital business processes. To answer this question, we asked what makes a digital business process customer-centric (c.f. RQ4). In RQ5, we wanted to uncover what features in digital business processes make them customer-centric, which led to the interview question: Do you have any examples of how features are incorporated into the digital processes or products? (c.f. RQ5). Addressing RQ6 is essential to grasp the role and capabilities of digital technologies in transforming companies' digital business processes into a more customer-centric approach. Hence we requested examples of digital technologies that enable or can be used to enhance customer centricity in digital business processes? (c.f. RQ6). In RQ7, we verify that there are practical applications of digital technologies in the customer-centric redesign and improvement of the business process. For that reason, we asked the interviewees how they use the (above) digital technologies to make the existing business processes more customer-centric (c.f. RQ7). Finally, RQ8 is necessary to validate the success of business process improvement and redesign efforts in alignment with customer-centric goals. Building upon this, our

concluding inquiries focused on how they can measure the success of customer-centric initiatives in business processes (c.f. RQ8). Additionally, we sought examples illustrating instances where adjustments were made to the business processes based on these measurements (c.f. RQ8). The complete list of interview questions is attached as an appendix to the thesis.

3.4 Data Analysis

The interviews were conducted via Zoom and Microsoft Teams and recorded with the consent of the interviewees. The number of interviews was totally 23 of which one, per request of the interviewee, was answered in written format. The entire video interview series lasted 797 minutes in total, and the average length of one interview was 36.23 minutes. The duration of the interviews was from 17 to 70 minutes. The shortest interview of 17 minutes was an outlier. The reason for this was that the interviewee, like all others, had received the questions in advance and had prepared his answers accordingly. Therefore, the discussion was less of an interview and more a clarification of his pre-prepared responses.

To analyze the interviews, first, we transcribed them by using the transcription tool Otter.ai[1]. After manually reviewing and correcting the transcriptions, we conducted a thematic analysis [60] of interview transcripts and documents. Initially, we familiarized ourselves with the data and created an initial set of codes based on our research questions. For instance, codes like *"customer centricity"* were used to understand how interviewees perceived customer-centric digital business processes (RQ1). We also used codes such as *"factors"*, *"motivations"* and *"benefits/ advantages"* to identify why companies strive for customer-centric digital business processes (RQ2). To explore how companies approach customer centricity, we employed the code *"decision"* (RQ3). The key principles that contribute to customer-centric digital business processes were identified using the code *"principles"* (RQ4). We used codes like *"functional features"* and *"non-functional features"* to discover what features make a digital business process customer-centric (RQ5). The code *"digital technologies"* helped us examine the technologies used in designing and developing customer-centric digital business processes (RQ6). We used *"usage of digital technologies"* to recognize how these processes can be redesigned and improved to be more customer-centric (RQ7). Finally, codes like *"metrics"* and *"changes/ adjustments"* were applied to evaluate the impact of a customer-centric approach on a company (RQ8). These initial codes were applied to the interview transcripts, and we discussed the coding results. Through discussion, we identified additional codes such as *"market dynamics"*, *"customer experience"*, *"profitability"*, *"features to enhance user experience"* and *"availability"*. The updated coding scheme was then reapplied to the transcripts, and we reviewed the results to cluster these codes into possible themes. We identified themes such as *"understanding perspectives of customer centric digital business processes"* and *"understanding principles of customer centric digital business processes"* along with sub-themes like *"customer*

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[1] https://otter.ai/

perspective”, “company perspective”, “reasons originating from external sources”, “reasons originating from internal sources”, “principles empowering customer independence”, “technologies enabling customer centricity in the whole process” and *“metrics of customer loyalty”.* The codes were assessed repeatedly to ensure proper categorization under suitable themes and sub themes. Any duplicated or similar codes were either merged or removed, and in some cases, original codes were converted into different themes and sub-themes. We iterated this procedure until no new themes, sub themes or codes emerged. After three iterations, we finalized 8 themes, 20 sub themes, and 20 codes in the final coding scheme.

4. Results

In this chapter, we present the results of this study grouped according to our research questions (RQs). It consists of eight sections from RQ1 to RQ8. Each section first presents an overview of the research question and a brief summary of related findings. Then the findings are further explained in detail and summarized at the end of each section.

4.1 Understanding Perspectives of Customer Centric Digital Business Processes

In this section, we present the findings for *RQ1* which was *"what are the main perspectives when working with customer centricity in the context of digital business processes?"*. This research question focused on clarifying what constitutes customer centricity in digital business processes. The results indicate that there are 2 process-agnostic perspectives that need to be in place for a digital business process to be customer-centric. They are;

- **customer perspective**, in which the companies prioritize understanding and meeting the needs and preferences of customers
- **company perspective**, in which customer-centric values are integrated across all levels and functions of the organization, aligning operations and culture with the goal of serving the customer

The 3rd perspective we identified is the **management of the above two perspectives** in terms of prioritizing long-term customer relationships over short-term gains and operationalization of customer insights and data.

In this section, we discuss these 3 perspectives in detail. By examining these foundational elements, we aim to better understand how customer centricity is interpreted and implemented across different industries within their digital processes.

4.1.1 Customer Perspective

The customer perspective prioritizes the needs, preferences, and overall satisfaction of the customer in the development and delivery of products and services, as well as within the interactions in digital business processes. It asserts that the value proposition is not only tailored to meet or exceed the expectations of the customer but also is reflected across all digital platforms and processes. Based on the results, 3 different characteristics were identified within the customer perspective.

The first characteristic of the customer perspective is **empathy and understanding**. This means putting oneself in the customer's shoes to deeply understand their needs and how they use the company's offerings. As one interviewee put it, *"when taking into new processes or when changing old processes in our organization, customer-centric means that we should put ourselves in the shoes of the customer to see how they will actually use that and what is the*

channel where they are" [I-01]. As the second characteristic, we identified **holistic journey and touchpoint consideration** that ensures a cohesive experience by mapping all interactions, as another noted, *"a customer-centric process is one that maps out all those different touchpoints and has a plan in place for making sure that you're maximizing the customer experience at each one of those touchpoints"* [I-06]. The third characteristic focuses on **seamless and effortless experiences**, aiming for smooth interactions across all digital channels, highlighted by an interviewee, *"when a customer has a problem or something that he or she wants to solve, the customer should be able to do it seamlessly from start to end and would not need to contact the company in any other channel because it all is very logical to the customer"* [I-05].

4.1.2 Company Perspective

From the company perspective, customer centricity is seen as a strategic orientation that penetrates all levels of an organization, influencing its culture, processes, and decision-making. This perspective emphasizes a holistic approach and a shared vision to embed customer-centric values into corporate objectives, ensuring that every department, including those involved in executing digital business processes, contributes to the enhancement of the customer experience. We identified 3 different characteristics of this perspective.

The first characteristic of a **company-wide mindset and culture** is ensuring that customer centricity is a core theme across all roles, fostering a unified organizational identity centered on delivering customer value. This importance was pointed out by an interviewee:*"I think it's more of a cultural thing. It's a mindset all over the company and if you think about any successful companies or products, the ones that do really well, are the ones that stay close to their customers and continue solving their problems"* [I-02]. Another participant reinforced this, commenting, *"I think it's a mindset that needs to be incorporated and something that is seen as business critical"* [I-12]. The next characteristic is **empowerment with tools and processes**. This not only improves the customer experience but also enhances job satisfaction among employees who have the resources they need to succeed. As stated by one interviewee, *"in our organization, our main focus is to empower our teams, from support to sales to customer success with tools and processes to make their job as efficient as possible and to facilitate the end goal of providing the best experience for end service for our customers"* [I-23]. The third characteristic, **feedback loops and internal communication** ensure that customer insights are quickly shared across departments, maintaining the company's agility and responsiveness, as highlighted by an interviewee, *"it's about the constant feedback every quarter, how can we improve? So you start to get into the concept of building internal feedback loops. How do all of those customer-facing people, to create a customer-centric organization, become the voice of the client for the internal teams?"* [I-11].

4.1.3 Managing Customer Perspective and Company Perspective

The 3rd perspective observed here serves as the link that ties the 'customer perspective' to the 'company perspective' encouraging companies to adopt more customer-oriented digital business processes.

The most noteworthy characteristic of this perspective is **finding the right balance of prioritizing long-term relationships over short-term gains** to achieve sustainable growth and profitability. An interviewee explained the risk of focusing solely on profits, *"if focusing on profit is your main driving Northstar metric, without actually taking their customer into account, then you're going to make tradeoffs, which then ultimately will hurt the customers"* [I-02]. In digital processes, using data from customer interactions ensures the financial benefits of customer centricity are maximized. We identified the **operationalization of customer insights and data** as another characteristic. By systematically gathering and applying customer feedback, especially digitally, businesses can refine their strategies and offerings to better meet customer needs. An interviewee noted, *"the process that we have is really around collecting those insights, and data and building a narrative around it, making sure that the customer gets what they want, the end result is satisfying for them"* [I-04].

The findings of this section concludes that customer-centric digital business processes involve a thorough integration of customer needs and organizational alignment from the 'customer perspective' and 'company perspective', ensuring that every digital interaction is optimized for customer satisfaction and business efficiency. Managing these perspectives emphasizes the importance of prioritizing long-term customer relationships and effectively using customer data to enhance digital processes.

4.2 Understanding Reasons for Striving Customer Centricity in Digital Processes

In this section, we present the findings for RQ2 which was *"why do companies strive to improve customer centricity in digital business processes?"*. This research question was about understanding what drives organizations to put the customer at the heart of their digital operations. In our exploration of why companies actually care about adopting a more customer-centric approach to their business processes, we identified a set of benefits which act as catalysts, pushing companies toward customer centricity. These benefits originate from external sources and internal sources.

4.2.1 Reasons Originating from External Sources

In exploring reasons originating from external sources, 2 primary aspects emerged as critical influencers: market dynamics and customer experience. Market dynamics involve adapting to shifting business landscapes that dictate competitive business practices. Customer experience focuses on the direct interactions and perceptions that customers have with a company. Each

aspect contains a related set of reasons that motivate businesses to adopt customer-centric digital business processes.

4.2.1.1 Market Dynamics

Market dynamics concern reasons such as companies wanting to adapt to consumer trends & expectations, pressure and cooperation opportunities presented by competitors, regulations and technological advancements. These reasons highlight how businesses stay competitive and relevant by responding to market shifts.

Companies want to adapt to consumer trends/ expectations to stay market-relevant, foster loyalty, and drive innovation. An interviewee highlighted this focus: *"there's the overall understanding of what's happening in the world, what are the global trends and how is our industry a part of that?"* [I-12]. Another outlined the agility of businesses in adopting new trends: *"when there is a new trend or the new way that something is done in the world, we will check it and if needed, we will make the inner changes"* [I-05]. The drive for an omni-channel experience is also essential, as expressed: *"so we want to provide this omni-channel experience"* [I-13]. Lastly, the emphasis on trend analysis for both new and existing customers to ensure long-term engagement was articulated by one interviewee, *"it's way more difficult to obtain new customers than to retain. So we also put a lot of effort into understanding the trends for our current customers to make sure that they continue with us for as long as possible"* [I-23].

The **pressure from the competitors** in the competitive landscape prompts continual innovation and refinement of digital offerings: *"every brand strives to improve customer centricity because especially in the digital world, to beat the competition, to gain the enhanced competitive advantage"* [I-22]. Monitoring competitors' actions, from new product launches to service enhancements, help guide internal strategy and innovation. Competition not only shapes the services offered but also drives companies to continually adapt keeping consumers' choice in mind: *"there's just too much competition out there and our customers know they can choose. So if they can choose between the company that offers free returns, and the company that doesn't, they'll go to the offer"* [I-09]. In instances of limited competition, such as monopolies, different strategies are required: *"they have monopolies. So there isn't the same motivation internally, because the customers that are there don't have other choices. So you need to work on other parameters in order to create that customer centricity in the organization"* [I-10].

A different yet complementary perspective compared to the above reason emerged regarding **cooperation opportunities with competitors**. One interviewee illustrated this aspect with a practical example, *"we had a co-creation project with Bosch. So it's a competitor and it's a customer. Also the biggest automation competitor, Beckhoff, is one of our biggest customers in one of the other fields. So we are working with competitors"* [I-08], highlighting how collaboration extends beyond traditional boundaries to include competitor entities blurring the

lines between competitors and partners in pursuit of innovation and shared goals. Another respondent described a reciprocal relationship with competitors as *"frenemies"* where mutual visits and knowledge exchange occur: *"sometimes we visit them, and they visit us. We talk about how we do in the design team, or the HR team. So we really have this sharing"* [I-14]. Furthermore, open dialogue and maintaining a positive relationship facilitate learning and improvement across organizations: *"it is important to have a good relationship with your competitors because we have a lot of things to talk and to learn"* [I-15].

While **regulations** might initially appear as constraints, they can catalyze companies to enforce more customer-centric business practices such as providing clear, accessible information about their products and services, leading to more transparent and user-friendly digital interfaces. One interviewee shared: *"we have a public service requirement from our government. As a television station, we have this obligation towards society, which says that you need to make it public service content, like delivering regular news. We cannot, for example, show so many commercials about a specific thing in one day to one client or commercials with only women or with only white people or black people, it has to be diverse"* [I-14].

The role of **technological advancements** in shaping customer centricity within companies was also addressed by another interviewee: *"then there are technological advancements, for example AI. We talked about the ways that we can best serve customers at a real personalized level, and ease of use"* [I-18]. This reason urges businesses to offer personalized, efficient, and innovative services that meet the evolving expectations of modern consumers.

4.2.1.2 Customer Experience

Customer experience relates to another set of reasons that explains why companies aim to be more customer-centric in their digital business processes. This cluster focuses on the direct impact of customer-centric practices on the overall customer experience. It includes efforts to enhance how customers perceive their interactions with the company and goals to improve customer satisfaction, and loyalty.

The first reason is that **companies care about how customers perceive overall experience** with many participants highlighting empowerment, convenience, and satisfaction as key pillars. This is demonstrated in statements like, *"customer wellbeing is really important. So our customers will enjoy what they are doing and that they will feel confident and convenient"* [I-01], *"we want to empower them. We want to encourage them"* [I-03]. Another key aspect is the importance of customer happiness for long-term business success: *"customer happiness is the most important thing"* [I-23], and the need to make customers feel special to retain them: *"If there is nothing that keeps the customer feeling special they won't stick around for long"* [I-21]. Listening and responding to customer needs is also critical, as indicated by, *"what makes a digital process customer centric, is also that the process is informed by the voice of the customer"* [I-06] and *"if*

we don't have the product the customer wants, if we don't put the customer really first, the customer won't buy from us" [I-09].

The second reason is that **companies aim for improved customer satisfaction and loyalty.** When customers increasingly engage with a brand's offerings, it reflects the utility and relevance of the products or services and a deep-rooted trust and a connection between the consumer and the brand. This fosters strong, lasting relationships, as one interviewee illustrated: *"you need to have some sort of customer service that is going to be pleasing to the guests that is going to be genuine, honest and you genuinely care about the experience of your guests"* [I-16]. The commitment to being a customer's first choice underlines this objective: *"we want to make sure that we are the first choice for the customers. They are satisfied and they are loyal to us. They prefer choosing us over our competitors"* [I-22]. Further, digital processes have been shown to enhance customer engagement and satisfaction: *"when we rolled out more digital practices, we found that we have improved customer satisfaction and higher conversion rates"* [I-18].

4.2.2 Reasons Originating from Internal Sources

Reasons originating from internal sources are divided into 3 aspects: strategic positioning, operational excellence, and profitability. Each aspect explores different reasons that drive businesses to enhance their service models and operational frameworks, ultimately focusing on achieving greater success in customer centricity within digital business processes.

4.2.2.1 Strategic Positioning

This cluster groups the reasons related to why companies differentiate and position themselves in the market through customer-centric practices. This includes the strategic business model they follow, need for achieving brand recognition and reputation, and enhancing employee satisfaction—all aimed at securing a competitive advantage and aligning business targets with customer needs.

The first reason we identified was that **some companies choose to employ customer centricity as their core business model or strategy**. This is reflected in the statement, *"if we look at the day-to-day apps that we use in general, for instance, Amazon, Spotify, or Netflix. So, those companies have this customer-centric model"* [I-20]. It is seen as a strategic differentiator in a crowded marketplace where pricing and product offerings are often similar: *"consumer centricity can help you create a base strategic differentiator in terms of why would a customer choose my brand versus another"* [I-19]. Aligning customer needs with the overall business strategy ensures that companies can effectively meet customer expectations: *"the most underlying, fundamental thing is that the customer needs and company's business targets or strategy are aligned. So they're not conflicting with each other"* [I-12].

The second reason is that **businesses want to achieve brand recognition and reputation**. One interviewee reflected on the public judgment of a company's service, which directly impacts its recognition: *"from a business perspective, it's going to come down to how your company is publicly judged when it comes to the service rating"* [I-11]. Positive digital experiences contribute to the brand's competitive edge and recognition: *"it gave us obviously a competitive advantage to attracting new customers through positive word of mouth, with the customers experiencing in the digital motion, and sharing that with their networks"* [I-18]. Additionally, winning awards for customer-centric practices boost brand recognition:*"winning different prizes for being customer centric, for a bank or mobile bank, is something that has high value"*. Also, we identified that reputation and competitive advantage demonstrate an intertwined relationship:*"improved customer insights and brand reputation is very important and it goes hand in hand with the competitive advantage"* [I-22]. Apart from the obvious functional purposes, digital initiatives also enhance reputation: *"we are quite proud of our digital infrastructure, and we are making it available to other people and it's a little bit of a publicity stunt as well, to show off"* [I-03]. According to another respondent, reputation is key, especially in monopolies: *"for monopoly, it's more about reputation because the government can at all times choose to also remove the monopoly. So there is a big motivation that's related to the reputation when we talk from an outside perspective"* [I-10].

Another reason for companies to prioritize customer centricity in their business processes is **to boost employee satisfaction**. According to one interviewee, employee motivation is linked to customer satisfaction: *"from an employee perspective,it is creating more meaningfulness in the world and knowing that the services we deliver, the products we deliver, actually creates a good experiences or delivers on the customer's needs or their pains is also a huge driver. For people who have a regular interaction with customers, if there is negative feedback, then that's an energy drainer for employees"* [I-10]. This approach also supports internal team success: *"that also applies to the success of our teams internally"* [I-23].

4.2.2.2 Profitability

This cluster includes reasons that directly affect the financial performance of the company, emphasizing the need to increase usage of products/ services, revenue generation, and overall business survival. It shows that customer-centric approaches are not just ethical but also substantially profitable.

Companies strive for customer centricity in their digital business processes because **they want the customers to use their products/ services more**. One interviewee noted the importance of responsiveness to customer feedback in increasing product usage: *"we may get feedback to shorten the amount of time for a specific action. So we'll work on it. Now you can tell your customers, instead of taking two minutes, it takes one minute, and then we'll see a trend potentially of the transactions going up"* [I-04]. According to another, it is beneficial from the

future perspective:*"the motivation for us to make stuff nice from UX perspective, basically is future sales, future onboarding"* [I-07]. A third highlighted an ambition to expand the customer base by embracing more digital experiences: *"we are retailers. Everything we are doing, we are looking for how we can get more customers"* [I-17].

The next reason was that **companies need to generate revenue/ profit**. . As one interviewee explained, missing customer expectations directly impacts revenue: *"if we don't have the product the customer wants, the customer won't buy from us, and then we don't get paid"* [I-09]. As one interviewee noted, prioritizing the customer's needs and experiences directly correlates with enhanced business performance: *"the more customer-centric the company, the higher the customer satisfaction and the higher the revenue"* [I-08]. Also there is a clear relationship between exceptional service and financial performance, *"it is a competitive advantage in our industry to have high quality service even if you had another product that was better. That became intrinsic value, which increased sales"* [I-11]. *"For the product to sell and not to be on the shelves"* [I-19], companies have *"to eliminate the gap between what the customer wants and what the business is providing. So if there's a gap, which means less sales, means less revenue"* [I-20].

Some interviewees viewed the need for customer centricity in digital business processes as a means to achieving direct business success and **ensuring company survival**.The competitive market landscape makes customer centricity essential for survival. As one interviewee put it:*"it's pure survival. If you're not customer-centric, in my mind, you're dead"* [I-02]. Another one emphasized its direct connection to business success: *"customer centricity is not an end in itself but always connected to direct business success"* [I-08]. The urgency for customer centricity is further stressed with industry challenges:*"there's a lot of banks, new comers in the business, fintechs that are disrupting the industry and that's also a push to some of the especially younger customers away from the bank"* [I-10].

4.2.2.3 Operational Excellence

This cluster addresses reasons why companies streamline their internal business operations, to better serve their customers. This involves the need to reduce costs and optimize resource usage, which in turn improves the customer interactions in digital environments.

Companies aim to reduce operational costs while maintaining quality to benefit customers and improve the overall profit margins. For instance, one interviewee described this as an internal business goal: *"ensuring that everything is as cheap as possible. From an internal perspective, how can we take down cost in the process?"* [I-10]. The economic benefits of customer retention over acquisition were highlighted by another interviewee: *"it is cheaper when the cost to service is lower. It is important to be customer-centric, since it is much cheaper to retain and keep the existing customers happy than always trying to acquire new customers"* [I-13]. Despite the cost

of technology implementations, their importance transcends mere cost reduction: *"I don't believe that reducing the cost could be the driver. Because anyway, all the technology implemented is a cost"* [I-17]. Another interview participant captured that the companies face the challenge of delivering high value at low cost due to thin operating margins: *"any company in today's economy operates on quite thin margins. There's a cost pressure, so you want to deliver with quality, but the lowest cost possible, the greatest amount of value towards the customer"* [I-19].

The need to optimize resources, whether it is workforce, time, or budget, involves creating digital business processes that allow customers to self-serve or require minimal human assistance which eliminates the necessity for a large staff: *"if the processes can be developed the way that the customer can do it themselves, then it is more efficient to us as a company, and we don't need to hire so many people"* [I-05]. One interviewee stated that improving digital interfaces can reduce customer inquiries and support needs: *"by updating our stock availability for each product across all the channels, the number of calls reduced drastically. We created a module where a customer can ask a question in a search bar and find out, saving coworkers' time"* [I-22]. Also, user-friendly designs reduce the burden on support teams. As one interviewee noted, *"if the UX is easy to use, we will have fewer support requests or accusations. So that would lessen the load on the support team and they would be able to work more effectively"* [I-07]. Automating internal processes minimizes the necessity for extensive human intervention as pointed out by another respondent, *"ensuring that our internal processes that support the customer experience are automated to a degree that's possible and that's handled with as few physical hands"* [I-10]. The human element plays a critical role in driving or hindering customer centric changes: *"it's almost impossible to change a company to be customer-centric if there are people in the business that are required to be there because of their knowledge, but don't have the culture fit around the concept"* [I-11].

This section sums up that reasons why companies strive to enhance customer centricity in their digital business processes, are driven by both external and internal influences. Externally, market dynamics and customer experiences push companies to adapt and innovate, maintaining competitiveness and satisfying consumer demands. Internally, strategic positioning, operational excellence, and profitability motives align business operations with customer needs, thereby fostering loyalty, optimizing resources, and ensuring business sustainability.

4.3 Understanding How Companies Approach Customer Centricity in Digital Business Processes

In this section, we present the findings for RQ3 which was *"how do companies approach to make the digital business processes customer-centric?"*. This research question is for understanding the decisions and methods of how companies prioritize the customer in digital business operations. It can be answered by breaking down the approach taken by the companies into 3 stages: identification, action and decision. Initially, they assess and identify areas for

improvement within their digital processes by collecting insights. Next, they respond to these actionable insights. Finally, they decide on the best methods to address these issues, ensuring a structured and effective enhancement of customer-centric operations.

4.3.1 Identification

To identify what to improve, companies leverage their research capabilities to gather insights on customer experience and strategic analysis of the market and competitor firms from external sources.

With respect to **making efforts for customer experience research and development**, there is an emphasis on UX research and design, where dedicated teams delve into understanding and anticipating customer needs. According to one interviewee, *"we have a UX team, which is supporting us to understand the customer experience in digital and what they should see"* [I-01]. This data-driven approach involves analyzing user behavior and preferences, as another interviewee noted, *"you have to focus on the research and insights from a UX and UI perspective to then determine we need to tweak this part of the experience, make this feature or change where this button is"* [I-04]. Moreover, customer surveys at various touch points identify improvement areas, *"we have different surveys and we are measuring the customer experience in different touchpoints"* [I-13] leading to developing a *"good understanding of customer types and segments"* [I-21].

By **analyzing market trends and competitor offerings**, companies can identify gaps in their own products and services, discover opportunities for innovation, and tailor their offerings to better meet customer expectations. Market insights and competitor tracking help benchmark performance, as one participant explained, *"we have a lot of market insight of macro trends and industry trends. There's also competitor tracking. We try to benchmark ourselves across other companies, not only within the energy sector"* [I-13]. Looking globally at trends and strategies offers broader insights, *"with our strategy team, we are looking into the future seeing what is out in the market, what are the trends not locally, but much wider in the other parts of the world"* [I-01]. In addition, learning from different industries was captured by one interviewee, *"when we have a problem, we research how other companies and competitors, not even in the same field, have solved it"* [I-05]. Such cross-industry insights can lead to innovative solutions that set a company apart.

4.3.2 Action

Once the relevant information is gathered, there are 2 internal approaches on how companies would respond to these insights: by developing a general understanding of customer needs/ pain points and directly engaging with customers.

Regarding **development of a general understanding of customer needs/ pain points**, one interviewee emphasized the value of making customer support contacts accessible to all teams to foster a company-wide understanding, stating, *"even all those teams who are not in the front lines, for example, engineers or compliance people, we made it very accessible for them to see what customers contact us about"* [I-02]. Another interviewee highlighted the importance of solving the actual problems that the customer faces:*"when we start solving a problem, the first thing that we do is we really want to understand what the customer problem is"* [I-05]. Reflecting on a methodical approach to grasping customer experiences deeply, one respondent described an engagement strategy, *"we had in-depth interviews with customers to understand how they work with their finances on a daily basis. What are some of the things that are difficult to do or that they struggle with?"* [I-10]. Also another interviewee stressed empathy with the customer's process as crucial: *"if we don't empathize and understand what the customers' process is, it's very difficult for us trying to offer them value for the customers"* [I-13]. One interviewee highlighted developing a general understanding of customer needs/ pain points as business critical: *"if we don't understand what the customer wants, and how they want it, how can we be successful? We don't want to just be building things out of our minds"*[I-23].

Our findings suggest that **direct customer engagement** is foundational for companies to respond to the insights and feedback. This commitment to understanding customer perspectives is detailed through extensive fieldwork of one interviewee, *"I had in-depth interviews with 15 customers and then talked about the general needs, gains, and expectations"* [I-10] and collaborating closely with customer service teams, *"everybody around the company still talks to customers, sits with their customer service team, does what we call side by sides, takes customer service, phone calls, or answers, emails"* [I-02]. Additionally, the significance of face-to-face interactions is underscored, especially where a personal demonstration of products plays a critical role in customer understanding and satisfaction*"our customers ask us to have a meeting face to face in person, because my team needs to show the product for them"* [I-15].

4.3.3 Decision

In deciding on what to focus on, there are 7 approaches that the companies follow. They are data-driven, strategic, operational, centralized, decentralized, reactive and proactive. It is important to note that these approaches were not mutually exclusive; rather, companies often employed a combination of these approaches, depending on the context and the nature of the decision.

When decisions to make the digital business processes more customer-centric are guided based on actual data that has been systematically collected, analyzed, and interpreted, rather than intuition or observation alone, that is the '**data-driven**' approach. As mentioned by one interviewee, *"we buy customer research from specialized agencies and the private sector. We always do client testing trying to figure out things and we analyze the behavior in terms of the*

current clients" [I-03]. Understanding customer feedback identifies specific demands: *"we did a customer survey in our retail stores, where we asked our customers what are you missing and we found that a lot of customers were asking for jewellery for men"* [I-09], and data also helps to prioritize product development: *"Let's say we had 500 customers show up over a period of two or three months. We were able to learn that 70% of them want Shopify integration and 30% want WooCommerce. So that gave us an informed decision based on the client feedback"* [I-11]. According to another participant, having a unified technology stack is important to better utilize data to make a decision: *"it's hard to make anything out of the data if it's located in all these different places. So try to find a more single stack solution, or at least limit the technology solutions that you're using under different companies"* [I-06]. Finally, it was also discussed how data is leveraged to prioritize the business-decision, *"we prioritize based on the product trio to find the sweet spot between desirability, viability, feasibility. We work with customer data to support those decisions"* [I-14]. An intuition-based approach, as opposed to a data-driven one, is generally not the most advisable strategy for achieving optimal outcomes: *"we don't want to be building things out of our minds and saying this could be interesting. In practical terms, the customer is looking for something else and we're not offering that what they want"* [I-23].

'Strategic' approach involves selecting the best course of action among various alternatives to achieve organizational goals such as balancing cost, time, benefits and internal needs effectively: *"how can we take down cost in the process? Can we automate something or show what's in it for us as a company? It's also about the mental capacity in the company. If a lot of other things are going on, it's also difficult to push from development wise, then it's about timing it"* [I-10]. Also one interviewee discussed another aspect which is high level planning and execution: *"we have the strategy . Then we are implementing the strategy for different business units and functions and iterating, developing and improving on the way according to customer feedback"* [I-13]. Involvement of stakeholders is also an aspect of strategic approach: *"when you partner with a certain organization, you should definitely do a check in at least annually, bi-annually or quarterly, depending on how close you are working with a business"* [I-04]. Another respondent brought out prioritizing different initiatives, *"companies have a lot of priorities on going at the same time. So we need to benchmark it against another priority to understand whether this is more important than the other, and against our capabilities to deliver."* [I-20].

'Operational' approach involves the process of choosing and implementing actions that ensure the day-to-day operations of an organization run effectively and efficiently. According to one interviewee, quick resolutions in response to issues is one important aspect here: *"we have a dedicated team of software developers and a 24 hour help desk, that can help us in the event that there's a software issue or there's some sort of issue internally"* [I-16]. Operational decisions often require quick adjustments based on immediate business needs: *"two days ago, we just changed a big process here, because we have some troubles with our big customer in Brazil"* [I-15]. In an operational approach, it is important to ensure all relevant stakeholders are within

the loop: *"as the customer operations team, we sometimes have to make decisions for everyone, but we always loop in the correct stakeholders"* [I-23].

When deciding what to focus on, the approach is '**centralized'** when key decisions are made by a small group of people or a single individual at the top of the organizational hierarchy. One main aspect is top-down information flow where directives are provided by top management as noted by one interviewee, *"big boss says it needs to be done"* [I-05]. Another aspect is central approval of changes:*"when it was the decision to change the delivery timeframes on our homepage, I went to my manager, and then my manager went to the CO and the CO signed off on it"* [I-09]. The next aspect brought out by one participant was evaluation and approval of decisions by a high level committee: *" if it's something totally new, where we want to change or start to use some new technological tool, then we have our new product adoption committee and they will evaluate is that safe enough and complying all the different laws that we as a bank should follow"* [I-01]. Finally, a centralized approach follows a tight control and consistency as noted by one respondent, *"In general, in all companies, getting this stuff done is quite complex. When you have a top-down approach, you have leadership, you have a strategy, then you have KPIs, indicators, that work together, and they're well connected"* [I-19].

When the decision-making authority is distributed throughout the organization, rather than being concentrated at the top, and individuals or teams are allowed to make decisions based on what is affecting their operations, that is a '**decentralized**' approach. The main aspect in this is the cross-functional method emphasized by one interviewee, *"cross functionally, having product marketing, and whomever is the touch points along the way for customers involved,"* [I-18]. The second aspect is empowerment of specialized teams as expressed by 2 interviewees *"for something smaller, then we have different development related committees"* [I-01] and *"we work with CO autonomous teams. That team might have engineers, product people, bankers, whatever you need to solve that problem. Then that team decides what they are going to use"* [I-02]. Also decentralized approach adopts a bottom up information flow: *"there's also the bottom-up element. We have a quite large, strong central structure that manages the entire landscape, and then we make customer insights available to essentially anybody within the company"* [I-19].

In '**reactive** approach, decisions are made in response to events or situations as they occur, rather than being planned in advance. Similar to the operational approach, immediate responses to direct requests and problems is an aspect for reactive approach. For example, one interviewee mentioned, *"if we see trends that are recurring some issues, you know, we'll bring it to their attention. Then if there's something that's more immediate, they're able to help with that"* [I-16]. Adjustments based upon customer feedback was further highlighted by another participant *"for those smaller things, we will do some of the changes based on customer feedback"* [I-01]. Changes could also be made due to requirements of external stakeholders: *"Probably because it*

was a requirement from an operator, then this was added to the as an integration. So mostly, like comes out of feedback from the operator side" [I-07].

The difference of '**proactive**' approach from reactive approach is that decisions are made in anticipation of future events, trends, or potential issues to mitigate risks and capitalize on opportunities before they become apparent. Main aspects of proactive approach such as customer-centric analysis, assessment of impact and value delivery were described by one interviewee: *"we start with understanding what their needs and expectations are. What are their pain points? What are the gaps today? What are the opportunities to improve these processes? There is a prioritization technique, what would be the impact? What is the value we are going to deliver?"* [I-22]. Also there are risk management and resource optimization aspects of the proactive approach: *"If it is a new digital technology, it goes through assessing the technology and cost-benefit analysis. Then we decide whether we are buying or building"* [I-22].

This section reveals that companies approach customer centricity in digital business processes through stages of identification, action, and decision-making. By conducting thorough research and engaging directly with customers, companies gather essential insights that inform their choices. Employing a combination of various decision-making methods such as data-driven and strategic, organizations effectively customize their digital processes to boost customer satisfaction and meet business objectives.

4.4 Understanding Principles of Customer Centric Digital Business Processes

In this section, we present the findings for RQ4 which was *"what are the principles for customer centric digital business processes?"*. This question was used to explore the underlying principles that guide the development of customer-centric digital processes. We identified different principles that companies consider when creating a customer-centric digital business process and we categorized them into 4 groups based on their primary objectives and how they contribute to enhancing the digital experience for the customer.

4.4.1 Principles Improving Data Driven Customer Interaction

Under this cluster, we identified 3 principles that use customer data to refine user interactions and experiences. They are automated data collection, prototype/ product testing and feedback & review retrieval/ customer engagement. These principles emphasize the importance of understanding customer needs through data and using this insight to tailor digital interactions.

The first principle we identified is **automated customer data collection**, designed to efficiently collect data from customers while ensuring their experience is both engaging and user-friendly. The increase in customers' shift toward digital engagement was mentioned by one interviewee, *"roughly 80-90% of the customer contacts happen and customer data collection happens*

through digital channels. We also try to automate" [I-01]. The value of initial data gathering to provide a tailored service was also emphasized: *"from a healthcare perspective, when people sign up with us, we give them a questionnaire and we learn, what are your interests because we have a bunch of different areas where we offer health care"* [I-06]. Capturing client data at certain lifecycle stages helps validate the product's value proposition: *"at a certain point in time of the client lifecycle, you are able to capture data about that client and that data needs to validate the thesis of your products"* [I-11]. This principle supports the 'operationalization of customer insights and data' of customer centricity, a key characteristic of managing both the 'customer view' and 'company view'. By collecting and using this real-time data, it drives improvements in digital business processes and validates the product/ service offerings.

The second principle is **prototype/ product testing** which best aligns with the 'customer view' of customer centricity, specifically under the characteristic of 'empathy and understanding' because this principle is all about understanding customers at a deeper level and ensuring that the offerings are genuinely useful and relevant for them. This principle requires active customer involvement: *"using customer interviews, and subsets of customers to do testing with, outside of just AB testing. Also surveys can be a useful part of that"* [I-18]. Methods vary from digital to hybrid approaches in product testing to ensure alignment with customer needs: *"UX virtual tests, a lot of experiments and underflows, and AB split testing. We user test before we build things to ensure the value of the design we chose"* [I-14]. As stated by one participant, this principle allows for early validation of products: *"validate prototypes, validate your ideas, before even going to the market. Some may use it in a way by automated touchpoints, like Amazon or Target. Some may go for a more traditional approach, like interviews"* [I-20].

The third principle, **feedback & review retrieval/ customer engagement** serves as the crucial link that unites all other principles within a company, acting as the definitive moment that reveals the effectiveness of them. This principle fits most appropriately under 'operationalization of customer insights and data' since it uses data to drive product and service enhancements, ensuring combined management of the 'customer view' and 'company view'. An interviewee explained how feedback is directly linked to product improvement: *"we have a robust system in place to categorize and attribute those customer contacts back to the different product teams and then based on that feedback, they can start improving the product"* [I-02]. A statement by another interviewee, *"have some sort of feedback and review systems so that customers can easily share their experiences to businesses and then business could respond and adapt"* [I-18] shows that this principle is not merely about collecting data but about creating a dialogue with customers, showing that their opinions are valued and acted upon.

4.4.2 Principles Empowering Customer Independence

We identified 3 principles that allow customers to manage their interactions autonomously, enhancing their control over the digital experience. They are availability of mobile app/digital accounts, self sufficiency in e-business/online ordering and ability to customize products online.

The first principle for empowering customer independence is **availability of mobile apps and digital accounts** which represent a strategic implementation of technological tools that create a channel for employees to serve and interact with the customers more effectively and efficiently. Mobile apps and digital accounts offer functionalities that address customer needs at various journey stages. For instance, one interviewee noted the use of apps for accessing content, stating, *"we have the streaming service where a user can get a sneak peek of the content but to view our content, you have to sign up being a customer and there you have to create an account."* [I-14]. Another interviewee described an app that focuses on after-sales support for professionals illustrating a niche approach to customer service: *"it's an app designed for the electrician. For aftersales support and tools/ product overviews that make your work easier"* [I-08]. Additionally, apps cater to specific customer segments for monitoring and management of services: *"a separate one for the enterprise customers and B2C customers where you can see your invoices, follow up your consumption, see the electricity prices"* [I-13]. Availability of mobile app/ digital accounts can be categorized under the characteristic of 'empowerment with tools and processes' of 'company view'.

Data and insights gathered through automated customer data collection and prototype/ product testing help companies to execute **self-sufficient e-business/ online ordering** through mobile apps and digital accounts. The essence of this second principle lies in the capability for customers to engage in a wide range of activities, such as financial transactions, product purchases, and service bookings, through digital channels and its ability to streamline these operations. One example illustrates the convenience of online service booking: *"when you make a travel booking, customer should be able to finish the booking without needing to contact the company in any other channel"* [I-05]. Also it was noted that digital sales are promoted through incentives: *"we have different possibilities or options to buy digitally. In some countries, they're also pushing customers onto the eshop with special discounts"* [I-08]. Another example showcases global online business management, irrespective of the physical location: *"Apply for e-Residency, pick up your e-Residency kit and use it to start, run and grow a company 100% online"[2].* All these examples related to self sufficiency in e-business/online ordering show a commitment to streamlining operations and making them accessible and easy. Therefore it falls within the 'seamless and effortless experiences' characteristic of the 'customer view'.

In certain industries, as a unique extension of availability of digital accounts, users are afforded the opportunity to **tailor products or services directly through their digital accounts**, although

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[2] https://www.e-resident.gov.ee/become-an-e-resident/

this practice remains relatively uncommon. This third principle fits best with the 'customer view', under the characteristic of 'holistic journey and touchpoint consideration', as it enriches the customer experience by giving them control over the product features and ensuring that their interactions with the company are more meaningful and fulfilling. Some companies allow customization of products providing flexibility and choice directly to the consumer: *"we have a smart design function to engineer existing products into one bigger application"* [I-08]. Another customization approach for business partners was also highlighted: *"we are offering customized products for our business partners to meet their individual requirements as we are a private label / OEM manufacturer. – or you may choose to develop an entirely new formulation specifically for your product"³*.

4.4.3 Principles Fostering Customer Awareness

This cluster involves 2 principles that streamline the initial customer interaction with digital platforms, ensuring enhanced customer awareness. They are content marketing efforts and frictionless customer onboarding/ training.

Content marketing efforts go hand-in-hand with e-business activities by engaging customers through informative, relevant, and personalized content. Content marketing falls within the 'feedback loops and internal communication' characteristic of 'company view'. It reflects a company-wide mindset where every piece of content is crafted to add value and establish a two-way dialogue with the customer that allows companies to gather feedback, communicate among teams and continuously improve the relevance and effectiveness of their content and offerings. This principle involves use of webinars, newsletters, targeted offers, educational materials, and advice services to inform, educate, and interact with customers. One interviewee shared*"we have webinars every month where people can come and they can ask questions. We have a newsletter to send some specific news"* [I-03]. Another one talked about communicating essential information to help customers make informed decisions:*"if you land in the website, you might be there to observe, where could I travel or what would be relevant destination, or what is the cost of travelling to a certain destination, or what are the times, so first, it's about offering the relevant information to the customer"* [I-12]. Clarity in product communication is also crucial, as highlighted by one participant,*"for instance, when it comes to making a purchase for a shaver, you have product categories that are quite focused. You get a very quick understanding, what does this product do?"* [I-19].

Frictionless customer onboarding/ training emerges as another principle related to e-business, focusing on efficiently integrating customers with products or services. Providing the necessary tools and streamlined processes to enhance the customer experience, ensuring employees and customers alike can achieve early and ongoing success with the company's products or services is the reason behind categorizing this principle under the characteristic of 'empowerment with

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³ https://faber-castell-cosmetics.com/our-services

tools and processes' of 'company view'. This principle is exemplified by the use of technology to speed up onboarding processes. One interviewee explained the first fact, *"ID verification is an automatic check and you don't have to wait for a human to do that. We were able to onboard customers within seconds instead of within minutes, or sometimes hours. So that automation helped us create a better product experience for our customers"* [I-02]. Additionally, guided experiences are important for customer familiarity and success: *"let's say, the client signs up on your website for a trial. You want the client in their first week of becoming a trial user to be able to add their first deal, and their first client and do their first activity. That would show that the client is using it to their gauge, and it increases the probability of them being successful using it"* [I-11]. On the other hand, one respondent warned against overly automated onboarding, *"when you try to onboard new customers, if everything's automated, there's no human touch there which means that the customer will feel that he or she is interacting with a robot"* [I-20].

4.4.4 Principles Enhancing Customer Loyalty and Retention

This set of principles aim to build and maintain long-term customer relationships through loyalty programs and convenient service options. In this group, we identified availability of loyalty programs and availability of digital customer service/support.

Loyalty programs often serve as an extended principle, available and accessible to customers who are registered members through digital accounts or mobile apps. One of the aspects is the use of digital platforms to facilitate loyalty programs and the significance of offering tiered rewards to recognize different levels of customer engagement: *"through four different tiers of loyalty, software will save previous history, they can earn points for each stay"* [I-16]. Another theme was design and customization of offers only for loyal customers explained by one interviewee, *"if I look at Adidas, they're 320+ million members, and they make special products/ offers for members only"* [I-19]. As stated by another interviewee, *"you can use the app as your loyalty card"* [I-17], integration of loyalty programs into mobile apps emphasizes the role of digital technology in making these schemes accessible and convenient. This principle focuses on tracking customer interactions, purchases, and engagement levels on digital platforms to gather detailed insights into customer behavior and preferences. It supports the 'operationalization of customer insights and data' of customer centricity, a key characteristic of holistic management of the 'customer view' and 'company view'.

Availability of digital customer service/support can be classified with the 'company view', specifically under the 'empowerment with tools and processes'. The emphasis of this principle is that companies integrate technology into customer support functions and streamline service delivery, reduce response times, and improve overall efficiency. This not only enhances job satisfaction among employees by easing their workload but also improves customer satisfaction by providing timely solutions to their issues. Companies integrate advanced technology to streamline service delivery through various digital channels, ensuring that support is both

efficient and accessible. Examples include *"ticketing system for customer service"* [I-07] and *"online fill-in contact form to get in touch"* [I-15]. In addition, one interviewee pointed out, *"we get about, I don't know, half a million customer support requests per month"* [I-02] highlighting the scale of digital customer service processes. It was evident that the focus is on using technology to enhance the quality and accessibility of customer service as stated by, *"a major part of your digital design is how easy it is for customers to reach you for assistance"* [I-06].

In conclusion, the principles discussed in the above section together form a comprehensive digital customer journey from start to finish. This complete customer journey aligns with the 'establishment of long-term relationships with customers' to drive enhanced financial performance to guarantee a unified approach in overseeing both the 'customer view' and 'company view'.

4.5 Understanding the Customer Centric Features of Digital Business Processes

In this section, we present the results for RQ5 which was *"what features in digital business processes make them customer centric?"*. This question helped to identify the key attributes that enhance customer centricity in digital processes, offering practical insights on how the principles discussed in the previous section are expressed as features. Our discussions identified two types of features: Functional and Non-functional.

4.5.1 Functional Features

Functional features refer to the capabilities, and actions that a digital business process can perform. These are the core operations and tasks that a digital system is designed to execute, directly related to its functionality. They define what the system does in response to certain inputs or in specific situations to meet business requirements and customer needs. We clustered these features into 6 sets based on the purpose that they serve for a company to improve the customer centricity in their business processes. The main point to note here is that unlike the principles, the functional features are confined to a certain part of a digital business process.

4.5.1.1 Features to Enhance the User Experience

The first customer-centric feature set we identified is for 'enhancing the overall user experience'. This feature consists of 4 different aspects. They are personalized recommendations, add-ons & upgrades, accessibility & inclusivity features and geolocation-based multi-language support.

Personalized recommendations are tailored suggestions provided to users, offering relevant products, services, or content that align closely with individual user interests based on their previous behaviors, preferences, and data. According to one interviewee, relevancy in customer interactions within the personalization efforts is important: *"it's definitely about seeing something that's relevant for me as a customer. So the more it can be relatable, the closer we are*

to being as customer-obsessed" [I-10]. Another interviewee explained how this feature improves user engagement in digital applications: *"Spotify generates these different suggestions based on my listening stuff. If it didn't, I wouldn't be that much interested in that application because it's suggesting to me something random"* [I-20]. An example of a highly personalized shopping experience in a digital retail environment was also provided: *"we have an online streaming service that is hyper-personalized and we are creating some algorithm to analyze the watch history. For example, somebody wants to renovate their living room. After getting insights from the customer, using AI, we provide them recommendations"* [I-22]. A key point is that the customer must get the feeling that the product or service is tailored for their need, *"even having this greeting message when the customer just logged into the portal, you can see your name for example. Something that gives the idea that it's arranged in a way that I need"* [I-12].

The second aspect, **add-ons and upgrades** allow customers to enhance or customize their user experience by purchasing additional functionalities or higher service tiers. In the digital processes, customers can easily upgrade their subscriptions with the click of a button: *"if I were a manufacturing company, I needed to use the shop floor application, there's a little star here that says, you need to pay for the add-on and then it tells you a little bit of what it is, and then you can view it. So all you have to do is click a button"* [I-11]. This facilitates seamless scaling as a business grows. Another one reflected on how businesses can offer varied choices to meet diverse customer preferences, *"we have different packages we offer to our customers. One is without commercials, and a cheaper one is with commercials"* [I-14]. According to another interviewee, upgraded options enhanced values in terms of service: *"if the customer from the beginning has CO_2 free electricity, but not renewable, we can upsell the renewable part. If you are a spot price customer, we have offers where you can fix your price for a certain time"* [I-13]. Within a B2B context, add-on options are offered to simplify activities for the customers' side: *"we also have a campaigns add-on, which automates for the customer to send follow ups and marketing campaigns not to be losing time with this type of tools and tasks"* [I-23].

When implemented in digital environments, the third aspect, **accessibility and inclusivity features** ensure that all individuals, regardless of their abilities or disabilities, can use and benefit from products or services effectively. One interviewee described, *"rather than having to type something out, a world where you can record your voice and leave an audio message to get back to you, or where customers are able to take small videos to show what's wrong with the product they received"* [I-06] and another interviewee added, *"the feature of having your sound or voice over, being able to have things read out loud for you"* [I-10]. Features that support accessibility are becoming standard: *"all of the digital channels need to be meeting the standards. So if you're using a screen recording or reading device, you should be able to use our services as well"* [I-12]. It was also emphasized that having accessibility features in apps is not only a legal requirement but also a critical aspect of customer inclusivity, reflecting a commitment to

accommodating all users: *"In the app, having some sort of accessibility features is required by law that you have this compliancy with this disabilities"*[I-17].

The final aspect of the features that enhance user experience is **geolocation-based multi-language support.** This refers to the capability of digital platforms to detect a user's location and suggest or switch the content to a language that is commonly spoken in that region. Users typically have the option to manually select their preferred language as well. Commenting on this feature, one interviewee highlighted how this feature addresses national/regional preferences: *"we might be able to think about Germany specifically and then the landing page specifically addresses these questions Germans tend to have"* [I-03]. According to another participant, the ability to switch regions and languages effortlessly demonstrates a seamless multilingual experience: *"if you have different languages available, like in Switzerland, you will have kind of an icon. Also you can change the region"* [I-08]. One reflected on balancing between globalization and localization when serving diverse nationalities: *"in Europe, the shopping experience is very much unified. In terms of marketing, content, campaigns, pricing strategy, product portfolio, there will be differences. If you take a country like Thailand, Indonesia, Vietnam, they make a payment running on different platforms, maybe it's a bit more of a localized experience"* [I-19].

4.5.1.2 Features to Improve Customer Convenience

There are features that make the digital business processes more customer-centric by 'improving the convenience' for the customer. We identified 3 aspects under this purpose: self-service portals and accounts, advanced search and filters and multiple payment options.

The first aspect, **self-service portals and accounts** allow customers to manage their interactions with a company independently, without needing direct assistance from customer service representatives. One participant highlighted how this feature enhances user autonomy in service management, *"In the system, you just log in to handle your booking, you can change the travel name, add dates, add the loyalty programme card, add if you want to go to eat in a buffet or make a preorder for some alcohol"* [I-05]. According to another one, there is an increased preference for self-service features among customers, *"customers want to be served in a self-service manner. They can manage their own accounts, access services, and resolve issues"* [I-18]. Customers value the level of freedom that the companies allow in managing their journey:*"there's a high level of independence and autonomy nowadays, for guests. Whether you want 100% interaction, or whether you want zero interaction"* [I-16]. Market dynamics in sectors like utilities have also emphasized the importance of digital self-service options: *"we see that all these digital services and self service portals are really crucial and important as a risk has increased a lot especially within the last two years or so when we've seen that the market has become really volatile and turbulent"* [I-13].

Advanced search and filters are designed to enhance the convenience of digital platforms by allowing users to quickly and efficiently narrow down options based on specific criteria. This enables users to input detailed search queries or select multiple filtering options to sort through large datasets or product inventories: *"since we have a huge selection of jewellery, the customer needs to be able to filter so that she can find everything without having to go through all 3000 items"* [I-09]. Similarly, one respondent described how users can utilize various filters to tailor their search results according to specific preferences in hospitality services: *"you can select the city on the search bar, choose your dates, and there's lots of filters for pricing, for brand, for free parking or free breakfast"* [I-16]. Underscoring the ongoing advancements in search technologies, two of the interviewees mentioned, *"we have the product finder software, a specific one, where we are currently thinking about just extending it for an AI search function"* [I-08] and *"facility for the customers to search and filter, depending on the product category"* [I-19]. Furthermore, the user-focused design ensures impactful interactions: *"interactive online map, where you can see where the power outrage is happening, if it's planned or ongoing and search for a specific address using the search field on top of the map"* [I-10].

We identified **multiple payment options** as the third aspect of this functional feature. It is the ability of a business to accept a wide range of payment methods tailored to customer preferences and regional practices. Inclusion of a wide range of payment options for the convenience of the user was mentioned by several interviewees. For instance, one participant stated *"all sorts of payment options, like Google Pay, or Apple Pay instead of VisaCard, MasterCard. We have 90% - 95% of the popular options available, depending on the country"* [I-19]. This flexibility extends to various service models: *"there are third parties that you can pay first like booking.com and then they pay us or guests have the digital check-in option with a credit card on file and it automatically gets run"* [I-16]. In addition, innovations in payment solutions also reflect unique business strategies: *"we have our own payment card with our bank, it's working only in our group"* [I-17].

4.5.1.3 Features to Boost Customer Interaction and Engagement

Third customer-centric feature group is for 'fostering customer interaction and engagement'. This feature includes 5 different aspects namely instant/ reminder notifications, chatbots and live chats, customer engagement features, community engagement features and gamification & loyalty rewards.

Instant/ reminder notifications are automated messages sent to users to inform them immediately about specific actions or updates related to their activities, transactions, or account statuses. The purpose of reminder notifications can be different based on the industry. In the travel industry, these notifications facilitate smoother interactions: *"you get a notification about, it's time to check in, you can check into your upcoming flight, and then you land into flow, and then you execute that and then you are checked in"* [I-12]. The hospitality industry uses similar timely alerts to enhance guest experiences: *"Notifications and emails are sent a week before, and*

then either the day of or the day before the reservation" [I-16]. Also, one interviewee described how reminder notifications are used to inform about service interruptions, *"you can get this notification or SMS if there is a power outage"* [I-10] to ensure that customers are well prepared. Another one discussed the use of automatic notifications for payment reminders: *"automatic notification or reminder, if the customer has to make some payments, and if the due date is coming"* [I-13]. Additionally, instant/ real time notification feature[4] is also available for transaction processing in financial services and features such as in-game and onsite messaging, proactive chat, push messaging, plus direct email and SMS[5] are available for the online gaming industry.

Chatbots interpret and respond to user inquiries, often handling common questions and tasks without human intervention while **live chats** allow for real-time interaction between users and human customer service agents through digital medium, providing personalized and direct support. Chatbots can be used to deliver theoretical, consistent and static content to the users quickly and accurately: *"we're working on chatbot to help customers get some initial understanding of international taxation"* [I-03]. Another interviewee illustrated strategic use of chatbots when enabling customers to self-serve and when handling high volumes of routine activities, *"you see a lot being invested in chat bots, being able to provide zero contact resolution, which essentially means the customer can serve themselves"* [I-06]. One participant described using a chat-based application to direct the customer requests to the relevant departments: *"we were using Intercom which is in-application chat. It uses AI auto suggesting based on any keywords that picks up from the messages and it can also help you triage the customer to get to the right person"* [I-11]. The ability to provide immediate support through digital channels without wait time was seen as an advantage of this aspect, *"nobody wants to call and be queuing up there for the customer service. Making sure that there's either the live chat or something that the customer is able to interact and get that help needed"* [I-13].

The third aspect we identified was **customer engagement features**, implemented by businesses to interact and respond to customers across various digital platforms. The need for this feature was highlighted by one interviewee, *"possibility for the customer to actually give their feedback, and share how they are feeling about the product"* [I-12] and another interviewee simply explained one way for this need is fulfilled, *"we are working for some surveys to have a better understanding about our customer satisfaction"* [I-15]. One participant detailed how surveys are integrated into every customer interaction, *"we send out a lot of surveys and an automatic message for the customer to rate the conversation"* [I-23]. Additionally, a multi-platform approach to capturing customer experiences was presented, *"we have third party websites such as Expedia, Hotwire, Booking.com. If they booked directly through our Honours app, they can also leave reviews there. As far as I know, it is automated"* [I-16].

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[4] https://wise.com/gb/about/security
[5] https://www.playtech.com/technology/information-management-solution

The next aspect, **community engagement features** involve creating online platforms and forums where customers can interact, share insights, and collaborate and provide a space for mutual support, learning, and direct feedback. For example, one interview participant expressed the importance of this feature: *"in these clinical services, we have virtual classes, and also online communities that the customers can join and get the support where we're offering value to customers outside of immediate service or product."* [I-06]. In SaaS space, this feature provides a problem-solving platform: *"community pages, a community portal, where different users talk to different users, and then they can have questions answered"* [I-11]. Another interviewee highlighted the learning experience within online communities, stating, *"learning from online communities and focus groups, about how the consumer actually, depicts this product, makes a hell of a difference"* [I-19]. Another one talked about how community engagement features can act as a hub for new launches and feedback mechanisms: *"we also have our community, which is self-sufficient, almost in the sense that the customer is there and they are engaging with each other. The customer can find out new launches, what is being talked about and can sign up for better groups,and share feedback"* [I-23].

As the final aspect of features that boost customer interaction and engagement, we recognized **gamification and loyalty rewards**. According to the interview results, gamification increases engagement of the customers by incorporating elements of game playing into non-game environments. Loyalty features are designed to reward and incentivize customers for their continued engagement and patronage. Rewards reinforce this engagement by providing tangible benefits to users, making interactions with the platform more appealing. These features encourage participation by offering tangible benefits: *"we had this customer programme. You get challenges, once a month. If the customers participate, they get some free electricity hours as reward"* [I-13]. Another respondent discussed the impact of gamification in customer loyalty programs, noting that competition and point collection significantly drive app usage and customer visits, *"we are looking for gamification to have a kind of gaming and competition that collect some kinds of points and do something"* [I-17]. Furthermore, one interviewee emphasized the level of popularity of these features among customers with a specific example in retail: *"if you choose to collect the lottery tickets, you can win a car each month. It's more popular than we thought, we thought maybe 20,000-30,000 customers will choose the lottery but it's 100,000+ customers"* [I-17].

4.5.1.4 Features to Provide Comprehensive Information

We discovered that there are customer-centric features to 'provide comprehensive information' for the customer. In this category, we identified 4 aspects; educational content and FAQs, featured content display, visual & textual attribute indicators and enhanced visual representation.

Educational content and FAQs (Frequently Asked Questions) were identified as the first aspect essential to this feature when providing users with accessible, structured information about

products, services, or processes. For instance, one interviewee stated the value of a central repository, *"the idea is that you create a central place where your customers can go to get all the information they need, where they can access FAQ, articles, trainings, industry news or key updates about your business, rather than having things splayed in different places"* [I-06]. The role of a dedicated content team that enables this aspect within their services at relevant points in customer journey was also mentioned: *"we actually have a specific content team working with content. We have content designers, which is quite a rare case"* [I-12]. Another participant mentioned how use of in-application widgets and user flows can be used to guide new customers: *"if you need help getting started, then there's a developer portal and a partner directory. When you're a brand new client, you can even go into certain parts of the application and go through steps that are given to you based on the actions that you follow"* [I-11]. Being proactive in terms of informing the customers with what they might need to know is important to enable this aspect: *"we have all kinds of tips on how to save energy and more general articles or blog posts about the energy market or if there's something ongoing, we are actually really proactive towards the customers"* [I-13]. According to another participant, availability of related content can serve customers with common inquiries:*"our customers are contacting us for very small problems, for example, what are the store hours? So we created this module, customer service pages, where a customer can ask a question in a search bar and find out there"* [I-22].

Featured content display is used on websites and applications to highlight specific products, services, or information prominently drawing user attention to specific products or services. This method is used to enhance visibility and user engagement with new or important content, as described: *"we have a new arrivals section for the customer who frequently comes to our page so that she can really right away see what's new"* [I-09]. Additional information is made available through interactive elements: *"you can also pull out a sidebar, to get more information about that specific item. Then there's the information bar, you can find out what's new, what's in the knowledge base"* [I-11]. We also found examples from cosmetics manufacturing where introductions are provided to their innovative products[6] such as "rechargeable eyeliner" and "bio glitter" as the new arrivals, providing customers with immediate access to the latest advancements. Finally, one respondent spoke of a different aspect of this feature that highlighted the necessity of having a clear and streamlined product portfolio: *"if you look for a laptop, you're gonna see all sorts of names that are slightly different and it's going to take a while to understand how this product is different from the product that I found at the retailer's website for a lower price. So having a clear, streamlined portfolio organized based on needs"* [I-19].

Next aspect identified by us is **visual and textual attribute indicators**. They are design elements such as icons, labels, badges, and tooltips that offer quick insights or detailed attributes, such as size, weight, material, or status of items used on digital platforms to provide clear and concise information about products or services. They are particularly useful in global contexts

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[6] https://faber-castell-cosmetics.com/our-products

where regional variations exist: *"if it's a bigger customer that is operating worldwide, it will always say, this is the American product, something like this. They have different markings on the website"* [I-08]. As stated by one interviewee, comprehensive product information enhances user decision-making: *"we give information about the material it's made of, about the size, the grams so that the customer just knows how heavy these are going to be"* [I-09]. An example of an online map that incorporated these attributes was provided by one interviewee, *"availability of interactive online map, where you can see where the power outrage is happening, if it's planned or is it on-going and click-on icons for more details on scope, cause, and duration"* [I-10]. Software industry also benefits from these indicators: *"when a new feature is added to the software product, you can put a little highlight there and the client can click it and it will pop up. We also had another in-application widget that will put a tiny question mark next to icons in the application"* [I-11].

As the final aspect of features that provide comprehensive information, we discovered **enhanced visual representation**. This refers to the use of advanced graphical displays such as high-quality images, interactive maps, augmented reality (AR), and virtual reality (VR) to provide users with a more detailed and immersive view of products or services. Utilizing this feature, businesses can aid customers in making informed decisions, increase engagement, and elevate the overall appeal of their digital platforms. The impact of this technology is profound in various industries: *"we are using AR and VR to create an immersive and interactive customer experience. For example, we have an app where a customer can visualize how furniture would look in their home before they purchase"* [I-22]. One participant illustrated the application of enhanced visual representation in identifying and ordering replacement parts for appliances and in the fashion industry: *"there's a product image database that has 360 degree angles of the device and some AR technology to recognize. If you look towards fashion, there are all sorts of pilots to merge digital and augmented reality in terms of how it will display the look on me"*[I-19]. Another interviewee mentioned, *"availability of interactive online map, where you can see where the power outrage is happening if it's like planned or is it ongoing"* [I-10] that also allows to search a specific address to check if the power outage affects you as a user and to visualize Geozones division for connection contribution for production[7]. Also one interviewee emphasized the importance of high-quality product images to show it in use, giving customers a realistic perspective: *"we need to have really good pictures, which not only show the product, but they also show the product on a person"* [I-09].

4.5.1.5 Features to Strengthen Trust

As a customer-centric feature in digital business processes, various technologies and protocols are implemented to protect sensitive information, safeguard against unauthorized access and data breaches and 'build trust with customers'. The goal is to maintain the integrity and confidentiality of user data and comply with regulatory requirements, thereby enhancing the

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[7] https://n1.dk/drift

overall security and reliability of the digital environment. In the context of digital financial services, two-factor authentication[8] is used to protect customers' accounts and transactions. One interviewee discussed the importance of security features stating, *"it's very sensitive data that we are dealing with. So security is a high priority for us. There are different tools that our security offices use to ensure that data is stored and handled in a secure way"* [I-12]. Another one highlighted the need for comprehensive security measures given the complexity of modern digital ecosystems: *"I think security is top of mind for everyone that's working with customers. You have a cloud and many different actors coming into your ecosystem from different points and a higher need for overall security."*[I-18].

4.5.1.6 Features to Establish Operational Efficiency

The final cluster of customer-centric functional features 'establish operational efficiency' across the digital business processes within organizations. We came across 4 aspects that related to this feature. They are; third-party service integrations, traceability/ tracking features, dashboards and connectivity features.

Third-party service integrations refer to the practice of incorporating external services, tools, or platforms into a company's own digital systems to enhance their service offerings, streamline operations, and improve customer experiences with specialized capabilities that are not primarily available within their own infrastructure. It allows companies to remain focused on their core competencies while expanding their functionalities. These integrations address regulatory requirements and streamline operations, as illustrated by, *"A lot of KYC flows, KYC providers, payment checking providers are integrated because of specific regulation requirements and operator requests"* [I-07]. Another interviewee discussed how electronic data interfaces (EDI) connect Enterprise Resource Planning (ERP) systems directly with them, simplifying the procurement process: *"for bigger companies that have ERP systems can order directly through their system from us. It's an interface with EDI"* [I-08]. External review platforms integrations benefit the companies by improving transparency and trust: *"we work with a company called Trusted Shops, which helps our customers to rate their experience with us post purchase. They have created a badge, you can put on your online shop and everyone knows that they can trust your shop"* [I-09]. Another statement detailed how marketplace integrations provide seamless connectivity for user-generated customizations: *"we have a marketplace with integrations that automatically connect with us. We also integrate with Zapier. If the customer is tech savvy for the majority of the tools, they can also develop their own custom integrations using our API"* [I-23].

The second aspect was **traceability or tracking features** in digital business processes. They are the capabilities that allow customers to monitor the status, location, progress and usage of their orders, products, or services in real time. These features provide reassurance by giving customers up-to-date information and keeping them informed and empowered to manage their operations

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[8] https://wise.com/in/send-money/

more effectively. For instance, one interviewee described, *"we gave card tracking making it possible for them to track how long it will take to get their card delivered. Also a similar one around how long a transfer is going to take. We have an estimation that tells you, this transfer is gonna be in one day or 20 seconds"* [I-02]. In manufacturing, it provides visibility into the production process: *"my customers know where the product is in my factory right now, in the appointment that we talk, in production or the product is almost ready to revise"* [I-15]. It was also noted about enhancements to e-commerce platforms that allow customers not only to track but also to modify delivery options post-purchase, *"they purchase and then they can see and track. We are even working on some business process improvements where they can alter the delivery option"* [I-22]. Additionally, utility consumption monitoring is another application of traceability, providing comparative insights: *"understanding how I'm consuming, what is my consumption profile, is this good or bad, how do I compare to others like me? That is really important as well"* [I-13].

The third aspect, **dashboards** are interactive tools used in digital platforms to visually display critical data and metrics in an organized and easily understandable format, as a functional feature. One interviewee provided an example of such dashboard development: *"Recently we have been working on creating a responsible gaming dashboard for the previous year. Dashboards make use of processes better"* [I-07]. The primary usage of dashboards is *"providing some sort of insight to the customer side through dashboards or reports"* [I-20]. Dashboards can be used to monitor activities such as usage of a service: *"dashboards, towards the customers, to see the energy consumption by the commercial partner"* [I-10]. They also consolidate business information, enhancing reporting and team collaboration: *"we are able to create better reports based on the information that the customer has and that's actually a big need that they are always pushing for. The Insights tool is also one where they can create reports, and dashboards, we can present and share with, with team teammates"* [I-23].

As the final aspect under this cluster, we identified **connectivity features** that integrate various digital and communication technologies into products and services to enhance user interaction and functionality. This creates efficient ecosystems within industries such as airlines and hospitality, supporting improved service delivery and customer experiences. Examples include, *"We have the in-flight system that creates the ecosystem that is offered for the customer, but also serves the cabin crew, and they can communicate with the customer"* [I-12] and *"for example, smart rooms in hotels where you can use IoT for changing temperatures or custom lighting options, the shades for power operation"* [I-16].

4.5.2 Non Functional Features

Non-functional features describe the performance attributes, quality criteria, and operational characteristics of a digital business process. These are not about the specific tasks the system performs, but rather how the system performs them. They influence the overall experience of the

user but do not change the core functionalities of the digital process. We discovered 9 non-functional features during our interviews that will be discussed here on. We recognized that non-functional features, unlike functional features, are not limited to any specific principles. The findings demonstrate that non-functional features are widely applicable across various digital business processes, contributing universally to enhancing the overall customer experience.

4.5.2.1 Availability

The first non-functional feature we identified was "availability". It refers to the degree to which a digital system, service, or resource is operational when needed by users. This includes ensuring that all digital business processes are continuously up and running, minimizing downtime, as highlighted by, *"the key factor is that we need to be where the customer is. We need to be available, basically, all the time. So we have really small down time"* [I-01] and *"web is live 24/7. They can just choose the time when they want to and make the booking"*. Moreover, the commitment to availability extends to user preferences for interaction channels, adapting to varied needs across different industries: *"in the healthcare space, we have a lot of people who want to get on the phones, whereas in other businesses, the idea of getting on the phones is not very popular anymore and people want a live chat. What we focused on is making sure that we have the availability on different support channels"* [I-06].

4.5.2.2 Accessibility

The second non-functional feature is accessibility, which is the ease with which users can access and effectively utilize digital services and resources. One interviewee underscored the broad expectation of accessibility, noting, *"most customers today are looking for accessibility"* [I-16]. As another one pointed out, efforts are made to ensure that users can easily navigate and utilize resources: *"the flow as the customer will go and search knowledge base and stuff like this, we have tried to make it as accessible as possible"* [I-03]. According to one respondent, a truly customer-centric approach involves making it straightforward for customers to reach support: *"Something which can be a major part of your digital design as to how easy it is for customers to reach you for assistance"* [I-06]. Also mobile applications, in particular, are optimized to provide quick accessibility: *"our mobile application, they have easy access to services that they want, to add to their flights and they are being informed of any changes that might happen during, before or after the flight"* [I-12]. This feature reinforces the customer-centric nature of digital processes like 'automated customer data collection', 'prototype/ product testing', 'e-business/ online ordering' and 'digital customer service/ support'.

4.5.2.3 Understandability

We recognized understandability as another non-functional feature that aims to make digital interactions as straightforward and intuitive as possible. *"all of our processes will be easily understandable"* [I-01], said one interviewee simply putting together the criticality of this feature. Another respondent stated *"it's really important from a digital perspective that it has to*

be simple" [I-04] emphasizing the simplicity as an aspect of understandability. This principle was supported by another interviewee, who advocated for minimalistic interaction: *"so you can just push as few buttons as possible, in order to get your job done"* [I-10]. It was underlined by one participant that *"customer journey should be smooth and simple"* [I-13]. The emphasis on understandability also involves tailoring communication to be clear and logical: *"product simplification, speaking the language that customer understands, and then hopefully, making the whole interaction and process logical and intuitive"* [I-19].

4.5.2.4 Seamless Product Journey

In the context of the interviews, the concept of a seamless product journey was about creating smooth, uninterrupted experiences that cater directly to user preferences and needs. One interviewee stressed the importance of continuity across devices, *"our aim is that if you choose the channel where you are approaching the bank, it will be a full journey"* [I-01]. Another one noted that digital processes should be inherently simpler than traditional methods: *"it has to be very seamless. It shouldn't take a lot of thought in mind. Because if something is digital, then by factor, we are trying to make it easier"* [I-04]. The goal behind this feature is *"to make these interactions as effortless and as frictionless as possible. thereby enhancing their overall experience and loyalty to the potential"* [I-18]. Finally, one interviewee underlined the customers' expectations of a seamless product journey: *"this requires us to understand customer journey on any platform digitally and provide them with a seamless and engaging positive experience. This is also feedback the customers provide when they come from other places"* [I-22].

4.5.2.5 Usability

The next non-functional feature that we identified is usability. It simply means *"easier to use"* [I-02] or how simple and straightforward a digital product or service is for the user. One interviewee emphasized focusing on the most widely used products that demonstrates higher impact of usability: *"we put more focus on the types of products that have a bigger user base versus the ones that are configuration only"* [I-07]. The design philosophy centers on reducing complexity for users: *"if you're familiar with the user needs hierarchy, you have the more basic needs in the bottom, that ensures that as easy as possible for the customers in mobile, to make a transfer, everything is more served for you"* [I-10]. One interviewee highlighted the nature of user expectations that demands consistent or improved usability: *"if they've been exposed to a feature or a setting that they prefer at a different hotel, they expect the same, if not better experience and usability"* [I-16]. The ultimate aim is to provide a hassle-free digital journey: *"I think that would be an automated journey or business process that will be effort-free for the consumer"* [I-19].

4.5.2.6 Time Efficiency

Time efficiency of a digital business process means aiming to streamline operations and enhance user experiences by reducing time and effort required for tasks. As simply stated by one interview participant, *"it has to be quick"* [I-04]. Reducing customer effort and increasing speed of access are central to this feature: *"you want to minimize the effort that it takes to get from point A to point B at any point in the customer experience. Also the speed of access is increasingly important"* [I-06]. Creation of tools that facilitates faster decision making and actions for the users was explained by one interviewee *"we have been working on creating a responsible gaming dashboard to make the lives of the administrator and customer service easier to enable them to make their decisions for risk players more informed, more accurate and faster"* [I-07]. One respondent spoke about achieving operational efficiency with streamlined navigation: *"trying to speed up the whole thing, we wanted to have this three click approach. You don't have to have more than three clicks"* [I-08]. Furthermore, automated services enable efficiency by catering to quick customer needs: *"we do have automated services because we want to tackle quick needs very efficiently so that the customer gets help"* [I-12].

4.5.2.7 Cost Effectiveness

We identified cost-effectiveness as a non-functional feature which focuses on reducing costs while maintaining or enhancing value. One interviewee clearly stated this feature as a goal: *"how do we make things cheaper"* [I-02]. This was further elaborated by another respondent, who discussed strategic improvements that not only enhance operational efficiency but also present direct cost benefits to the customer: *"I see that there's room for improvement here in terms of the time, let's say it's a B2B and you can add more resources. This will reduce your time-to-market. Then, at the end, I can show them these are the cost benefits that you will have"* [I-20].

4.5.2.8 Cross Platform Consistency

As a non-functional feature, cross platform consistency ensures that regardless of the medium through which users access a service—be it a mobile app, desktop website, tablet interface, or any other digital channel—their experience remains consistent in terms of design, features, accessibility, and performance. One interviewee underlined the importance of this feature, *"the main thing is that all of our processes and products, you should be able to use them in all channels. We are not limiting that we are offering something only in the branch and not in the web applications"* [I-01]. It allows users to seamlessly transition between devices and platforms without losing functionality or efficiency: *"we want to make it consistent for the app or the web portal. You can save the shopping list and can access it on any platform"* [I-17]. One respondent emphasized on providing an omni-channel experience across platforms, *"they are engaging through different channels online. So ensuring that we are providing them an omni channel experience that is consistent through all these touch points"* [I-22].

According to interview results, transparency is about clear and open communication about services and processes. One participant noted their practices of this feature as, *"we transparently communicate how much it costs to use the service"* [I-02]. This ensures that customers are fully informed about any financial commitments upfront, preventing surprises and building trust. Another one discussed transparency in the context of early communication to prevent wasted effort and disappointment for the clients: *"even if in our case his answer is negative that he gets this information from us before applying already, before going through some other processes and then finding out that it was not for me"* [I-03]. As one interviewee summed up, *"customer journey should be smooth and simple and transparent"* [I-13].

This section presents the functional and non-functional features that contribute to customer centricity in digital business processes. Functional features in digital business processes focus on core tasks like enhancing user experience and boosting interaction to meet specific customer needs. Meanwhile, non-functional features improve system quality and performance, ensuring accessibility, efficiency, and consistency across platforms to enhance user experience and build trust and satisfaction.

4.6 Understanding the Digital Technologies that Enable Customer-Centric Features in Digital Business Processes

In this section, we present the results for RQ6 which was *"what are the digital technologies used in designing and developing customer centric digital business processes?"*. We explored the digital tools and services employed by service providers across various industries that facilitate customer-centric features. We noticed that some technologies are used to enable customer centricity in the whole process whereas others are used in specific parts of the digital business process. Therefore these technologies can be categorized as 'technologies enabling customer centricity in the whole process' and 'technologies used in specific parts of the process'.

4.6.1 Technologies Enabling Customer Centricity in the Whole Process

This cluster includes digital technologies that enable customer centricity at every touchpoint throughout the entire digital business process. These technologies are serving various purposes such as enhancing customer interactions and experience, ensuring security, improving findability, enhancing insights and streamlining operational efficiency.

The applications of **Machine Learning (ML)** described by the interviewees suggest a broader and more comprehensive use across the entire customer journey, from product discovery to post-purchase engagement, enhancing overall business operations. ML contributes effectively for 'personalized recommendations' allowing businesses to anticipate customer needs and provide tailored suggestions: *"when you look at a product, you will see that there is a recommendation*

saying, if you like this, you might also like this" [I-09]. Additionally, another interviewee emphasized application of machine learning in 'featured content display': *"we have requirements that we cannot show so many commercials about that specific thing in one day to one client. So we need to have a specific algorithm and curate those"* [I-14]. This highlights how ML aids in managing the frequency and relevance. These examples indicate that ML is applied across entire processes **to enhance customer interaction and experience**.

Customer Relationship Management (CRM) tools are central hubs for all customer-related data, supporting multiple facets of entire business operations from customer service to operational management and team collaboration. CRM makes the storage, management, and analysis of customer data easier for companies. One interviewee stated, *"having a CRM system and all data in one place available to be used is crucial. We are using HubSpot, for customer communications as a central place or a master"* [I-13] highlighting CRM's role in 'digital customer service/support'. How CRM tools support 'personalized recommendations' was also described: *"we are learning about the purchase history, their behavior, their interactions with the complete CRM. So we can show them on the site all those products which are relevant to their needs or which they are interested"* [I-22]. The functionality of CRM systems spans the entire customer lifecycle and is integrated into various business processes, **ensuring enhanced customer interactions and experience**.

As suggested by the name itself, **experience management software** is used to manage customer interactions across the entire customer journey by enabling personalized interactions, efficient feedback collection, and targeted content delivery. These platforms enable 'customer engagement features' optimizing the gathering of customer insights, *"for any insights, you have to work with a customer experience management platform, like Qualtrics or Medallia. That's a way to make it more efficient when you're gathering insights in one place"* [I-04] and facilitating 'feedback & review retrieval' across various platforms, *"we have a stay experience platform, that will generate the reviews either internally through our software app or through the externals like booking.com"* [I-16]. They also support direct feedback utilization: *"when you get feedback, you can use them to analyze or get the insights out of the feedback straight away from these tools"* [I-19]. Another participant provided several sources as examples of experience management platforms, *"you'll also want to use other tools that track customer sentiment, and customer satisfaction. You can do surveys in review websites, like Trustpilot. For software companies, you can look at Capterr"* [I-11]. Also use of experience management software in providing 'personalized recommendations' and 'featured content display' was discussed: *"we can customize, we can personalize the content, what you see. All information comes to the data warehouse, and we are using this to customize the content for our clients. We're using Adobe Target for targeting specific offerings to send out newsletters"* [I-05]. Overall, experience management software boosts 'efficiency' and 'usability' by streamlining the collection, analysis, and management of customer feedback and interactions. These platforms are supporting a

comprehensive approach **to managing customer interaction and experiences** across the entire digital business process.

Digital technologies for implementing security measures are applied to entire digital processes. One participant elaborated on the variety of 'security features' implemented using secure technologies, indicating comprehensive security strategies to protect sensitive data, *"for security, or transparency, using something like blockchain technology or even other securities, like login passwords, two factor authentication"* [I-12]. This ensures that **security is maintained** at every point where sensitive information might be accessed or processed.

One interviewee discussed the importance of 'security features' and scalable processes enabled by integrating **cloud computing** into their own processes: *"cloud computing, to make sure that the processes are scalable and flexible because we work with 30 countries. We want to make sure that these processes are secure. When it comes to data, you want to be responsible"* [I-22]. This highlights that cloud computing is integral to the organization's ability **to operate securely** on a global scale, supporting entire business processes rather than being confined to specific parts.

Search Engine Optimization enhances the findability and visibility of the entire digital business, directly influencing customer engagement and reach. One interviewee mentioned a buy-in tool used for SEO, *"for the analysing the search engine keywords and optimization, Semrush"* [I-05]. Another participant highlighted the organizational commitment to this practice, *"we also do SEO, We have a person who does that here internally"* [I-09]. Therefore, the functional feature, 'featured content display' is supported by SEO tools, ensuring that key offerings are prominently positioned in search results. Additionally, one interviewee emphasized the necessity of SEO in e-commerce, *"if it is an e-commerce, SEO is a must have if you want to be ranked higher and customers to find you"* [I-22]. The key aspect highlighted by this response is 'availability' of a business, especially in terms of online presence. From product pages to blog posts, SEO influences how the business is presented and discovered across various online platforms.

Application Programming Interfaces (APIs) are also used **to increase findability** with real-time data access. For example, one interviewee described how APIs allow real-time price updates without manual intervention: *"best price finder plugin to see a certain product price on a website. If you are on the content page, the real time price taken from the booking system pops up"* [I-05]. APIs provide flexibility to create adaptations in digital platforms: *"we have a marketplace with integrations that automatically connect with us if the customer wants. If the customer is tech savvy, they can also develop their own custom integrations using our API"* [I-23]. One participant outlined, *"it's quite common nowadays to use microarchitectures, market services, APIs, essentially, various composable components"* [I-19]. These examples clearly demonstrate that APIs enhance the '3rd party services integrations' in digital business processes.

In addition, APIs improve 'efficiency' by automating data exchanges between different software components or systems, reducing the need for manual intervention and speeding up processes, which directly contributes to reducing operational delays and enhancing user satisfaction. APIs are used across the entire spectrum of business processes, facilitating everything from customer interactions on front-end platforms to backend data management and service integrations.

Big data analytics and business intelligence tools facilitate businesses **to understand and enhance insights** by analyzing detailed customer data and trends. One interviewee described two types of data analytics with examples of technology service providers: *"for marketing data analytics on how you get more quality signups and sales analytics, you can use things like Power BI, ChartMogul or Segment"* [I-11]. Big data analytics and business intelligence tools support the functional feature of 'personalized recommendations' as stated by *"providing recommendations or insights to the customers using analytics"* [I-20] and *"big data analytics can come in and offer insights into customer behavior and enabling more tailored experiences"* [I-18]. Another participant showed how analytics can enhance the 'traceability / tracking features': *"Power BI is connected to Shopify. We use this to look in-depth into their return rates"* [I-09]. Also 'dashboards' are enhanced by analytics for providing real-time data visualizations such as a real-time Player Journey canvas.[9] Additionally, one interviewee brought out the role of analytics in process optimization enhancing non-functional features like 'efficiency' and 'usability' : *"we make sure that for all the digital processes, we have BI tools and the best data visualization tools, so we can continuously analyze the data and enhance our processes"* [I-22]. The application and integration of data analytics and BI tools are comprehensive, affecting all areas of the business processes.

Cloud Computing is often used **to streamline the operational efficiency** of entire digital processes. It ensures several non-functional features of digital business processes, as highlighted by one interviewee*"cloud computing facilitates the scalability and the flexibility of service delivery"* [I-18]. Another interviewee illustrated how cloud computing facilitates in maintaining high 'availability' and 'accessibility', *"using cloud to facilitate all the management between online platforms to make sure that the website is hosted and then it's available and accessible all the time"* [I-17]. This broad application indicates that cloud computing is not confined to specific parts of the business process but is fundamental to the operational strategy across the company.

Also, one participant highlighted **ML**'s impact on operational efficiency: *"Leverage AI and machine learning models to understand what's the reason for their contact. We automated it using AI and ML"* [I-22]. This reveals how machine learning enhances 'efficiency' by automating complex processes, streamlining customer service, and improving response times across multiple communication channels. ML is employed across the entire spectrum of digital operations **to improve overall service delivery and operational efficiency.**

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[9] https://www.playtech.com/technology/information-management-solution

CRM systems are important in their roles in managing information, facilitating team collaboration, and **enhancing operational management**. One interviewee emphasized: *"all CRMs are really important, because they will be able to house a lot of the data and share all of this information between teams"* [I-04] highlighting 'integration of 3rd party services'. Another focused on the role of CRM in operational management: *"We have a CRM to input information on if a guest needs new fresh towels, if we need to run their credit card for an extended stay or for checking-in or out. It collects information well. We're able to regurgitate it in such a way that it's efficient"* [I-16]. Overall, these insights underline how CRM tools improve non-functional features such as 'accessibility', 'efficiency' and 'usability' in digital business processes. The functionality of CRM systems spans across the entire business processes.

4.6.2 Technologies Used in Specific Parts of the Process

This cluster includes digital technologies that enable customer centricity at specific parts of digital business processes. These technologies still serve the same purposes such as enhancing customer interactions and experience, ensuring security, improving findability, enhancing insights and streamlining operational efficiency.

Artificial Intelligence (AI) is used **to improve customer interaction and experience** by automating and optimizing business operations notably in self-service and customer support: *"when it comes to ease of availability and speed of service, it's a big focus now on self service capabilities through different AI powered technologies, and it kind of started with chat bots"* [I-06]. Therefore, AI enables 'chatbots/ live chat' and 'self-service portal/ accounts' and the non-functional feature, 'availability'. AI's role in enabling 'advanced search and filters' aspect to refine the product discovery phase was evident in one of the respondents' description: *"we have the product finder software where we are currently thinking about just extending it for an AI search function"* [I-08]. As mentioned by another interviewee, *"AI and machine learning for predictive analytics and personalized recommendations"* [I-18] supports the 'personalized recommendations' aspect. Furthermore, another interviewee highlighted the capacity of AI for enhancing capabilities of a buy-in customer support tool: *"we were using an in-application chat that used AI auto suggesting based on any keywords that picks up from the messages and it can also triage and relay the customer inquiries in the way to get to the right person"* [I-11]. Overall, AI is utilized to handle specific parts within the broader business processes, rather than supporting the entire digital system end-to-end.

Augmented Reality (AR) and Virtual Reality (VR) technologies are novel concepts transforming digital business processes by **enhancing customer interactions** and enabling more informed purchasing decisions. These technologies offer detailed visualizations that enhance customer confidence and interaction: *"we are using AR and VR to create an immersive and interactive customer experience. We have an app where a customer can visualize how furniture*

would look in their home before they purchase" [I-22]. Another interviewee elaborated on how VR can replace the diminishing human touch in digital interactions and simulate realistic environments for deeper product engagement: *"these days, everything is digitalized and the essence of human touch, and the human interactions is decreasing. However, the beauty is that it can be provided by virtual reality. A customer is trying to buy a product and he or she just sees it as a 2D image, but rather, would like to see the entire thing in VR"* [I-20]. Collectively, these applications clearly support the functional feature of 'enhanced visual representation'. One participant discussed the role of AR in providing certainty and reassurance in e-commerce transactions: *"for instance, a customer is looking for a specific accessory or spare part for a product. So the customer needs reassurance that they have chosen the right one that is going to fit with the product. That's where some AR tools can actually help"* [I-19]. This use of AR enhances the 'traceability features' by aiding customers in identifying and verifying the correct products, thereby improving confidence in their purchases. Both AR and VR are focused on specific applications like enhancing visual representation for better product understanding and verifying product choices, which play significant roles in particular interaction points with customers as opposed to supporting every element of the complete digital business process from start to finish.

Another respondent spoke of how **Internet of Things (IoT)** is used in the hospitality industry to enhance guest experiences through smart rooms: *"for example, smart rooms where you can use IoT for changing temperatures or custom lighting options. Some that will have Netflix integration for Smart TV, and a few other apps. I've stayed at one property that does have the sun shades for power operation, so you don't have to manually open or close it"* [I-16]. Use of IoT supports 'seamless product journey' strengthening customer-centric efforts of the organizations. The IoT applications mentioned are specific **to improving the interactions and experiences of customers.** This highlights that its usage is focused on specific segments rather than being deployed across all operational facets of the business processes.

Customer service and support software streamlines communication and provides robust support platforms **to enhance customer interactions.** One interview participant illustrated how this technology centralizes customer interactions, ensuring efficient management and response to customer inquiries, *"we use Zendesk when we do these webinars to give them the opportunity to ask the right questions from us"* [I-03]. This aligns with the 'chatbots/ live chat' feature, as these platforms often include automated responses and direct messaging capabilities. Another one mentioned, *"for support we use Intercom. We use that for email and chats"* [I-23]*,* highlighting the versatility of these tools in handling multiple communication channels effectively. Considering non-functional features, this enhances the 'availability', 'efficiency' and scalability of the digital business processes. While essential to customer service, these tools do not cover all aspects of a company's operations but focus specifically on improving the efficiency and 'effectiveness of customer interaction and support'.

Collaboration and communication tools also significantly **enhance the effectiveness of customer interactions** in digital business processes. For example, one respondent described, *"we use Zoom to talk to customers if you do a more extensive interview. We have our in-house built customer support tools, where you know, we can call them up and get feedback when they can provide feedback"* [I-02]. The use of webinars as a communication and educational tool was highlighted by two interviewees as, *"webinars are hosted through Zoom" [I-03] and "we also have webinars that our teams create and are streamed live. The recordings are kept for the customer to consult later if they want"* [I-23]. These results show that collaboration and communication technologies support functional features such as 'educational content/ FAQs' and 'customer engagement' and non-functional features such as 'usability' and 'accessibility'. This reflects that while these technologies are crucial for improving specific aspects of customer interactions like providing educational content and engaging customers in real-time, they are not integrated into the entire operational process but rather focus on optimizing particular communication tasks within the broader digital business process.

Digital signatures and IDs are used in **ensuring the security and authenticity of customers**. While crucial, they do not encompass all areas of business operations but focus specifically on enhancing security and verification for particular transactions and user interactions. As a buy-in service, one interviewee explained the role of digital signatures in providing secure, verified transactions: *"e-sign possibilities. Customers can sign all the agreements everywhere, where they are just with their mobile phone with a local ID card, a residency card or Smart ID app certified by the Estonian government"* [I-01]. Another interviewee also discussed services that enhance ID security, *"we have this ID security that is white label service from F-secure. You can secure that if your identity gets stolen, you are able to get help, and compensation. Also there's another service, which is the endpoint protection, and that helps you to make the surfing and the internet banking, etc. more safe in case something would happen"* [I-13].

Geo Spatial Mapping technology provides detailed and interactive visualizations of geographical data, thus aiding in decision-making and improving service delivery. One interviewee illustrated the use of this technology in the context of locating electric vehicle (EV) chargers: *"we have an app targeted towards the EV drivers, where you find the charging map where there are other charging stations, and you can start your charging and stop your charging etc"* [I-13]. This deployment enables the 'enhanced visual representation' and 'traceability/ tracking features' allowing users to track the availability and status of charging stations, which significantly contributes to the non-functional features of 'usability' and 'accessibility'.*"there were some integrations also with other Nordic services"* [I-10], said another interviewee acknowledging the buy-in approach. They use licensed Geocortex Essentials technology for the Esri ArcGIS platform[10] to see where the the electricity cables are located and the interactive

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[10] https://factmaps.sodir.no/FactMaps/3_0/?scale=250000&?run=WellboreExpByNPDID&NPDID=10023

version of the map is enabled by 'Map Viewer' at Green Power Denmark[11]. This application also facilitates the functional feature of 'enhanced visual representation', allowing for a detailed understanding of physical infrastructures in a digital format. This technology focuses on **improving findability** and is applicable for those particular segments of digital business operations.

Content Management Systems (CMS) allow businesses to effectively manage and distribute content across various platforms to ensure it is easily accessible and navigable for users. As stated by one interviewee CMS can be used, *"like a content hub for internal purposes where every content and images, everything like that will be included"* [I-08] to centralize the management of diverse digital assets, which supports functional features such as 'featured content display' and 'visual/textual attribute indicators'. CMS plays a significant role in maintaining brand image and disseminating knowledge: *"it is very important because we are not only known as a furniture brand, but we have a wealth of knowledge in home furnishing. That's why the content becomes more important, because we are inspiring the world in how to furnish, focusing on sustainability"* [I-22]. This statement highlights how CMS facilitates in creating 'educational content/FAQs', allowing customers to access valuable information that helps shape consumer perceptions and decisions. Another interview participant provided a specific example of customization and security aspects of one CMS that safeguard digital content against external threats, *"Website is based on WordPress, but it is very much customized. For some reason, this website is one of the favourite attack targets for hackers. So this is extremely well protected"* [I-03]. Additionally CMS can impact customer experience, *"You have the various components that you can pull in to have best in class elements in terms of a content management system. Every single thing that a customer sees is part of the experience, can obviously bring value or create frustration"* [I-19]. The purpose of CMS platforms is **to improve findability** of aspects related to content within the organization.

The **Internet of Things** is transforming customer-centric features in digital business processes by enhancing the interactivity and automation of physical environments and devices leading to operational efficiency. One interviewee expressed his/ her interest in the applications of IoT in integrating voice-activated assistants into the customer journey, *"with Siri, Alexa and Googlebot, customers don't even have to go to the e-commerce website or app. They can order using one of these smart devices and we can collect the data, help the customers in their buying journey"* [I-22]. This integration enhances 'accessibility features' and 'usability' while contributing to a 'seamless product journey'. IoT is typically focused on **enhancing operational efficiency** in specific areas rather than the entire spectrum of business operations.

Project management and collaboration tools are buy-in tools that help structuring and **streamlining of digital business processes to enhance efficiency** of customer-centric

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[11] Geozonekort for 2023

operations. For example, one interviewee detailed, *"if you're familiar with Jira or Confluence, these tools are able to take all of the information insights and updates can be made to a digital process"* [I-04]. Another respondent further elaborated, *"for documentation, we use Confluence. We have our support space, where they can find specific troubleshooting information, specific guidelines on how to proceed and that is fully aligned with the review of the cases from the QA team"* [I-23]. These tools are not used across all aspects of a business's operations but are critical for supporting the efficiency of specific parts of the process.

In summary, this section presents a range of digital technologies that underpin customer-centric features in digital business processes. Technologies like ML, CRM, and experience management software enhance the entire customer journey by improving interactions, security, and efficiency. Conversely, technologies such as AI, AR, VR, and IoT target specific aspects of customer engagement and process efficiency, enriching distinct areas of the digital experience.

4.7 Understanding How Digital Business Processes can be Redesigned for Customer Centricity

In this section, we present the results for RQ7 which was *"how does digital technologies enable design and development of customer centric digital business processes?"*. We focused on how the digital technologies are used in reshaping existing digital business processes to enhance customer centricity. This was a challenging area to explore. Majority of the interviewees were unable to provide specific examples to support this inquiry. From our interviews, 4 key aspects emerged about the transformation efforts: automation, enhanced interaction, segmentation & targeting and predictive analysis.

Automation speeds up processes that would otherwise be manual and time-consuming. Faster responses and actions lead to higher customer satisfaction as their needs are met more swiftly. One interviewee provided an example of this application of automating digital business processes in a subscription-based food delivery company, *"we get a flood of cancellation requests, 400-500 a day, and it makes us much less efficient. So we handed that off to a chatbot to handle the cancellation for us. Then those 500 contacts were very small in terms of the amount of time they actually took"* [I-06]. Also **automated systems perform tasks the same way every time, eliminating the variability and errors that can occur with human intervention.** This consistency ensures that every customer receives the same high level of service, which is crucial for maintaining trust and reliability. As confirmed by one interviewee, *"automation helped us create a better product experience for our customers. In the vast majority of cases of ID verification, when we check your selfie with your ID, it's actually an automatic check. You don't have to wait for a human to do that. We're not doing this, because it's cheaper. We're doing this because it's much faster. So now, we were able to onboard customers within seconds instead of let's say, within minutes, or sometimes hours"* [I-02].

Enhanced interactions provide improved and more engaging ways in which businesses connect with their customers using advanced digital tools and technologies, aiming to offer a more intuitive and satisfying user experience. For example, traditionally, shopping for significant items involved visiting physical stores, where customers had to rely solely on their imagination to envision how products would fit and look in their personal environments. Digital technologies have revolutionized this process by **enabling virtual enhanced interactions, allowing customers to see and experience products in their intended setting before making a purchase**. One interviewee described this scenario with an example: *"we have an app where a customer can visualize how furniture would look in their home before they purchase. We ask them some questions and after getting insights from the customer using AI, we provide them recommendations. They can view those products and their rooms. They can visualize and they feel like they are there in the room. It's an immersive experience"* [I-22].

Segmentation and targeting helps companies to make sure that their interactions are relevant and tailored to different customer groups. Traditionally, segmentation and targeting in marketing relied heavily on broad demographic data, often leading to generalized and less effective marketing efforts. Digital technologies have transformed this approach by enabling the collection and analysis of detailed customer data, allowing for more precise and dynamically tailored segmentation and targeting strategies. One of the applications is focusing on these specific segments with marketing messages that are highly relevant to their particular needs and desires. This personalization effort was highlighted by one interviewee, *"understand your customers and break them into different segments, the more you are able to break them into smaller segments the better the personalization gets"* [I-21]. Another interviewee highlighted, *"we did a lot of data aggregation within highly segmented populations of our customers based on their spend, geography, language, where they were in the product, what modules of the product they're mostly using and for what reasons. Looking at the segmentations really helped us drive where we want it to take our customers with our digital place"*. By understanding these distinct needs of different segments, businesses can develop or modify products and services that meet the specific requirements of these groups. This not only boosts the perceived value but also enhances customer satisfaction and retention.

Predictive analysis allows businesses to anticipate customer needs and behaviors, and proactively address them. Previously, predictive analysis often depended on historical data and manual trend analysis, supplemented by creative interpretations of limited information, which could delay effective responses to market changes and customer behaviors. Digital technologies have transformed this practice by facilitating real-time data processing and advanced analytics, enabling businesses to anticipate customer needs with unprecedented accuracy and agility. This shift allows for proactive responses that are informed by a comprehensive analysis rather than reactive guesses based on past trends. The following statement showcase how predictive analytics can facilitate enhanced customer support: *"that's a way to make it more efficient when*

you're gathering insights, then house it in one place, and be able to analyze the data and come up with the themes and get a pulse on scores and metrics over time" [I-04]. On top of that, it can identify signals that a customer may be at risk of leaving, allowing businesses to remedy the situation:*"First, you have to do data analytics to understand what delivers value to your clients, what makes them stay with you. Usually operations specialists or revenue operations specialists know what data to look for. How do we increase our conversion from our trials? When it comes to customer success, how do we increase retention? How do we drop the churn rate? Everything supports the business model of making money. That's the first thing. So you need to build your data analytics around that"* [I-11].

This section concludes that digital technologies enhance customer centricity in business processes through automation, enhanced interactions, segmentation and targeting, and predictive analysis. Automation ensures swift and consistent service, while technologies like AR improve user experiences. Additionally, advanced data analytics enable precise customer segmentation and proactive service adjustments, increasing satisfaction and retention.

4.8 Understanding Measurements of Customer Centricity in Digital Business Processes

In this section, we present the results for RQ7 which was *"how can business processes for digital products and services be measured for customer centricity?"*. Measuring customer centricity in digital business processes is crucial for organizations aiming to ensure that their operations are aligned with customer needs and expectations. These measurements help businesses to refine their strategies, improve customer interactions, and enhance overall customer satisfaction in their digital processes. During our interviews, we identified 12 distinct metrics employed by various companies, some of which are broadly utilized across industries while others are more tailored to specific organizational or industry needs. We clustered them under 4 common topics as metrics concerning business performance & growth, customer loyalty, efficiency and quality. Additionally, we explored how these companies made changes to their existing digital business processes to become more customer-centric driven by insights gathered from the metrics.

4.8.1 Metrics of Business Performance and Growth

Metrics that provide insights into the broader impact of customer interactions on the business performance and growth, including long-term value and conversion effectiveness are included in this group. We identified 6 such metrics namely number of customers affected, visitation metrics, Click Through Rate (CTR), Customer Conversion Rate, Churn Rate / Retention Rate and LifeTime Value (LTV).

The number of customers affected is used as a scale of impact any particular issue or feature may have on a customer base. One interviewee illustrated the application of this metric by

monitoring *"how many bookings are made in which market? How much revenue comes from different channels; from the desktop, mobile and app"* [I-05]. Another interviewee discussed the need to identify the extent of an issue's impact to provide targeted solutions, *"how many customers are affected? Is that really just one customer wish? Or is that maybe something wider?"* [I-01]. Additionally, the importance of customer feedback in measuring impact was noted: *"we get specific ratings, and we also get the semantic feedback if there's something specific that the customer wants to address. There can be others based on or related to specific features"* [I-12]. For example, an adjustment made to an existing process was shared by one interviewee here: *"we looked at the numbers of customer cancellations coming in and the amount of time that was taking to answer those. We made this more customer centric by handing that off to a chatbot. It took us six or seven minutes to answer each of those emails coming in and that was reduced to about 30 seconds with the Chatbot"* [I-06].

Visitation metrics measure the frequency and depth of customer interactions with physical or digital locations of a business. These metrics assess how often customers visit, the duration of each visit, and the overall engagement during these visits, providing insights into customer behavior and the attractiveness of the business environment. Examples include *"how many times you will be visiting our stores, and how frequently you are doing that"* [I-17] and *"how many customers are visiting our channel. How is their engagement rate, for how long they are visiting a page and what is the total time they are spending on the website"* [I-22].

Click Through Rate (CTR) helps assess the effectiveness of digital engagements and how well they convert interest into action. For example, one interviewee said *"we measure operational data, visiting rates from a digital point of view and click through rates"* [I-08]. Further emphasizing the role of CTR in understanding customer behavior, another interviewee discussed the necessity to analyze usage data: *"usage data says, what are the clients clicking on when they come to our website? Where does it perform the most? Where do our clients click in the app in the first week that they're using it and which ones are converting?"* [I-11].

Customer conversion rate is essentially how well a business turns potential customers into actual ones. It involves *"measuring how many of the customers actually act based on the adviser insights that we are sending and were we able to actually have agreement"* [I-01]. This is about tracking the success of digital strategies in generating sales. Furthermore, one interviewee described this metric as *"number of visitors you get and how many of them ended up with the booking"* [I-05]. Another interview participant emphasized on the value of conversion rates in business success, *"how do we increase our conversion from our trials? The biggest challenge is the number of quality leads you get. It's not like I have 1000 downloads, and then only 20 people are ready-to-pay. You'd be better off having 100 downloads and having 10 people paying"* [I-11]. Finally, there was a statement about increased customer conversion after adjustments, *"once we've changed the product, or we brought it online, then we saw a jump in sales"* [I-05].

Churn rate and **retention rate** are complementary metrics that measure customer centricity from opposite viewpoints. The churn rate reflects the percentage of customers who stop using a company's products or services over a specific period, while the retention rate shows the percentage of customers who remain with the company during the same period. One interviewee tied these metrics to broader indicators of business performance, stating, *"you have leading or lagging indicators. We look at retention and repurchase rates"* [I-19]. Another interviewee discussed the importance of understanding these metrics to maintain the customer base: *"when it comes to customer success, how do we increase retention? How do we drop the churn rate? what are the customer biggest problems to churn, why are clients cancelling, figuring out all of that"* [I-11]. Companies use specific tracking tools to trace these metrics: *"we have tracking systems to see how much the churn rate and when did the churn happen?"* [I-14]. A case where changes were made to a digital business process, by looking at churn rates was highlighted: *"we figured out that the journey from a SoMe platform into our content took 5 steps before the customer could get to the desired content, and that created a lot of churn. So we reduced the steps with inserting a link in the post. So it was now from 5 to 1 step"* [I-14].

Customer Lifetime Value (LTV) is a key metric used to assess the total value a customer brings to a company throughout their relationship. As pointed out by one interviewee, *"we found we have improved customer satisfaction and higher conversion rates, and through all increased the customer lifetime value"* [I-18]. This statement shows how enhancing various stages of the customer journey positively affects LTV. Furthermore, another respondent elaborated on the calculation and significance of LTV, explaining, *"we estimate the total revenue back from a single account. So, higher the customer lifetime value is, the loyalty would be higher. So that is the customer lifetime value"* [I-22].

4.8.2 Metrics of Customer Loyalty

We identified a set of metrics that directly measure customer satisfaction, loyalty, and their willingness to promote the company. They are Net Promoter Score (NPS), CSAT (Customer Satisfaction score), Customer Effort Score (CES) and the number of referrals / word of mouth.

Net Promoter Score is one of the most used metrics, which evaluates how likely customers are to recommend a company's products or services to others. As described by one of the interviewees, *"if you specifically talk about customer value and customer centricity, then you know, the biggest indicator of that is the Net Promoter Score"*[I-02]. NPS is not only popular in B2C contexts but also in B2B environments: *"Net Promoter Score is really popular in organisations where the end user is someone that's using your product/ service for B2B"* [I-04]. The effectiveness of NPS in capturing customer sentiment is further highlighted by, *"let's say 50% of the e-residents put 10 if they were asked would you recommend this to a friend, but there are still 10% who put zero or one. So this shows that still some people who come do not find what they were looking for"* [I-03]. This demonstrates NPS's ability to identify both satisfied and

dissatisfied segments of a customer base, guiding efforts to *"minimize these people who will not be satisfied"* [I-03] and *"maximize these people who are satisfied"* [I-03]. Another participant emphasized the direct link between NPS and customer loyalty: *"Net promoter score is about customer loyalty. Higher the number is good for us"* [I-22]. One interviewee provided an example of how their organization utilized this metric to make informed adjustments to their digital business processes and how this adjustments led to a significant improvement in their NPS: *"We're looking at NPS scores and we identified a lot of friction in regards to our ability in customer going from trial to transact. So we streamlined that process and reduced the number of steps. That improved our NPS score quite significantly, also increased our customer satisfaction and increased the longevity of our customers staying with us"* [I-18].

CSAT is another metric that is as widely used as NPS in measuring the success of customer-centric efforts of the company. The metric itself is self-explanatory, primarily focusing on how satisfied customers are with a company's products or services. One interviewee explained, *"out of the surveys that you conduct, you ask on a rating from 1 to 10. How happy are you with this product, with the service, and then you get that score"*[I-04]. Moreover, CSAT is not only about post-purchase satisfaction but the entire customer experience:*"CSAT can be for an end to end experience. So then it's not just digital, but the whole experience, or it can be part of the journey"* [I-12]. As reflected by another interviewee, *"we call it Happy Customer Score. That is about how happy or satisfied our customers are with our products, experience or services"* [I-22]. This highlights the broad applicability and critical importance of CSAT in understanding and improving customer interactions. The same interviewee also provided an example here: *"our customers are dropping in the front of the customer journey, it means that we have to improve our checkout processes. In the login functionality, if the customers are spending too much time and dropping out or they are not registering to our website , it means that it is taking either too much time or it is not user friendly. We always track to learn about our business processes and what needs to be done to improve these processes"* [I-22].

Customer Effort Score (CES) is identified as a crucial metric alongside Customer Satisfaction and Net Promoter Score for evaluating the ease with which customers can interact with and complete tasks within a company's digital processes. Several interviewees mentioned CES as a key metric they follow:*"right off the top of my head, we're talking Customer Effort Score"* [I-18] and, *"we have all of this, whether it's customer satisfaction, or NPS or Customer Effort Score for journey"* [I-19]. One interview participant described an example of reducing customer effort to achieve better scores, *"When I enter the app, I'm lost. I don't know where to click and what to click. What can be achieved in two clicks ended up being five clicks. During that, the customer got confused and lost his thought process. By reducing that entire flow to one click or two clicks, it increased the speed of the customer and the usability experience"* [I-20].

Word of mouth or *"increased referral rate"* [I-21] is a critical metric for gauging customers' the public image of a company. For example, one interviewee stated, *"if you do a great job or a*

bad job taking care of your customers, they're going to tell everybody about it" [I-11]. The impact of word of mouth was illustrated as, *"we do no sales, it's 70% word of mouth, that customers are happy with the product"* [I-02]. This shows the power of positive customer experiences in driving new customer acquisition. Another participant emphasized the natural outcome of customer satisfaction, *"there's a lot of evidence that when the customers are happy, they recommend the companies to others"* [I-13]. Positive word of mouth enhances a brand's reputation and aids its digital transformation efforts: *"this gave us a competitive advantage to attract new customers. Customers experiencing the digital motion, and sharing that with their networks enhanced our brand reputation to be able to continue to iterate and grow in a digital transformation that was best serving the customers"* [I-18].

4.8.3 Metrics of Efficiency

Metrics in this category measure how efficiently and effectively the company handles customer interactions and requests, impacting customer satisfaction through operational excellence. Average Wait Time (AWT) and On-time in-full (OTIF) are two metrics that fall into metrics of efficiency.

Average Wait Time (AWT) reflects the responsiveness of a business and can significantly influence customer satisfaction and loyalty. Measuring wait time at the transactional level helps organizations gauge how effectively they are managing customer interactions: *"if you ask at a transactional level after a service call, what was the waiting time? How easy was it to get in touch with us?"* [I-08]. Also AWT can be measured in the context of service-specific metrics: *"a bit service specific, for instance, within customer service, we have this first contact resolution. Then within the digital services, how easy it was to accomplish what you came for"* [I-13]. This metric is tracked to determine the overall service speed. For example, one interviewee stated, *"we have reply time and closing time. Our goal is to provide the best help but the fastest as well because the customer doesn't want to be just staying with us forever"* [I-23]. Companies also observe AWT in terms of operational efficiency, to analyze customers' behavioral data: *"they can track how much downtime there is if anything crashes. Where do they move and how long do they spend? [I-14]. Another participant discussed how measuring product interaction data helps understand and reduce unnecessary wait times or complications in product use: *"another thing is to capture those metrics from the product itself, like Amazon captures everything where you click, & how you click"* [I-20]. An example where AWT was reduced improving the efficiency of the business process was provided by one respondent: *"a person would come in the morning in Estonian time and answer tickets or chats. The whole US customer base, 60% of total conversation volume, didn't get an answer for like 16 hours. The average response time for a customer is 36 hours. To improve the customer experience, we hired our first remote employee in the US time zone and we increased our conversation coverage by an additional 8 hours. That dropped the average customer response time from like 36 to 12 hours. Later, we hired another*

person in New Zealand to promote 24 hour support 5 days a week in English, which dramatically reduced the first response average time to less than 4 hours." [I-11].

On-time delivery was another efficiency metric highlighted by an interviewee, who emphasized its importance: *"we were looking for OTIF, On-time in-full. If you asked me for 100 pieces of lipstick, and I deliver you 50, the mark is 50%. It is not good for us"* [I-15].

4.8.4 Metrics of Quality

We identified that metrics in this category refer to specific qualitative indicators used to assess the effectiveness and efficiency of processes, products, or services in meeting customer requirements and standards. These metrics are a part of continuous improvement efforts, as they help businesses identify performance gaps, enhance service reliability, and ensure consistent delivery of high-quality outcomes.

Internal Quality Metrics, particularly within a Quality Management System (QMS), play a major role in assessing customer centricity from an internal perspective. They assess internal operational and service quality, focusing on continuous improvement and aligning internal processes with customer-centric goals. This was detailed by only one interviewee, *"service companies set up proactive or reactive Quality Management Systems and test the empathy of customer interaction, a solution to the problem, product knowledge of the person who was handling the issue and timely response"* [I-11]. These elements are quantified into what is referred to as an *"internal quality score"* [I-11], which helps in pinpointing where the issues lie and assigning responsibility, often revealing that problems may originate from the product or engineering teams rather than customer service. Moreover, he/ she discussed quantifying potential revenue loss due to customer issues: *"For example, let's say you have 100 customers, worth $1,000 a piece. If 20 clients are at churn risk, I could lose potentially 20,000 in revenue. If your actions are poorly customer centric,you have the potential to lose that money* [I-11].

Another interviewee detailed a comprehensive **process evaluation** that captured the depth and variety of feedback mechanisms used to assess customer experience thoroughly, *"we measure success based on the success metrics we defined in scope process and evaluate on customer experience through a follow up report consisting of user input, comments from SoMe, interviews, prototypes, usability tests"* [I-14]. This methodical assessment ensures that all elements of the customer experience are scrutinized and optimized for quality.

Also one interviewee discussed **evaluating stay experiences in hospitality, focusing on multiple physical aspects**, *" we look at stay experience as a whole, the cleanliness of rooms, the food experience, security, amenities. There's usually a one-to-five scale score for each. We strive for fours or fives every time. If there's something less than that, and we look into trends and see what we can do to correct that"* [I-16]. This evaluation not only measures the satisfaction with

specific aspects of a stay but also ensures that quality standards are maintained across all physical dimensions of the service.

In conclusion, we found that these metrics collectively enable companies to reap the benefits of enhanced customer centricity in their digital business processes. Looking at these metrics, they can swiftly adapt to consumer trends and expectations, deeply understand customer needs and pain points, and enhance product or service usage. These metrics also indirectly influence competitive strategies and improve employee satisfaction by providing clear performance targets. Significantly, they boost customer satisfaction and loyalty, evidenced by metrics such as NPS and referral rates, which are strong indicators of customer endorsement. High scores across these metrics not only foster a customer-centric culture but also enhance a company's reputation and industry recognition, driving overall business success.

5. Discussion

In this section, we address the research questions in detail by discussing them. We start with the perspectives that shape customer centricity in the digital business processes. Then we dig into why companies are so keen on putting customers at the center of their digital operations. Along the way, we double-check our findings by comparing them to what is already out there in the literature. Next we discuss how companies are actually going about making their digital processes more customer-centric. We also touch on the principles guiding this process, ensuring everything stays aligned with what the organization aims to achieve. We break down the key features of customer-centric digital processes, showing how they play out in real-life business settings. Plus, we look at the digital technologies driving these changes and how they are being put into action. Finally, we wrap things up by looking at how companies measure the success of these customer-centric digital strategies, pointing out any limitations in our own study and suggesting areas for future research.

5.1 Customer and Company Perspective: Aligning Needs and Values

Our first research question centered on unpacking the concept of customer centricity within the context of digital business processes. Customer centricity can be understood through various lenses, and our investigation aimed to identify these perspectives. The first perspective is the customer perspective. According to our interviews, customer perspective emphasizes understanding customer needs, ensuring cohesive interactions across all touchpoints, and facilitating smooth digital interactions to enhance overall customer satisfaction. Aligning with this, studies [46] and [43] highlight the essential customer-centric approach of recognizing the full spectrum of consumer goals and their engagement with various stakeholders and touchpoints. They advocate for a shift from product-centric to customer-centric strategies, where integrating customer insights into business practices is key to improving satisfaction and forging deeper relationships. In contrast, some of the previous studies also view the consumer perspective in user-centric innovation as involving consumers to become active participants in the innovation process and recognizes consumers as co-creators, integrating their insights, needs, and behaviors to enhance product and service development and delivery [42], [50].

The second perspective, the company perspective, focuses on embedding a customer-centric culture and mindset throughout the organization, empowering employees with the tools and processes needed to deliver on customer needs, and establishing robust internal feedback loops to continuously improve processes and communication across departments. The company perspective complements the customer perspective by highlighting the need for a customer-centric culture throughout the organization. Similar to our findings, research [45] focused only on company perspective, viewing customer centricity as a strategic orientation that aligns the company's operations and culture with the ongoing needs of its customers, highlighting the necessity for businesses to continually adapt to these needs to stay competitive.

While the customer perspective is more of an outside-in direction, the company perspective is inside-out. However, these perspectives are related and should be managed in order to prioritize long-term customer relationships for sustainable growth. It highlights the need to integrate customer data and insights from digital channels into product development and business process refinement. Effectively managing both customer and company perspectives fosters a balanced approach to customer centricity. Research [41] captures the dual perspectives of 'customer' and 'company' in customer centricity without the management aspect of these perspectives. It says that placing the guest at the heart of every business decision increases competitiveness by enhancing customer value and embedding a customer-focused mindset throughout the organization and engaging employees at all levels in the value creation process for customers. The literature tends to concentrate predominantly on one perspective, either customer or company. In instances where both perspectives are acknowledged, the emphasis is on how technology can enhance customer centricity at the operational level. In summary, it seems that customer centricity in digital business goes beyond just pleasing customers. It requires a two-pronged approach: understanding customer needs and building a customer-focused company culture. The key lies in balancing these perspectives. One without the other might actually make the business processes less customer-centric.

5.2 Drivers of Customer Centricity: Internal and External

Our second research question, why companies strive to improve customer centricity within digital business processes, revealed a multifaceted landscape driven by both external and internal sources. In today's digital age, customers expect more from companies; they seek the same experiences that were traditionally provided through human-to-human interaction, which is now increasingly replaced by digital services. External influences such as market dynamics and customer experience prompt companies to adopt customer-centric approaches. Externally, adapting to customer trends and expectations helps businesses stay ahead, build loyalty, and drive innovation. This adaptation helps not only to outperform competitors but also in some cases to effectively collaborate with the competitors for knowledge exchange and innovation partnerships. Additionally, technological advancements and regulatory demands push companies to better meet these evolving expectations, ensuring they remain relevant and responsive in a dynamic market environment. In an outside-in approach, organizational activities can be transformed to be more in line with the marketplace so that the organization is better positioned in relation to customers' actual needs, competitor initiatives, and emerging marketplace trends [11].

But, if customer centricity is widely recognized and adopted as crucial for competitive advantage, and it becomes a common practice across all businesses, then it may lose its effectiveness as a differentiator. This raises an important question: What then continues to make customer centricity a viable competitive advantage? This is where the internal influences; strategic positioning, operational excellence, and profitability come into play. Referring to the

findings from RQ1, customer centricity requires a companywide mindset and culture. However, transforming organizational culture is both challenging and time-consuming as it necessitates a fundamental shift in how individuals think and behave [49]. Despite these challenges, there is agreement that strengthening a culture oriented towards customer centricity is essential for driving profitability and achieving operational excellence for long-term business success [49]. Strategic positioning with customer-centric business models, has a positive impact on employee roles and motivations, and the drive for operational excellence affects revenue generation, cost reduction, and resource allocation to enhance business performance [29].

It is important to recognize that neither external nor internal influences alone are sufficient for effective customer centricity. Companies must achieve a balance between internal and external drivers. Without this balance, efforts may not be financially viable or effective in service delivery. This aligns with the interview findings from RQ1 about managing both company and customer perspectives to ensure the financial sustainability of customer-centric initiatives. A company may prioritize customer centricity, but if these efforts are not financially sustainable, the very foundation of being customer-centric is at risk. Hence the forces driving customer-centric strategies are not isolated as external or internal; rather, they are integrated elements of a holistic business strategy essential for survival in today's business environment [7].

5.3 From Insights to Action to Decision: Course of Customer Centric Digital Processes

Our third research question looked into how companies approach making their digital business processes customer-centric. While existing research suggests that the identifications of how to make improvements to make a product or process customer-centric should start from the customer, our interviews show that there is a structured progression through identification, action, and decision stages. Companies initiate the process by using research capabilities to gather comprehensive insights on customer experiences and market conditions. Customer experience research reflects the evolving influence and expectations of customers who seek unique and memorable interactions with products and services [45]. Companies leverage UX research to understand and respond to customer preferences and behaviors across all phases of the customer journey, ensuring that products and services are not only relevant but also enhance customer satisfaction and loyalty [45]. By integrating customer feedback and insights into product development and service delivery, businesses can align their offerings with customer needs, thereby reinforcing their market position and fostering meaningful relationships with their customers [45].

In the action phase, companies employ these insights to develop a deep understanding of customer needs and pain points and make informed decisions about product design, service improvements, and customer engagement strategies. This typically involves cross-functional teams and integrates direct customer interaction to refine and validate customer needs and

responses. Research [44] captures that understanding everyday lives of customers to direct future services into the customers' value creation processes as crucial to create competitive advantage.

The decision phase is characterized by a blend of several approaches tailored to specific organizational goals and contexts. Data-driven decisions are common, emphasizing the use of concrete analytics to guide developments. Strategic decisions balance customer benefits with organizational objectives, while operational decisions focus on immediate response to customer interactions and issues. Furthermore, decisions are made using both centralized and decentralized approaches, depending on the desired speed of implementation and the scope of the impact. Companies that adopt a centralized approach generally direct changes from the top down, ensuring consistency and alignment with broader business strategies. In contrast, decentralized approaches allow for greater agility and responsiveness, with decisions made closer to the customer interface. [43] touches on several decision-making strategies—data-driven, decentralized, and strategic—emphasizing their role in aligning operations with customer needs. Yet, it also notes the challenges these methods bring, such as reduced efficiency and increased costs, which can complicate their implementation. [44] and [47] similarly mention these decision-making practices, though their discussion is less direct. Instead, these articles slightly reference how data-driven, decentralized, and strategic decision-making aid in refining business processes. In addition, the interviews revealed reactive and proactive decision-making approaches, which are less explored in existing literature. Reactive decisions are made in response to immediate events or situations, whereas proactive decisions reflect a forward-thinking mindset, allowing companies to anticipate future needs and trends to address potential challenges before they fully emerge.

Incorporating customer centricity within an organization does not follow a uniform, predefined process. Rather, it manifests through a variety of approaches tailored to the specific needs and strategic orientations of each company. While some organizations might opt for a centralized, top-down approach to ensure uniformity and alignment with broader business goals, others may embrace a decentralized strategy, prioritizing agility and responsiveness to rapidly changing customer demands. This diversity in approaches underscores that achieving true customer centricity extends beyond mere technological implementations or process adjustments; it fundamentally revolves around adopting a customer-centric mindset. The success of integrating customer centricity depends not only on aligning technology and processes but also on embracing it within the cultural and strategic layers of the organization. If only certain areas of the business adopt customer-centric principles while others lag behind, the initiative may only be partially successful, highlighting the need for a holistic incorporation of customer-centric values across all facets of the business.

5.4 Transforming Business Processes: From Operational Efficiency to Customer Centricity

Our fourth research question explored the principles that guide the development of customer-centric digital processes. Insights from our interviews suggest that there are principles that could be adapted to foster a customer-centric approach in process redesign. These principles improve data-driven customer interaction, empower customer independence, foster customer awareness, and enhance loyalty and retention. Principles improving data-driven customer interaction focuses on using customer data to enhance digital interactions, including automated data collection, prototype/ product testing, and feedback & review retrieval. Principles empowering customer independence emphasizes giving customers control over their digital experiences through mobile apps and digital accounts that allow self-sufficiency in e-business and customization of products. Principles fostering customer awareness involves engaging customers through informative and personalized content marketing efforts and frictionless onboarding/training. Principles enhancing customer loyalty and retention focuses on building connections through loyalty programs and efficient digital customer service/support. All principles align with different characteristics of the 3 perspectives of customer centricity discussed in RQ1.

In comparison, existing literature primarily addresses redesigning business processes for efficiency gains, with methodologies that are heavy on analytical, transactional, and inward-looking [27]. These approaches aim predominantly to enhance the efficiency of internal processes [27]. However, while some methodologies such as design-led innovation, the process model canvas, and NESTT adopt a more outward-looking perspective, they are generally geared towards creating new products or services rather than specifically redesigning processes to enhance customer centricity [27]. To shift the process redesign from purely internal efficiency gains to enhancing customer centricity, specific practices such as moving controls towards customers, reducing contact points, and integrating business processes with those of customers or suppliers are discussed [23], [26]. Thus, current literature mostly overlooks how process redesign can be used specifically to make processes more customer-centric. In summary, by integrating the identified principles into process redesign efforts, businesses can effectively shift focus from solely internal efficiency gains towards fostering a customer-centric approach, thereby creating a seamless, efficient, and satisfying digital customer journey, fostering long-term relationships and enhanced business performance by aligning both customer-focused and operational strategies.

5.5 Customer Centric Features for Optimal Business Process Redesign

In the fifth research question, we aimed to identify the key features that contribute to customer centricity in digital processes. RQ4 concentrated on principles that assist in redesigning business processes by applying broad guidelines across the entire process rather than targeting specific parts. In contrast, features are more focused, addressing particular segments of the process for

improvement. Our interviews revealed two types of customer-centric features in digital business processes: functional and non-functional. Functional features include personalized recommendations, add-ons, accessibility options, and geolocation-based language support, which enhance the user experience. Self-service portals, advanced search filters, and multiple payment options improve convenience. Features like instant notifications, chatbots, customer engagement tools, community platforms, and gamification boost interaction and engagement. Overall functional features refer to the capabilities, and actions that a digital business process can perform. Non-functional features focus on performance attributes like availability, accessibility, understandability, seamless journeys, usability, time efficiency, cost-effectiveness, cross-platform consistency, and transparency. These features collectively aim to make digital processes more responsive, accessible, and aligned with customer needs, thereby improving overall customer centricity.

Most of the redesign heuristics in existing literature are efficiency centered [26]. They are geared towards streamlining operations, reducing redundancies, and increasing the overall efficiency [26]. Some of the features identified from our interviews align with several general redesign heuristics, such as control relocation, contact reduction, integration, and task automation [26]. However, the emergence of unique features not covered by these existing general heuristics suggests an opportunity to expand the set of redesign principles. This extension would specifically incorporate customer-centric heuristics, further tailoring the redesign approach to meet evolving customer demands.

Research [28] outlines specific design heuristics for customer-centric business processes that complements and overlaps the findings from our interviews. Related to functional features, personalized interaction, as a heuristic, is mirrored in the personalized recommendations from the interviews, both focus on tailoring interactions based on individual customer data, preferences, and behaviors. Customer self-service corresponds with the self-service portals and accounts that empower customers to manage their interactions independently. Customer support as a heuristic is exemplified by the use of chatbots and live chats to provide immediate assistance and information to users. The heuristic of customer feedback aligns with the customer engagement features identified. Both emphasize the importance of gathering and acting on customer feedback to continuously improve service quality and customer satisfaction. Lastly, customer community corresponds with the community engagement features from the interviews. It involves creating platforms where customers can interact, share insights, and collaborate. As for the non functional features, temporal flexibility as a heuristic ensures that services are available at all times, which directly aligns with the availability. Locational flexibility focuses on making services accessible regardless of the user's location. This matches the accessibility feature from our study. The consistent brand experience heuristic advocates for seamless experiences across various platforms, which corresponds with the seamless product journey identified in the interviews. Moreover, customer-friendly control flow emphasizes the need for

systems to be easy to understand and navigate correlating with the understandability and usability features. Economic efficiency connects directly with the cost-effectiveness feature, stressing the importance of delivering high value at lower costs. First-contact problem resolution complements the time efficiency feature from the interviews, highlighting the efficiency of resolving customer issues swiftly and effectively at the first point of contact. This article comprehensively covers almost all non-functional features and some of the functional features too, aligning closely with our interview findings. In general, both functional and non-functional customer-centric features within digital business processes can collectively enhance user experience while contributing to the operational effectiveness. These findings not only confirm the established redesign heuristics but also reveal gaps that offer potential for developing new customer-centric heuristics, thus fostering a more tailored and responsive digital business environment.

5.6 Digital Technologies at the Heart of Customer Centric Digital Process Redesign

Our sixth research question was about digital technologies used in designing and developing customer centric digital business processes. According to the interviews, digital technologies either enable customer centricity in the whole digital business processes or are applicable to a part of it. Technologies like Machine Learning (ML) and Customer Relationship Management (CRM) systems enhance customer interactions across entire customer journeys, offering personalized recommendations and efficient data management. Experience management software and security technologies like blockchain ensure secure and personalized customer experiences. Other technologies, such as Search Engine Optimization (SEO) and Cloud Computing, improve findability and operational efficiency. Meanwhile, APIs facilitate third-party integrations and real-time data exchanges. Specific technologies, like Artificial Intelligence (AI), Augmented Reality (AR), and the Internet of Things (IoT), target particular aspects of customer interactions, optimizing specific points within broader digital processes. These technologies collectively enhance accessibility, efficiency, and customer engagement, reinforcing a customer-centric approach in digital business environments. By integrating digital technologies, businesses can achieve a balanced approach that not only optimizes processes but also elevates the customer experience.

Research [35] introduces an approach where digital technologies are considered with the capabilities they offer for redesigning processes. This study highlight digitalization to convert traditional paper-based processes into digital formats; communication technologies that streamline workflows and centralize data to improve efficiency across departments; analytics that enable data collection and analysis, thus supporting decision-making and enhancing transparency; connectivity, which facilitates improved access to systems and efficient data sharing; and digital twin technology that digitally replicates physical processes, increasing both efficiency and operational insights [35]. While the emphasis remains predominantly on

operational improvements, some capabilities such as communication, analytics and connectivity are applicable to customer centric process improvement as well. Ultimately, this strategic incorporation of digital solutions empowers companies to create more responsive, efficient, and personalized digital ecosystems that align closely with customer needs.

5.7 Pathways of Digital Business Process Redesign and Improvement

In the seventh research question, we aimed to understand how digital technologies enable design and development of customer centric digital business processes. We identified four key transformations on how digital technologies facilitate the redesign and improvement of customer-centric digital business processes: automation, enhanced interaction, segmentation & targeting, and predictive analysis.

According to our interviews, automation streamlines operations, enhancing efficiency and customer satisfaction, as exemplified by an e-commerce meal service improving their cancellation process. The article [57] emphasizes how automation can speed up the process of redesigning business operations, thereby reducing the reliance on human creativity which is often time-consuming and labor-intensive. It implies that more efficient and faster redesign processes, enabled by automation, can lead to significant improvements in overall business operations, thereby enhancing customer satisfaction [57]. Moreover, it acknowledges that automated systems ensure consistency in executing tasks, which helps in reducing variability and errors, crucial for maintaining reliability and trust in business processes [57].

Predictive analysis, as discussed in interviews, enables businesses to anticipate customer needs and behaviors, ensure timely and relevant responses and identify at-risk customers . The role of predictive analytics in enabling businesses to detect patterns and trends, anticipate events, and understand changes in customer behavior, enabling staff to take actions that lead to desired business outcomes was discussed in study [54]. Moreover, the article mentions that predictive analytics is being operationalized more frequently as part of business processes and is used to improve functions like marketing and sales, which in turn boosts sales, reduces churn rates, and enhances operational efficiency contributing to increased revenue and operational effectiveness [54].

Furthermore, interviews revealed that enhanced interactions, such as virtual furniture visualization apps, create engaging customer experiences. Segmentation and targeting allow for tailored marketing efforts, making interactions more relevant to specific customer groups. To summarize, digital technologies have a transformative impact in shaping customer-centric digital business processes. However, existing research has not extensively explored these topics, suggesting ample opportunity for further investigation to understand these technologies to their full potential in various business contexts.

5.8 Measuring Success: Finding the Right Metrics for Customer Centric Digital Processes

The final research question focused on metrics to measure the impact and effectiveness of customer-centric digital business process redesign efforts. Key metrics for measuring customer centricity in digital business processes, as identified in interviews, can be grouped into four categories: customer loyalty, efficiency, business performance & growth, and quality. If the process is customer centric, customers will remain loyal and regularly come back and express their satisfaction. This is measured with metrics such as NPS (loyalty) and CSAT (satisfaction). A customer-centric approach to business processes can significantly enhance business performance, ultimately fostering growth of customer base. This impact can be assessed through key metrics such as conversion rate, churn rate, and retention rate. Efficiency in business processes saves time for customers, thus enhancing customer centricity and metrics such as Average Wait Time (AWT) and On-Time In-Full (OTIF) are used in measuring this operational efficiency. Finally metrics concerning quality such as process evaluations demonstrate a dedication of companies to continuous improvement and meeting customer standards, highlighting the customer-centric nature of the business processes.

The applications of proposed metrics are fully aligned with existing research. This underscores their validity, yet there remains a significant challenge in assessing whether a process is truly customer-centric. Traditionally, metrics are oriented towards products and services, and high performance in these metrics is often taken as an indirect indicator of efficient processes. However, this does not necessarily reflect true customer centricity. There appears to be a gap in the availability of metrics specifically designed to measure the customer centricity of processes. This raises a critical question: How can improvements be identified and implemented in processes to enhance their customer centricity? Moreover, understanding the direct relationship between modifying a specific part of the process and its impact on a metric remains a largely unexplored area. This lack of clarity and direct measurement tools suggests a ripe opportunity for further research and discussion in this field.

5.9 Limitations of the Study

Qualitative research inherently comes with certain limitations that apply to this research as well. One limitation is selection bias, where the chosen experts may not fully represent the diverse landscape of digital business processes. This makes it challenging to generalize the findings beyond the sampled experts [61], a common issue in qualitative, interview-based research methodologies. Findings from interviews with domain experts cannot be assumed to apply universally to all digital business processes. Context-specific factors, industry variations, and organizational idiosyncrasies may limit the transferability of our results. To mitigate this limitation, we aimed to enhance the diversity of our sample by interviewing 23 domain experts from 15 different industries, encompassing both B2C and B2B digital business processes. While

this approach cannot entirely eliminate the limitation, it does help to provide a broader perspective and reduce the potential bias in our findings.

Another limitation is internal validity that refers to the extent to which a study can establish causal relationships between variables [62]. While interviews provide rich insights, they may not fully address causality or control for confounding variables. Similarly, reliability is also a limitation. Reliability concerns the consistency and stability of findings depending upon the researcher [62]. Although efforts were made to enhance reliability such as using standardized questions, some variability is inevitable. In this study, these limitations were mitigated to some extent by following a structured interview protocol, asking follow-up questions, recording the interviews, and transcribing the content for transparency [62].

Another limitation is interviewer bias, which can occur during qualitative interviews when the interviewer's behavior, preconceptions, or unintentional steering of discussions influence participant responses [63]. Also respondent bias arises from the respondents' attitudes toward the study, ranging from suspicion causing them to withhold information, to a desire to please the researcher, leading them to provide answers they think are expected [63]. Additionally participant responses in interviews can vary due to factors like memory recall, mood, or context. Although efforts were made to minimize this bias through standardized interview protocols, some degree of subjectivity remains.

6. Conclusion

In this research, we aimed to gain a deeper understanding of how companies incorporate customer centricity into their digital business processes. To achieve this objective, we wanted to understand what perspectives defined customer centricity, why companies prioritize it, its key principles and features, which digital technologies support it, how digital business processes can be redesigned for customer centricity, and how to measure its effectiveness. In this study, we focused specifically on digital business processes.

To explore the research objectives, we conducted semi-structured qualitative interviews with 23 industry experts across 15 industries that were recorded and later transcribed for thematic analysis. The analysis involved coding the transcripts based on predetermined themes and sub themes to ultimately understand redesign and improvement of customer-centric digital business processes in both B2B and B2C contexts.

Results indicate that customer centricity consists of customer perspective and company perspective and that these two perspectives should be managed together for a digital business process to be truly customer-centric. Companies pursue customer centricity due to reasons originating from external sources such as market dynamics & customer experience and internal sources such as strategic positioning & profitability. In response, companies begin by identifying needs through user experience and market research, then take actions such as engaging directly with customers, and finally make decisions employing methods that range from fully data-driven to proactive approaches. In making digital business processes customer centric, companies follow a set of process-wide principles such as automated data collection, self-sufficient e-business, availability of digital customer support, and feedback & review retrieval/ customer engagement. Specifically, features such as personalized recommendations, advanced search & filtering and chatbots, enabled by digital technologies and tools such as AI, ML, AR/VR and CRM make digital business processes customer centric. Companies redesign digital business processes through automation, enhanced interactions, targeting & segmentation and predictive analysis and measure the success of their efforts by assessing aspects such as business performance & growth and customer loyalty using metrics such as NPS, CSAT and churn/retention rate.

However, this research has limitations affecting its reliability and validity. One issue arises from discrepancies between intended responses and interpretations, which was mitigated by using follow-up questions and reviewing recordings for clarity. Additionally, the interviewees may not fully represent the broader specialist community. Despite in-depth discussions, the responses were limited to the participants' specific experiences and domains potentially omitting critical aspects and affecting generalizability of the results. To address this, a diverse sample of 23 experts from 15 industries was used. Potential oversights in thematic analysis were minimized through an iterative approach and consultations with the research supervisor.

While customer centricity is highly relevant, there has been limited research on redesign of existing business processes and considerations for new ones, indicating an area for future work. Our research identified general outlines and features of customer-centric digital business processes. However, to identify where a digital process can be improved and how to improve it to become more customer centric, more specific redesign heuristics would be needed. Hence a possible direction for future research is developing or evaluating a set of heuristics for optimizing digital business processes with customer centricity in mind.

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Appendices

I. Interview Guide

1. How would you describe or define a customer-centric digital business process?
2. Can you provide examples of digital business processes that can be recognized as customer-centric?
3. What factors or motivations drive enhancing customer centricity, specifically in digital business processes?
4. Can you provide examples of specific benefits or advantages of prioritizing customer centricity in digital business processes?
5. What makes a digital business process customer-centric?
6. Do you have any examples of how features are incorporated into the processes or products?
7. Can you provide examples of digital technologies that enable or can be used to enhance customer centricity in digital business processes?
8. How do you use the (above) digital technologies to make the existing business processes more customer-centric? Can you give examples?
9. Can you share insights into the decision-making process behind selecting and adopting specific digital technologies to support customer-centric initiatives?
10. How can you measure the success of customer-centric initiatives in business processes?
11. Can you share examples where adjustments were made to the business processes based on these measurements and evaluations?

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