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BSc in Industrial Engineering and Management

THE KEY MARKET DRIVERS USED IN THE DEVELOPMENT OF DIGITAL SERVICES

A CASE STUDY IN THE REAL ESTATE SECTOR

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” *“In Today’s era of volatility, there is no other way but
to re-invent.”*

— **Jeff Bezos**

ABSTRACT

To thrive in today's ever-evolving world of technology, businesses must embrace digital solutions in their products and services. This is essential to meet customer expectations and succeed in the market. Digital innovation is crucial to improving operations across all pre- and post-transaction activities throughout the customer journey. Some services, such as healthcare and real estate, are typically non-digital, which can result in inefficiencies, slower access to information and missed opportunities to improve customer experience.

In this context, there was a need to carry out a study to discover how to identify the key market drivers that can be used in the development of digital services and how can organizations respond to evolving customer needs in this dynamic digital services landscape.

Extensive research was conducted on current business practices, whether digital or not, by reviewing existing literature. To confirm the findings, a case study was carried out in a virtual real estate firm.

The recommendations presented in this research are founded on theoretical and case study evidence. It is crucial to identify the right customer needs as the first step in developing digital services, as most startups fail due to a lack of market demand. Several factors, including innovative technology, political funding, crises, and selecting countries with high digital maturity levels, can boost the success of digital services. These recommendations prioritize an awareness of external circumstances and can lead to successful digital service innovation.

Keywords: Digital Services, Digital Transformation, Market Drivers, Real Estate, Sustainability

RESUMO

Atualmente, o mundo tecnológico encontra-se em constante evolução e, para alcançar o sucesso, as empresas devem adotar soluções digitais nos seus produtos e serviços. Apenas com esta estratégia, é possível corresponder às expectativas dos clientes e suceder no mercado. A inovação digital é crucial para melhorar operações tanto antes como depois das transações que ocorrem ao longo da *Customer Journey*. Alguns serviços, como a saúde e o imobiliário, são tipicamente não digitais, o que pode resultar em ineficiências, acesso lento a informação e oportunidades perdidas de melhoria da experiência do cliente.

Neste contexto, surgiu a necessidade de desenvolver um estudo com os propósitos de descobrir quais os principais *drivers* de mercado que podem ser usados durante o desenvolvimento de serviços e como é que as organizações podem responder à evolução das necessidades dos clientes neste sistema dinâmico de serviços digitais.

Foi conduzida uma extensa investigação, com o propósito de identificar as práticas correntes de negócio, tanto digitais como não digitais. De forma a poder validar os resultados, foi realizado um estudo de caso numa imobiliária virtual.

As recomendações presentes neste estudo baseiam-se tanto nos conceitos teóricos, como nos resultados do caso de estudo. Como primeiro passo para o desenvolvimento de um serviço digital, é crucial identificar as necessidades dos clientes, uma vez que grande parte das startups falham devido à falta de necessidade do produto no mercado. Vários fatores, como tecnologias inovadoras, fundos governamentais, crises e a seleção de países com elevada maturidade digital, podem alavancar o sucesso de um serviço digital. Estas recomendações priorizam a consciencialização do mundo exterior e levam a inovação de serviços digitais bem sucedida.

Palavras-chave: Serviços Digitais, Transformação Digital, *Drivers* de Mercado, Imobiliário, Sustentabilidade

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ACRONYMS

AI	Artificial Intelligence
BCG	Boston Consulting Group
CMMI	Capacity Maturity Model Integration
COVID-19	CoronaVirus Disease of 2019
CX	Customer Experience
CXM	Customer Experience Management
DAI	Digital Adoption Index
DESI	Digital Economy and Society Index
IDC	International Data Corporation
IoT	Internet of Things
KPI	Key Performance Indicator
MIT CISR	Massachusetts Institute of Technology Center for Information Systems Research
RD	Research and Development
RPM	Remote Patient Monitoring
RQ	Research Questions
TCE	Total Customer Experience

INTRODUCTION

This is the introductory chapter that encompasses the dissertation’s motivation, study objectives and methodology, and the structure of the dissertation.

1.1 Motivation and Problem Statement

“It is not the strongest or the most intelligent who will survive but those who can best manage change.”

Charles Darwin

The ever-evolving technological landscape has significantly impacted customer expectations, necessitating businesses to adapt their market offerings. Merely providing high-quality physical products is insufficient for success in today’s landscape. Digital solutions, be it products or services, have become essential throughout the customer journey. Embracing digital innovation has become crucial for any company to revolutionize their operations from pre-transaction activities to post-transaction efforts in the current dynamic business environment (Leimeister et al., 2014).

Innovation is a critical driver of the success of every business, with the Research and Development Research and Development (RD) sector facing significant challenges to remain relevant. Innovation has become essential for sustained success due to the rapid pace of technological evolution, changing consumer preferences, and dynamic market landscapes. A company’s ability to incorporate innovation into its RD endeavours is essential to navigating uncertainties, seizing emerging opportunities, and maintaining a competitive edge (Kitsios & Kamariotou, 2021).

Innovation and digital services are mutually reinforcing, with digital services emerging from innovative thinking and technological progress, allowing organizations to deliver novel offerings to customers. These digital services serve as a foundation for ongoing innovation, enabling organizations to collect user feedback, optimize their services, and harness emerging technologies to enhance the customer experience. Innovation remains the cornerstone of the digital services realm, driving differentiation, competitive advantage, and adaptation to the ever-evolving digital landscape. By cultivating a culture of

innovation, organizations can position themselves at the forefront of digital transformation, ready to capitalize on emerging market opportunities (Kitsios & Kamariotou, 2021).

Innovation is intimately intertwined with accurately defining customer needs and the evolution of digital services. In today's dynamic business environment, innovation plays a pivotal role in effectively identifying, understanding, and meeting customer needs. By harnessing the power of digital technologies, companies can gather vast amounts of data and insights about customer behaviour and preferences, allowing them to refine their offerings and tailor digital services to meet those needs with precision (Tueanrat et al., 2021).

Digital services are an excellent example of how innovation and customer needs intersect. Through continuous innovation, organizations can develop digital services that not only address existing customer needs but also anticipate emerging ones. By staying attuned to customer feedback and market trends, companies can evolve their digital service offerings in real-time, ensuring they remain relevant and competitive. The ability to correctly define and adapt to customer needs is crucial in the digital services realm, as it drives the development of user-centric solutions that provide a seamless and valuable experience, ultimately fostering customer loyalty and business growth. In essence, innovation in digital services hinges on the accurate interpretation and fulfilment of customer needs in a rapidly evolving technological landscape (Teixeira et al., 2012).

From 2015 to 2021, digital services underwent a transformative period. E-commerce has become an essential part of daily life, providing consumers with unprecedented convenience and access to a wide range of products. Streaming services redefined the entertainment industry, with various platforms competing for viewers' attention. The CoronaVirus Disease of 2019 (COVID-19) pandemic acted as a catalyst for digital transformation, making telehealth mainstream and speeding up the adoption of remote work tools. The financial sector underwent a fintech revolution, with digital payment methods and cryptocurrencies becoming more widely accepted. At the same time, the proliferation of smart devices and the Internet of Things brought about the age of the connected home (Wahyuningsih et al., 2021).

During this time, personalization through artificial intelligence became a driving force behind digital services, enhancing user experiences and content recommendations. However, this evolution also raised concerns about cybersecurity and data privacy (Wirtz et al., 2023).

This study was initiated by the researcher's curiosity to explore the key drivers behind the rapid expansion of digital services and to conduct a thorough examination of their growth in non-traditional sectors. Notably, the motivation for undertaking this study was fueled by the realization that the influence of digital services extended beyond traditional sectors, penetrating into unconventional domains. This transformative trend was altering the fundamental operations of organizations, their interactions with customers, and their adoption of innovative technologies. By closely examining the emergence and evolution of digital services in these previously uncharted territories, the study sought to provide

fresh insights and a deeper comprehension of the multifaceted digital revolution that has been reshaping the modern business landscape.

1.2 Study Objectives

This thesis centres on the pivotal market drivers employed in developing digital services while also addressing the obstacles developers encounter throughout this intricate process. It sets out to investigate and provide insights into two primary Research Questions (RQ), thus forming the foundation of its research framework:

RQ1: "How to identify the key market drivers that could be used in the development of digital services, more specifically in typically non-digital services?"

RQ2: "How can organizations respond to evolving customer needs in the dynamic digital services landscape?"

The zenith of this research undertaking will culminate in the delivery of an extensive and finely crafted compendium of recommendations, meticulously honed to serve as a guiding beacon for organizations embarking on the profound journey of digitalizing their services. These recommendations, born out of a rigorous and thorough analytical process, represent the synthesis of wisdom gleaned from not only well-established theoretical frameworks but also from the invaluable empirical insights harvested during an in-depth and immersive case study.

At the core of these recommendations lies a dedication to practicality and applicability. Each recommendation is meticulously forged, drawing upon the rich tapestry of theories that have laid the groundwork for understanding the nuances of service digitalization. Furthermore, these recommendations are bolstered by the real-world experiences and lessons extracted from the case study, injecting them with a practical dimension that resonates deeply with the complexities and realities of contemporary business environments.

The goal of this thesis is to contribute to the growing body of knowledge surrounding the digitalization of services. It aims to uncover the key factors driving this transformation and provide practical strategies for organizations to adapt and thrive in the ever-changing digital landscape.

This research serves as a bridge between theory and practice, connecting the insights gained from theoretical foundations to real-world applications. By doing so, it offers valuable insights that can inform decision-making and strategic planning in the digital era. Overall, this thesis provides a strong foundation for organizations to become more agile and responsive to the demands of digital services.

1.3 Study Methodology

This research project was conducted in different stages.

The initial phase of this research endeavour was a meticulous process, commencing with the critical task of identifying the precise area of focus within the broader domain of

study. This critical step involved a thorough exploration of existing literature and conducting an exhaustive review of scholarly works, research papers, and relevant publications. The purpose of this extensive literature review was twofold: firstly, to gain a profound understanding of the foundational knowledge and prior research contributions in the chosen field, and secondly, to pinpoint specific gaps or areas where further investigation and improvement were warranted.

The comprehensive literature review, spanning both historical and contemporary perspectives, served as the cornerstone of this research endeavour. It not only allowed for a deep immersion into the existing body of knowledge but also facilitated the identification of emerging trends, theoretical frameworks, and best practices within the subject matter. This critical examination enabled the research team to ascertain the applicability and relevance of the insights gleaned from the literature to the specific context of the forthcoming case study.

The second phase of this research endeavour represented a pivotal juncture in the investigative process. Having undertaken a comprehensive literature review to amass a wealth of insights, the subsequent step involved a rigorous analytical exercise aimed at distilling and amalgamating the multitude of ideas, concepts, and findings unearthed during the initial exploration. This analytical journey was driven by the overarching objective of not only comprehending the existing knowledge landscape but also harnessing it as a foundation for the formulation of practical recommendations and the development of an innovative plan of action.

This analytical process unfolded through a systematic approach, wherein the various threads of thought and research perspectives identified in the literature were meticulously woven together. This synthesis of ideas served to create a cohesive and holistic understanding of the subject matter, transcending the boundaries of individual insights and converging into a comprehensive body of knowledge. It entailed not only recognizing the interconnections and synergies among the discovered ideas but also discerning potential areas of contention or divergence that warranted further scrutiny.

The ultimate goal of this analytical phase was to provide actionable recommendations informed by the amalgamation of the rich tapestry of ideas and insights. These recommendations were designed to serve as a practical guide, offering innovative strategies and approaches that could be applied in real-world contexts. Additionally, this phase also laid the groundwork for the development of a new plan of action, one that was fortified by synthesized knowledge and tailored to address the specific challenges and opportunities encountered in the chosen area of inquiry.

Following the successful completion of the initial two preparatory phases, the research journey advanced to a more concrete and applied stage. With a solid foundation established through the extensive literature review, the formulation of recommendations and a new plan of action, the investigation delved into a focused analysis of non-digital services. This phase was underpinned by the ambition to validate and substantiate the previously identified findings and insights in a real-world context.

The central thrust of this stage entailed the selection of a suitable company, representative of the non-digital services sector, to serve as the subject of an in-depth case study. The careful curation of this case study subject was paramount, as it needed to align closely with the research objectives and provide a practical lens through which to examine the applicability of the previously gleaned insights. The chosen company would become the living embodiment of the research's theoretical foundations, allowing for a nuanced exploration of the dynamics at play within the realm of non-digital services.

With the company identified, the research team embarked on a comprehensive analysis, scrutinizing the company's operations, strategies, and interactions within the context of non-digital services. A critical aspect of this analysis was the conduct of an in-depth interview with a key employee of the chosen company. This interview served as a valuable means of gathering firsthand information, perspectives, and data that could be compared and contrasted with the initial theoretical underpinnings.

Subsequent to the interview, a rigorous comparative analysis was undertaken. The insights and data gleaned from the interview were meticulously juxtaposed with the previously established theoretical statements and recommendations. This process allowed for a comprehensive validation exercise, revealing the extent to which the theoretical constructs aligned with the real-world practices and challenges encountered by the selected company.

1.4 Structure of the dissertation

This dissertation is divided into 7 chapters.

The inaugural chapter encompasses an introductory section that highlights the problem in question and outlines the primary objectives of this thesis.

The second chapter, titled "Digital Products and Services," is divided into 4 sub-chapters. A comprehensive literature review is conducted in this chapter, elucidating the definitions of the key concepts employed in this dissertation.

"Digital Transition Drivers" is the title of the third chapter, which explores the key drivers used in developing digital services.

The fourth chapter, titled "Case Study", focuses on the company analyzed and its business model.

The fifth chapter presents recommendations for the digitalization of services based on the findings and insights from this dissertation and the case study.

Finally, in the final chapter, the primary conclusions of this study are presented, accompanied by recommendations for prospective avenues of research.

DIGITAL PRODUCTS AND SERVICES

The aim of this chapter is to explain important terms and concepts related to digital products, services, servitization, and the distinct stages of digital transformation. Furthermore, some illustrative examples will be provided for clarification.

2.1 Digital Products

In business and commerce, a product refers to a physical or non-physical item created, designed, or manufactured to meet consumers' specific needs or desires. It can range from physical objects like electronics and clothing to digital or virtual entities. The creation of a product involves various stages, including design, development, production, and distribution, intending to deliver value and utility to its intended audience (Cahen & Borini, 2020).

Physical products, such as appliances, vehicles, and consumable goods, are tangible entities that can be seen, touched, or interacted with. On the other hand, non-physical products or services are characterized by their intangible nature and may include experiences, expertise, or access to information (Cahen & Borini, 2020).

The main purpose of a product is to fulfil a certain function or provide a specific benefit to consumers, such as addressing basic necessities or offering entertainment and convenience. The success of a product depends on factors like its quality, features, pricing, branding, and how well it aligns with the needs and preferences of its target audience. The relationship between a product and its consumers is crucial in shaping consumer behaviour, market trends, and the overall dynamics of supply and demand (Cahen & Borini, 2020).

A digital product refers to a product delivered and consumed mainly in its digital form, as opposed to a physical product that can be touched or held. Various digital products include software, mobile apps, eBooks, videos, music, online courses, webinars, podcasts, and games (Hui & Chau, 2002).

Digital products are usually distributed through digital channels like the Internet, digital marketplaces, or mobile networks. Their primary aim is to provide value to the

user, such as entertainment, education, productivity, communication, or problem-solving. Digital products can be created by individuals, small businesses, or large corporations and are increasingly popular due to their low production costs and ease of distribution (Hui & Chau, 2002).

The introduction of digital products has revolutionized how we interact with technology and transformed various aspects of our lives profoundly. These intangible creations, including software applications and multimedia content, have become integral to modern society. Digital products have streamlined efficiency and opened new avenues for creativity and entrepreneurship (Lyytinen et al., 2016).

Digital products have unique characteristics such as scalability and accessibility. Unlike physical goods, digital products can be easily replicated and distributed to a global audience at a minimal cost. This has democratized information and entertainment, allowing people from diverse backgrounds to access educational materials, entertainment content, and innovative tools (Hui & Chau, 2002).

The software industry has experienced significant growth due to the development of digital products, leading to a plethora of software applications that cater to different needs. These products have transformed how we work, learn, and play, from productivity tools that optimize workflow to entertainment platforms that deliver immersive experiences. Additionally, digital products receive continuous updates and enhancements, ensuring that they remain relevant and practical (Lyytinen et al., 2016).

E-commerce has undergone a significant transformation with the rise of digital products. Online marketplaces offer many downloadable products, ranging from e-books and digital art to software plugins and online courses. This shift has empowered creators and entrepreneurs to monetize their skills and knowledge directly, bypassing traditional distribution channels (Hui & Chau, 2002).

Digital products have also impacted the entertainment industry by enabling the creation and distribution of music, movies, and games in digital formats. Streaming platforms have become the norm, allowing users to access a vast content library on demand. This shift has changed how we consume entertainment and prompted creators to experiment with new formats and interactive experiences (Hui & Chau, 2002).

The concept of ownership has evolved in the digital age, as digital products often blur the lines between ownership and access. With the prevalence of subscription models, users can access various digital products without outright owning them. This shift has sparked discussions about the implications for intellectual property rights and the sustainability of creators (Lyytinen et al., 2016).

The development and distribution of digital products have paved the way for innovative business models. Freemium models, for example, offer basic functionalities for free while charging for premium features. This strategy has been widely adopted in the software and app industry, allowing companies to attract a more extensive user base and convert a portion of them into paying customers (Hui & Chau, 2002).

In Figures 2.1 and 2.2, there are examples of digital products, including software applications like Photoshop and WhatsApp, and products like digital albums and wallpapers.



(a) Photoshop

(b) WhatsApp

Figure 2.1: Software Applications



(a) Digital Album

(b) Wallpaper

Figure 2.2: Digital Products

2.2 Digital Services

A service is a process-driven activity that depends on multiple actors and systems cooperating to create, deliver, and improve the experience (Tuunanen et al., 2019).

In the world of business and commerce, a service refers to a non-physical offering provided by one party to another in exchange for something of value. Services are intangible and often involve actions, expertise, or efforts to fulfil specific needs or desires of the recipient. These can range from professional assistance and advice to tasks that enhance convenience, well-being, or enjoyment (Tuunanen et al., 2019).

At the heart of every service is applying specialized knowledge, skills, or resources to address a particular requirement or challenge the recipient faces. This could include consultation, maintenance, repair, education, entertainment, transportation, etc. The essence of a service lies in performing an action that benefits the recipient in some way.

The delivery of a service is often characterized by the interaction between the provider and the recipient, and effective communication, expertise, and the ability to meet specific needs are essential. Service transactions can be one-time interactions or ongoing relationships, and the quality of service often determines customer satisfaction and loyalty. The intangible nature of services requires clear communication and understanding between the parties involved to ensure expectations are met, and value is exchanged (Soto Setzke et al., 2023).

In today's economy, digital services are crucial in transforming how people and businesses interact and collaborate. These services, which rely on technology and the Internet, offer many benefits, including convenience, efficiency, and global accessibility (Laudien & Pesch, 2019).

One of the key advantages of digital services is that they can be accessed from anywhere in the world, as long as there is an internet connection. This has revolutionized industries such as e-commerce, online education, and remote work, allowing businesses to reach a global market and providing individuals with access to resources that were previously out of reach (Saunila et al., 2017).

Digital services encompass various offerings, from online banking and telemedicine to e-learning platforms and virtual reality experiences. This has made essential resources accessible to people from all walks of life, including financial advice, medical consultations, educational materials, and entertainment. Many digital service providers also offer subscription-based models that create ongoing value and foster long-term customer relationships (Asen, 2021).

The rise of digital services has forced traditional businesses to adapt and innovate in response to changing consumer preferences. Many industries have embraced hybrid models that combine physical and digital components to create better customer experiences. For example, retail companies have integrated online and offline shopping channels to provide a seamless shopping experience (Jochen Wulf et al., 2017).

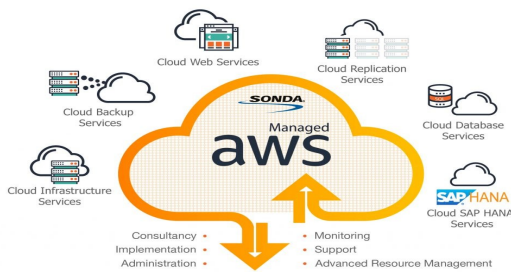
The entertainment world has seen a shift towards digital services, resulting in a decline in the use of physical media like CDs and DVDs. People now prefer streaming platforms, which provide easy access to a vast collection of movies, music, and TV shows. This shift in preference has also paved the way for content creators to showcase their talents and reach a global audience through platforms like YouTube, TikTok, and podcasts (Schallmo & Tidd, 2021).

Digital services have also played a significant role in the gig economy, allowing freelancers and independent contractors to offer their services remotely. Platforms like Upwork, Freelancer, and TaskRabbit connect service providers with clients, offering flexible work arrangements and varied sources of income (Laudien & Pesch, 2019).

However, the digital nature of these services raises concerns about privacy, cybersecurity, and data protection. As users share sensitive information and engage in online transactions, ensuring the security of personal and financial data becomes crucial. Service providers must, therefore, implement robust cybersecurity measures to safeguard user

information from potential threats (Schallmo & Tidd, 2021).

In Figures 2.3, 2.4, 2.5 and 2.6 there are examples of digital services, cloud computing, online marketing, online education and e-learning and streaming services.



(a) Amazon Web Services



(b) Google Cloud

Figure 2.3: Cloud Computing Services



(a) Search Engine Optimization



(b) Digital Marketing

Figure 2.4: Online Advertising and Marketing services



(a) Superprof



(b) Coursera

Figure 2.5: Online education and e-learning services



Figure 2.6: Streaming Services

2.2.1 Servitization

Servitization is a new business trend that involves companies going beyond the traditional model of solely selling products and instead offering a range of value-added services throughout the entire lifecycle of their offerings. This shift in strategy allows businesses to better meet customer demands and build long-lasting relationships while generating additional revenue streams through specialized services like maintenance, consulting, customization, and outcome-oriented solutions. By embracing servitization, companies can diversify their revenue sources, improve their competitive advantage, and adapt to changing market dynamics for sustainable growth (Kitsios & Kamariotou, 2021).

Previously, companies would manufacture and sell products with revenue primarily from those sales. However, servitization focuses on providing value-added services alongside the core products, such as maintenance, repair, training, customization, consulting, software integration, and other forms of support that enhance the customer's experience and help them achieve their desired outcomes. These services are derived from the product itself and the outcomes that result from using the products. This approach fosters lasting customer relationships, presents opportunities for differentiation, and moves the company up the value chain (Kitsios & Kamariotou, 2021).

Servitization can offer several benefits to both customers and companies (Saunila et al., 2017):

- Customer Value

Customers receive a comprehensive solution that caters to their individual requirements and obstacles. They don't just purchase a product; they acquire a complete package that comprises continuous assistance and knowledge.

- Revenue Diversification

Companies can create new revenue streams by offering additional services and decreasing their reliance on product sales.

- Long-Term Relationships

The servitization process can facilitate the establishment of robust and enduring relationships between businesses and their clients. By engaging in ongoing service provision, businesses can create chances for frequent interaction and valuable customer feedback.

- **Competitive Advantage**

The company was solely focused on selling individual products. One of the benefits of servitization's subscription-based service model is the predictability of income.

- **Predictable Income**

For businesses, having predictable and consistent revenue streams is crucial. Moreover, to remain competitive, companies may focus on innovation and differentiation.

- **Innovation and Differentiation**

To stand out in the market, companies may need to develop new services to go along with their products and innovate accordingly.

- **Sustainability**

The concept of servitization can help establish a more sustainable business model by emphasizing product reuse, remanufacturing, and recycling.

To successfully transition to servitization, companies must change their mindset and business processes significantly. They must understand their customer's requirements deeply, create appropriate service offerings, implement efficient service delivery systems, and often acquire new skills. With the help of digital technology and the Internet of Things (IoT), companies can remotely monitor and manage the performance of their products, which is essential to achieve successful servitization (Coreynen et al., 2020).

2.2.1.1 Digital Servitization

The concept of digital servitization is an advanced form of servitization that utilizes digital technologies and data-driven strategies to offer enhanced value to customers and businesses alike. By combining the principles of servitization with digital transformation, digital servitization provides better services, greater customization, and improved operational efficiency (Coreynen et al., 2020).

This concept's heart is a data-centric approach that relies heavily on collecting, analyzing, and utilizing data. This is achieved by integrating sensors, IoT devices, and other data sources into products to capture real-time performance data, which is then used to optimize service delivery, predict maintenance needs, and provide personalized experiences (Coreynen et al., 2020).

One key feature of digital servitization is its focus on predictive and preventive maintenance, which uses data analytics to anticipate when maintenance or repairs are

necessary. This proactive approach minimizes downtime, reduces costs, and enhances customer satisfaction by preventing unexpected disruptions (Coreynen et al., 2020).

Digital servitization also involves innovative subscription-based or usage-based service models, where companies offer access to a product's capabilities through service subscriptions. Additionally, remote monitoring and management are central to this model, allowing companies to continuously observe product performance at customer locations and facilitate real-time diagnostics, troubleshooting, and remote repairs or adjustments (Saunila et al., 2017).

Another advantage of digital servitization is its ability to provide customization and personalization by analyzing data related to customer behaviour and usage patterns, tailoring services to meet specific needs and enhancing the overall customer experience (Saunila et al., 2017).

Collaboration within ecosystems is also common in digital servitization, with companies working alongside partners, third-party service providers, software developers, and data analytics firms to deliver comprehensive solutions that maximize value (Häikiö & Koivumäki, 2016).

Digital servitization is agile, allowing companies to quickly adapt and refine their offerings in response to changing customer preferences and market dynamics. The benefits of digital servitization include heightened customer satisfaction, efficiency gains, recurring revenue, competitive edge, and sustainability (Häikiö & Koivumäki, 2016).

2.2.2 Non-Digital Services

Digital services have permeated various industries, transforming traditional non-digital sectors with innovative solutions. Several typically non-digital industries have embraced digital services to enhance customer experiences, improve operational efficiency, and unlock new opportunities. Here are a few examples (Laudien & Pesch, 2019):

- Healthcare

Digital health services, such as telemedicine and Remote Patient Monitoring (RPM), have revolutionized the healthcare industry. Patients can now access medical consultations and receive personalized care remotely, reducing the need for in-person visits. Digital platforms and mobile applications also enable individuals to track their health metrics, access medical information, and manage appointments conveniently (Shaw et al., 2018).

A successful example of a digital health service is the use of remote health monitoring systems. RPM is a revolutionary approach to healthcare that leverages digital technology to monitor patients' health conditions from a distance. This innovative method has transformed how healthcare is delivered, providing numerous benefits for patients, caregivers, and healthcare providers (Labrique et al., 2018).

At its core, RPM involves using wearable devices, mobile apps, and other digital tools to continuously collect and transmit crucial health data to healthcare professionals. These devices can track vital signs such as heart rate, blood pressure, glucose levels, and sleep patterns. This real-time data enables healthcare providers to closely monitor patients' conditions without the need for frequent in-person visits, enhancing the efficiency of care delivery (Shaw et al., 2018).

One of the critical advantages of RPM is its ability to empower patients to take an active role in managing their own health. By regularly monitoring their vital signs and health metrics, patients can gain insights into their conditions and make informed decisions about their lifestyles and treatment plans. This leads to increased patient engagement, adherence to treatment regimens, and greater control over their well-being (Ricciardi et al., 2019).

RPM offers a lifeline of support for patients with chronic conditions. It enables early detection of potential health issues, allowing healthcare providers to intervene promptly and prevent complications. This proactive approach can significantly reduce hospitalizations and emergency room visits, improving patient outcomes and quality of life (Ricciardi et al., 2019).

Furthermore, RPM is especially valuable when patients live in rural or underserved areas with limited access to healthcare facilities. It bridges geographical gaps, ensuring patients receive continuous care and support regardless of location. Additionally, RPM can be a game-changer for the elderly population, giving them the independence to age while maintaining a solid connection to their healthcare providers (Ricciardi et al., 2019).

While RPM has clear advantages, it raises essential considerations like data security and privacy. As patient data is transmitted electronically, robust security measures must be in place to safeguard sensitive medical information. Striking a balance between the convenience and benefits of RPM and protecting patient privacy remains critical to its implementation (Shaw et al., 2018).

- Education

The education sector has witnessed the rise of digital services, including online learning platforms and virtual classrooms. Students can access educational materials, participate in interactive online courses, and virtually engage with instructors and peers. Digital services in education have expanded access to quality education, offered flexible learning options, and facilitated lifelong learning opportunities (J. Lee & Han, 2021).

Online learning platforms have revolutionized education by providing accessible, flexible, and often cost-effective opportunities for individuals to acquire knowledge and skills. These platforms have gained immense popularity due to their convenience,

variety of courses, and interactive features that cater to learners of all ages and backgrounds (J. Lee & Han, 2021).

One of the most significant advantages of online learning platforms is their flexibility. Learners can access course materials, lectures, and assignments at their own pace and schedule, making it possible to balance education with work, family, or other commitments. This flexibility is especially beneficial for non-traditional students, working professionals, and those who may not have access to traditional educational institutions (Wahyuningsih et al., 2021).

The diverse range of courses available on online learning platforms is another notable feature. These platforms cater to various interests and needs, from academic subjects like mathematics and literature to specialized skills such as coding, digital marketing, and language learning. This versatility allows learners to explore new areas of knowledge or enhance their existing expertise (Wahyuningsih et al., 2021).

Interactivity is a critical component of online learning platforms. Many platforms incorporate interactive elements such as video lectures, quizzes, discussion forums, and assignments that engage learners actively. These features facilitate active learning and enable learners to apply theoretical concepts to real-world scenarios, enhancing understanding and retention (J. Lee & Han, 2021).

Online learning platforms often foster a sense of global community. Learners worldwide can interact, share perspectives, and collaborate on projects, creating a diverse and enriching learning environment. This global reach exposes learners to different cultures and viewpoints and promotes networking and collaboration beyond traditional geographical boundaries (J. Lee & Han, 2021).

- **Banking and Finance**

Digital services such as online banking, mobile banking applications, and digital payment platforms have transformed traditional banking services. Customers can now perform various banking transactions remotely, including fund transfers, bill payments, and account management. Digital banking services have enhanced convenience and security and introduced innovative financial products and services (Vives, 2019).

Digital banking services have reshaped how individuals and businesses manage their finances, offering a convenient and efficient alternative to traditional brick-and-mortar banking. These services, delivered through web and mobile platforms, have become an integral part of modern banking, providing a range of benefits that cater to today's fast-paced, interconnected world (Gouveia et al., 2020).

One of the primary advantages of digital banking services is their convenience. Customers can access their accounts, perform transactions, pay bills, transfer funds, and even apply for loans from the comfort of their homes or while on the go. This 24/7

accessibility eliminates the need to visit physical bank branches during operating hours, saving time and effort for both customers and banking staff (Gouveia et al., 2020).

Furthermore, digital banking services enhance financial transparency. Users can view their account balances, transaction history, and statements in real time, allowing them to closely monitor their financial health and track expenses more effectively. Budgeting tools and alerts help users set financial goals and manage their spending patterns, contributing to better financial management and planning (Vives, 2019).

Security measures are a crucial aspect of digital banking services. Advanced encryption, two-factor authentication, biometric identification, and other security features protect customers' sensitive financial information and mitigate the risks associated with online transactions. Despite initial concerns about cybersecurity, the banking industry has made significant strides in ensuring the safety of digital transactions (Gouveia et al., 2020).

Digital banking services also foster financial inclusion by reaching underserved populations. Mobile banking apps and online platforms enable individuals without easy access to physical banks to open accounts, conduct transactions, and access essential financial services. This inclusion can contribute to economic empowerment and improve financial literacy among marginalized communities (Vives, 2019).

- Retail

The retail industry has witnessed a significant shift towards digital services with the rise of e-commerce platforms and online marketplaces. Customers can now shop for various products online, access personalized recommendations, and enjoy doorstep delivery. Digital services have also enabled retailers to gather customer data, analyze shopping patterns, and offer targeted marketing campaigns, enhancing the overall shopping experience (Wood et al., 2020).

E-commerce platforms have revolutionized how businesses operate and consumers shop, creating a dynamic online marketplace across industries and borders. These platforms provide a digital space for businesses to showcase their products and services while offering consumers a convenient and seamless shopping experience. The impact of e-commerce platforms has been profound, fundamentally reshaping retail and commerce (Ervasti et al., n.d.).

One of the critical advantages of e-commerce platforms is the accessibility they offer to businesses of all sizes. Small startups and individual entrepreneurs can establish an online presence and reach a global audience without the significant overhead costs associated with physical retail spaces. This democratization of commerce has levelled the playing field, allowing innovative products and services to gain traction irrespective of the company's size (Ervasti et al., n.d.).

E-commerce platforms also provide consumers with unparalleled convenience. Shoppers can browse, compare, and purchase products from various vendors within a few clicks. Eliminating geographical constraints means that consumers can access a wide array of products that might not be available locally. Features like personalized recommendations, user reviews, and flexible payment options further enhance this convenience (Wood et al., 2020).

Furthermore, e-commerce platforms empower businesses with data-driven insights. Businesses can gather valuable information about customer preferences, purchasing behaviour, and market trends through analytics and tracking tools. This data-driven approach enables businesses to refine their strategies, optimize product offerings, and tailor marketing efforts to meet consumer needs (Wood et al., 2020).

E-commerce platforms have also facilitated the growth of cross-border trade. With the ability to reach consumers worldwide, businesses can expand their customer base beyond their domestic markets. This global reach increases revenue potential and encourages cultural exchange and diversity in products and services (Wood et al., 2020).

2.3 Value Co-Creation

Value co-creation has emerged as a transformative and increasingly popular concept across a multitude of industries, revolutionizing the traditional producer-consumer relationship that has long been the norm. Unlike the conventional business models where companies manufacture goods or provide services, and customers simply purchase them, value co-creation emphasizes a collaborative and interactive approach. In this innovative paradigm, both companies and customers join forces throughout the entire business process, working in tandem to generate value (Saunila et al., 2017).

At the heart of value co-creation lies a fundamental recognition - that customers bring with them a wealth of unique experiences, preferences, and opinions that significantly influence and shape product design, marketing strategies, and consumption patterns. This cooperative effort creates a dynamic and mutually beneficial scenario. Companies, by actively involving customers in the creation process, can fine-tune their offerings to align more closely with customer needs. In doing so, they enhance customer satisfaction, foster loyalty, and gain a distinct competitive edge within their respective markets (Saunila et al., 2017).

To thrive in the realm of value co-creation, companies must maintain an unwavering dedication to understanding and accommodating customer preferences. Actively encouraging engagement and collaboration with external partners, including customers and other stakeholders, becomes a pivotal aspect of this approach. Personalization is undeniably paramount in today's dynamic market environment. Consumers, now more than ever, demand experiences and products that are tailored to their unique desires.

Furthermore, companies must exhibit a high degree of adaptability and flexibility in their co-creation endeavours, recognizing that customer needs are in a constant state of flux (Coreynen et al., 2020).

Sharing responsibility for the value creation process with customers and external collaborators stands as a cornerstone of value co-creation. This inclusive approach fosters an environment where ideas and insights flow freely, leading to the co-creation of innovative solutions and products. It's a collaborative mindset that goes beyond traditional notions of business-client relationships, promoting a sense of partnership and ownership among all involved parties. Ultimately, the driving force behind successful value co-creation is the mutual benefit it delivers to all participants (Saunila et al., 2017).

While value co-creation has proven particularly effective in industries where customer preferences hold significant sway, such as technology, fashion, and entertainment, its principles are adaptable across various sectors. Even in industries historically characterized by limited customer interaction, the potential for co-creation exists. Companies can harness the power of co-creation to break down barriers and cultivate new opportunities for innovation and growth (Coreynen et al., 2020).

Value co-creation is a powerful and adaptable paradigm shift in the world of business and marketing. By prioritizing strategies such as personalization, adaptability, shared responsibility, and mutual benefit, companies can establish and nurture successful and enduring value co-creation partnerships. These partnerships not only drive growth and innovation but also ensure a competitive edge across a wide spectrum of industries, transcending the boundaries of traditional business models and fostering a dynamic, customer-centric future (Coreynen et al., 2020).

2.4 Digitization, Digitalization and Digital Transformation

During the continuous process of digital change that a company goes through, there are three significant stages of change. The first simple part of the process is called digitization. When the changes focus on altering business processes, digitalization starts, and when it impacts the whole core business of the company, a digital transformation process begins (Verhoef et al., 2021).

2.4.1 Digitization

Digitization is the process of converting analogue information to digital format, which can be applied to both the back-end and front-end operations of organizations. This conversion has become a transformative phenomenon, affecting communication, business operations, and societal interactions. Digital data can be systematically stored, manipulated, and transmitted with unparalleled efficiency, resulting in significant changes across diverse domains (Abolhassan, 2017).

In the education sector, digitization has opened up new avenues for learning and collaborative engagement, supplementing conventional pedagogical settings with virtual courses and digital learning resources. Digital editions of textbooks offer interactive elements and multimedia enhancements, making learning more engaging and facilitating cognitive assimilation. Digitization has also led to the proliferation of online classrooms and remote instruction, dissolving geographical barriers and fostering a conducive environment for continuous and geographically agnostic scholarship (Shaw et al., 2018).

In healthcare, digitization has led to a seismic transformation, resulting in heightened levels of patient care and expanded research frontiers. Electronic health records have streamlined medical data management, ensuring secure and expedient access to patient information. Enabled by digitization, telemedicine has facilitated remote medical consultations, diagnostics, and therapeutic interventions, becoming an invaluable asset during difficult circumstances. The digitization of medical imagery has revolutionized diagnostic precision and efficacy, augmenting comprehension of intricate medical conditions and fostering collaborative exchanges among medical specialists (Coreynen et al., 2020).

In the financial domain, digitization has led to a reimagining of service delivery by financial institutions, yielding expeditious, convenient, and secure transactions. Virtual banking interfaces, mobile payment platforms, and digital wallets have obviated the need for physical visits to brick-and-mortar branches, redefining the contours of financial interactions. Cryptocurrencies and blockchain technology have introduced decentralized and tamper-resistant systems that have the potential to redefine conventional monetary frameworks and transaction modalities, representing a significant departure from established norms (Youngjin Yoo et al., 2010).

Digitization has also reshaped entertainment, revolutionizing content generation, dissemination, and consumption. Streaming services have supplanted conventional media, affording consumers seamless and on-demand access to an extensive array of cinematic productions, television series, and musical compositions. Digitization has democratically democratized the realm of content creation, allowing aspiring artists to showcase their craft to a global audience through digital platforms and social media conduits. The gaming sector has undergone a paradigmatic metamorphosis characterized by immersive digital encounters, augmented reality, and virtual reality innovations that have captivated audiences through novel and captivating experiential modalities (Abolhassan, 2017).

2.4.2 Digitalization

Digitalization goes beyond digitization by integrating multiple technologies into all aspects of daily life that can undergo digital transformation. In the business world, digitalization revolutionizes a company's business model and creates new opportunities for generating revenue. The goal is to improve efficiency, cost-effectiveness, security, and sustainability (Verhoef et al., 2021).

Digitalization is a driving force behind servitization, which allows companies to shift

from product-centric models to digital service-oriented offerings. Adopting a servitization model helps companies differentiate themselves from competitors and explore new revenue streams through collaborative partnerships with customers (Gray & Rumpe, 2015).

Digitalization is a transformative influence in modern society, incorporating digital methodologies, tools, and platforms to enhance efficiency, accessibility, and interconnectivity. This engenders significant changes in communication, commercial activities, and global interactions (Afonasova et al., 2019).

In the business world, digitalization has caused significant changes, affecting areas such as supply chain management and customer interactions. Companies now use data analytics, artificial intelligence, and automation to optimize workflows, make informed decisions, and personalize customer experiences. Online marketplaces and e-commerce platforms have grown, reshaping the retail industry and changing consumer preferences. Additionally, remote work arrangements and collaborative frameworks have become more prevalent, highlighting the potential of virtual methods in managing geographically dispersed workforces (Saunila et al., 2017).

Digitalization has led to a revolution in education, with traditional teaching methods being augmented or transformed through online learning portals and virtual classrooms. Digital resources such as e-books, simulations, and internet-based lectures have expanded educational opportunities beyond geographical limits. Furthermore, incorporating games into education through digital tools has made learning more engaging and immersive, catering to different learning styles (Abolhassan, 2017).

In healthcare, digitalization has provided medical professionals with tools to improve patient care and research capabilities. Electronic Health Records have made it easier to manage patient data, leading to precise diagnoses and personalized treatments. Telemedicine has emerged as a way to provide remote consultations and diagnoses, especially important for underserved or remote areas. Sophisticated digital imaging technologies have also increased diagnostic accuracy, leading to more efficient medical procedures (Labrique et al., 2018).

In finance, digitalization has caused significant changes in traditional banking and monetary transactions. Fintech innovations such as mobile banking apps, digital wallets, and contactless payment systems have made financial transactions more streamlined, convenient, and secure. Cryptocurrencies and blockchain technology have led to decentralized fiscal frameworks, challenging conventional financial paradigms and creating borderless transactions with heightened security protocols (Gouveia et al., 2020).

Digitalization has also profoundly impacted society, changing how information is disseminated, communicated, and discussed. Digital communication platforms and social media channels have changed how people connect, share information, and gain knowledge. The shift towards online news and media has sparked discussions about the accuracy of information, digital literacy, and the influence of algorithmic mechanisms on public narratives (Y. Y. Lee et al., 2020).

Furthermore, digitalization has affected governance and public service provision. E-government initiatives have transformed administrative mechanisms, improving accessibility and operational efficiency in government services. The development of smart cities is an example of digitalization's impact on urban governance, using technology to optimize resource allocation, strengthen public safety, and improve urban planning (Laudien & Pesch, 2019).

2.4.3 Digital Transformation

Digital transformation is a significant and revolutionary process that involves integrating digital technology into various aspects of human activities, organizational structures, and societal constructs. It goes beyond digitization and involves profound operational changes, business model reconfigurations, and interaction paradigms. This transformation is facilitated by the use of advanced digital tools, analytics, automation, and artificial intelligence. It has resulted in fundamental shifts across industries and sectors, driving innovation, boosting efficiency, and creating new modes of value (Verhoef et al., 2021).

The corporate world has been heavily influenced by digital transformation, leading organizations to recalibrate their strategies to align with technology-driven imperatives. Enterprises use data analytics to derive insights from vast information repositories, facilitating evidence-based decision-making. Automation technologies streamline operations, reducing redundancies and optimizing resource allocation. Digitally transformed businesses offer personalized engagement, real-time communication, and seamless interactions, revolutionizing customer experiences (Schallmo & Tidd, 2021).

The integration of technology into education is transforming traditional learning methods, marking a shift towards personalized learning and innovative pedagogies. Digital tools are being used to bridge the gaps in access to education for underserved communities, while data-driven insights provide adaptive instruction. Technology also fosters seamless communication and collaboration, streamlining administrative processes and encouraging a culture of lifelong learning. However, challenges such as the digital divide, teacher training, data privacy, quality assurance, and balancing technology integration must be carefully addressed to ensure that education is equitable, effective, and impactful for all. Despite enhanced engagement and global connectivity benefits, a balanced approach to technology integration is crucial (Soto Setzke et al., 2023).

The healthcare field is experiencing a digital transformation marked by the integration of Artificial Intelligence (AI)-powered tools. These tools aid medical professionals in detecting patterns, predicting diseases, and advancing drug discovery, resulting in a more efficient and effective healthcare delivery system (Shaw et al., 2018).

Digitalization has indelibly transformed society's interaction with information and media. Social media platforms have revolutionized communication dynamics, enabling instantaneous global reach. Digital content creation and distribution have democratized media production, amplifying diverse voices and narratives. However, concerns regarding

fake news, algorithmic bias, and information privacy have also arisen, necessitating critical discourse on the ethical dimensions of this transformation (Abolhassan, 2017).

Governments embark on digital transformation journeys to enhance public service delivery and governance efficiency. E-government initiatives digitize administrative processes, facilitating citizen engagement and reducing bureaucratic bottlenecks. Smart city concepts leverage interconnected technologies to optimize urban planning, resource management, and citizen well-being, ushering in a new era of sustainable urban development (Youngjin Yoo et al., 2010).

The energy sector is undergoing a paradigmatic shift due to digital transformation, characterized by intelligent grids, IoT-enabled monitoring, and renewable energy integration. Smart grids optimize energy distribution, reduce wastage, and enhance grid resilience. IoT devices monitor energy consumption, enabling informed conservation decisions. Renewable energy technologies, empowered by data analytics, are being harnessed to create sustainable and efficient power ecosystems (Verhoef et al., 2021).

However, the pursuit of digital transformation is not without challenges. Organizational resistance, cybersecurity vulnerabilities, and concerns over job displacement necessitate a comprehensive approach. Collaborative efforts between governments, industries, and academia are imperative to navigate these challenges while harnessing the transformative potential of digitalization (Verhoef et al., 2021).

DIGITAL TRANSITION DRIVERS

In this chapter, the key drivers that contribute to the development of digital services are analyzed. These drivers include management drivers, customer-related drivers, external shocks, innovative technologies, governmental drivers, and sustainability factors.

3.1 Management and Decision-Making Drivers

Efficient management and centralized decision-making are two pivotal factors that significantly influence the development of digital services. Competent management is the cornerstone of any successful project, and digital service development is no exception. The intricacies involved in creating innovative and user-friendly digital services necessitate meticulous planning, organization, and coordination. Without proficient management, projects are prone to deviate from their objectives, resulting in missed deadlines, escalated costs, and dissatisfied stakeholders (Soto Setzke et al., 2023).

Resource allocation is one of management's primary functions in digital service development. A skilled management team can identify and allocate the necessary human, financial, and technological resources, ensuring the project has the right people with the right skills to execute it. This mitigates the risk of resource bottlenecks and minimizes the potential for delays caused by insufficient resources (Abolhassan, 2017).

Moreover, management plays a crucial role in risk management and mitigation. Developing digital services involves navigating through various uncertainties and potential pitfalls. A well-prepared management team can anticipate risks, develop contingency plans, and promptly address emerging issues, minimizing their impact on the project's progress (Coreynen et al., 2020).

Another crucial aspect of effective management in digital service development is fostering collaboration and communication among different teams and stakeholders. Developing a digital service is rarely a one-person task; it requires multidisciplinary expertise and seamless collaboration among software developers, designers, marketers, and other relevant parties. Strong management ensures that all teams align with the project's goals, work in sync, and share information effectively (Schallmo & Tidd, 2021).

Centralization of decision-making is equally vital in the context of digital service development. Centralization implies that important decisions are made by a select group of individuals or a single authority rather than dispersing decision-making power across various departments or individuals. This approach provides several benefits (Soto Setzke et al., 2023).

Firstly, centralization streamlines the decision-making process. In digital service development, prompt decision-making is vital to keep the project on track. By centralizing decision-making, unnecessary delays caused by bureaucracy and multiple layers of approval can be avoided. This accelerates the development cycle and helps deliver digital services to the market faster (Soto Setzke et al., 2023).

Secondly, centralization ensures consistency in decision-making. Decisions made by a centralized authority are more likely to align with the organization's overall strategy and vision. This coherence is essential for developing digital services that align with the company's brand identity and long-term objectives (Soto Setzke et al., 2023).

Moreover, centralization facilitates accountability and responsibility. When a specific group or individual makes decisions, it is easier to trace the decision-making process and assess the outcomes. This fosters a sense of responsibility among decision-makers and encourages them to make well-informed choices that positively impact the digital service's development (Soto Setzke et al., 2023).

However, it is crucial to strike a balance between centralization and decentralization. While centralization brings benefits in terms of efficiency and consistency, decentralization can empower individual teams and foster creativity. In some cases, decentralized decision-making might be more suitable for digital service development, requiring rapid experimentation and innovation (Coreynen et al., 2020).

Effective management ensures proper resource allocation, risk management, and team collaboration. Centralization of decision-making, when appropriately balanced with decentralization, can streamline the decision-making process, ensure consistency, and promote accountability. Together, these two factors play a pivotal role in shaping the success of digital service development and ultimately contribute to an organization's growth and competitiveness in the digital landscape (Schallmo & Tidd, 2021).

3.2 Market and Customer-centric drivers

A market driver can be defined as a significant determinant or influential factor that profoundly affects a specific market's behaviour, development, and dynamics. These drivers can originate from internal and external sources, exerting substantial influence over the demand, supply, pricing, competitive landscape, and overall performance of products or services within the given market context (Liere-Netheler et al., 2018).

Market drivers assume various forms, encompassing economic indicators, consumer preferences, technological advancements, regulatory shifts, industry trends, competitive forces, and socio-demographic transformations. They shape the market environment and

play a pivotal role in determining businesses' success or failure (Światowiec-Szczepańska & Stępień, 2022).

Understanding market drivers is paramount for organizations as it enables the identification of opportunities, anticipating market trends, and formulating informed strategic decisions. Through diligent analysis and leveraging of market drivers, businesses can effectively align their offerings, services, marketing strategies, and operational plans to cater to customers' evolving needs and preferences. This, in turn, allows them to gain a competitive edge and achieve sustained growth (Viale Pereira et al., 2020).

According to a study from CBI Insights (2021), the four major reasons startups fail are (CB Insights, 2021) :

1. Ran out of cash/failed to raise new capital (38%)
2. No market need (35%)
3. Got outcompeted (20%)
4. Flawed business model (19%)

The last three reasons are all connected to the first one, as they all lead to financial insolvency. The main reason for a company to get outcompeted is the lack of a market need. In the following sections, several topics related to Customer Experience Management (CXM) will be analyzed.

3.2.1 Customer experience

Organizations aim to gain a competitive advantage and drive favourable business outcomes, such as customer retention and profitability, by designing and delivering unique customer experiences. These experiences are shaped by interactions between customers and service providers, encompassing various touchpoints and engaging the customer's cognitive, emotional, social, and sensory elements (Bolton et al., 2018).

CXM is a robust business strategy establishing a mutually beneficial relationship between service providers and customers. In digital CXM, organizations strive to provide essential components across digital, physical, and social domains, addressing different moments of truth occurring within diverse temporal and spatial contexts. Companies can gain substantial customer acquisition and retention advantages by building relationships based on prior experiences (3CI Customer Co-Creation et al., 2019).

However, it is important to note that customer satisfaction alone does not guarantee loyalty, additional revenue, or an expanded market share. Organizations must consistently deliver positive and distinctive customer experiences, fostering loyalty and advocacy (Bolton et al., 2018).

CXM is the personal and subjective response that customers develop through direct or indirect organisational interactions. Organizations strive to influence customers and create unique and meaningful experiences, nurturing enduring relationships by employing

emotional, physical, sensory, rational, and relational perceptions (3CI Customer Co-Creation et al., 2019).

3.2.1.1 Differences between digital and physical customer experiences

The CXM in digital and real physical environments can vary considerably due to the distinct characteristics of each medium. The primary disparities include (3CI Customer Co-Creation et al., 2019):

- Means of Interaction

The primary distinction lies in the mode of interaction. Digital experiences entail engagement with websites, mobile applications, chatbots, and other virtual interfaces, while real experiences involve physical products, in-person services, and tangible environments.

- Physical Presence

In traditional customer experiences, individuals are typically in a physical storefront, office, or designated location. This physical presence enables direct interactions with personnel, the opportunity to examine products physically, and a heightened sense of immediacy. Conversely, digital experiences lack this tangible presence, resulting in more virtual and distant interactions.

- Personalization and Human Touch

Although digital experiences can be customized based on data and algorithms, they frequently lack the personal touch and tailored assistance that real-life experiences can provide. Employees can offer individualised suggestions in a physical store or service environment, address individual needs, and create a more empathetic and humane experience.

- Sensory Experience

Traditional experiences engage a wide range of senses, including touch, smell, and sight, while digital experiences concentrate on visual and auditory stimuli. The absence of sensory stimulation in digital environments can restrict the richness of the overall experience.

- Instant Gratification

Authentic experiences involve engaging various senses, such as touch, smell, and sight. Conversely, digital experiences prioritize visual and auditory stimuli, resulting in a lack of sensory stimulation. This dearth of sensory stimuli in digital spaces can lead to a less immersive and satisfying experience overall.

- Location Dependency

Traditional experiential offerings are confined to physical locations, necessitating customers to be present at a specific place to avail themselves of products or services. In contrast, digital experiences enable customers to access services from virtually anywhere with an internet connection, thus providing unparalleled convenience and accessibility.

- **Tangibility and Trust**

Traditional experiential offerings are inherently location-bound, mandating customers to physically visit a particular venue to benefit from products or services. Conversely, digital experiences afford customers the flexibility to access services from virtually any location with an internet connection, thereby delivering unparalleled convenience and reach.

- **Customer Assistance and Support**

Physical experiential offerings have the drawback of being location-dependent, necessitating customers to physically visit a specific venue to benefit from the products or services. Conversely, digital experiences allow customers to access services from virtually any location with an internet connection, offering unparalleled convenience and reach.

- **Feedback and Reviews**

Real-world experiences are dependent on physical locations, obliging customers to visit a specific venue to avail themselves of products or services. In contrast, digital experiences allow customers to access services from virtually any location with an internet connection, thereby providing unparalleled convenience and accessibility.

- **Social Interaction**

Genuine experiences have the potential to encourage social interaction and promote a feeling of camaraderie among customers, such as through meeting friends at a coffee shop or attending events. Conversely, digital experiences can facilitate virtual communities, but technology frequently mediates social interactions.

3.2.1.2 Total Customer experience

The concept of Total Customer Experience (TCE) encompasses the comprehensive perception and satisfaction that customers derive from their interactions with a company or brand throughout their journey. It encompasses all touchpoints and engagements, spanning the pre-purchase, purchase, and post-purchase phases (3CI Customer Co-Creation et al., 2019) (22).

Total customer experience recognizes that customer satisfaction and loyalty are shaped by numerous factors extending beyond the product or service's inherent quality. It

considers customer service, user interface design, usability, brand reputation, marketing communications, post-sales support, and more (Bolton et al., 2018).

By prioritizing the delivery of positive and seamless experiences at each stage, companies strive to cultivate enduring customer relationships and foster heightened loyalty. This holistic approach acknowledges that customers form perceptions based on their cumulative encounters, understanding that a negative experience at any juncture can significantly impact their overall perception of the brand (Bolton et al., 2018).

To provide a superior TCE, organizations often invest in comprehending customer needs, preferences, and pain points. This knowledge enables them to design and optimize interactions, align processes, and create personalized experiences that meet or surpass customer expectations. The overarching objective is consistently delivering value, building trust, and evoking positive emotions throughout the customer journey, ultimately leading to heightened customer satisfaction, loyalty, and advocacy (3CI Customer Co-Creation et al., 2019).

When a company undergoes digitalization, it is crucial to meticulously consider every aspect of the customer journey and strive to provide an exceptional overall Customer Experience (CX) (3CI Customer Co-Creation et al., 2019).

3.2.1.3 Customer Journey

The customer journey encompasses the entirety of the experiences encountered by a customer throughout their interaction with a company, commencing before a transaction and extending significantly beyond its completion (3CI Customer Co-Creation et al., 2019). This approach encompasses all touchpoints that encompass the customer's interactions with the organization throughout the process, whereby a touchpoint refers to a specific temporal instance in which the customer engages with the company or any element associated with the transaction (3CI Customer Co-Creation et al., 2019).

The customer journey usually consists of the following stages (Tueanrat et al., 2021):

- Awareness

Customers enter the customer journey when they become aware of a product, service, or brand. This awareness can be triggered through various channels such as marketing campaigns, advertising, public relations efforts, social media, or word-of-mouth referrals.

- Consideration

Once customers are aware of the offerings, they proceed to the consideration stage. They actively explore and evaluate different options to fulfil their needs or solve a problem. They research, compare features, prices, and reviews, and may seek recommendations from peers, industry experts, or online resources.

- Decision

In the decision stage, customers narrow down their choices and make a final decision regarding the purchase. They weigh the available information, including product quality, pricing, reputation, customer service, and any additional incentives or promotions.

- Purchase

The customer proceeds to the purchase stage, completing the transaction and acquiring the chosen product or service. This stage involves the selection of a specific product variant, processing payment, and exchanging goods or services. The purchase can occur through various channels, including online platforms, physical stores, or authorized resellers.

- Post-Purchase

Following the purchase, the customer enters the post-purchase stage. This stage encompasses the overall experience and satisfaction that the customer derives from their purchase. Companies focus on ensuring customer satisfaction, providing adequate customer support, and addressing any concerns or issues that may arise. Positive post-purchase experiences contribute to customer loyalty and the potential for repeat business.

- Loyalty and Advocacy

In the final stage, customers may develop loyalty towards the brand based on their experiences and satisfaction. Loyal customers continue to engage with the brand, make repeat purchases, and potentially become advocates by recommending the brand to others or providing positive feedback through reviews, testimonials, or social media.

Today's business landscape demands that companies prioritize their customers by enhancing their presence across all customer journey stages. Digitalization is at the forefront of this shift as businesses recognize the importance of expanding their reach through digital platforms. The focus on customer-centricity drives the need for digital transformation as companies work to amplify their visibility and meet customer needs, preferences, and expectations through digital channels (Lemon & Verhoef, 2016).

3.2.1.4 Types of Digital Customers

There are various methods for categorizing digital customers into different eras, but the most frequently used approach is to divide them into five distinct types (Shrivastava, 2017):

- Digital Natives

Individuals who were born after the mid-1990s and grew up in the digital age are known as digital natives. They have been exposed to advanced technology

and the internet early, making them proficient in navigating digital devices, social media platforms, and online communication tools. Digital natives are known for their adaptability and ease in using smartphones, tablets, and computers to obtain information, interact with others, and consume media.

Digital natives have a unique approach to learning and acquiring information. They tend to search for answers online and use various digital resources to enhance their knowledge and skills. They are also skilled in multitasking, seamlessly transitioning between diverse digital platforms and applications. However, there are concerns about the potential adverse effects of prolonged screen time and the ubiquity of digital devices on their attention spans and mental well-being.

For businesses and marketers, understanding the behaviours and preferences of digital natives is crucial. This demographic represents a significant consumer group, and digital channels, such as social media, online reviews, and personalized advertising often influence their purchasing decisions. To effectively engage with digital natives, brands must establish a robust online presence, deliver authentic and relevant content, and provide seamless experiences across various digital touchpoints. By recognizing the unique characteristics of digital natives and personalizing marketing strategies to resonate with them, companies can build successful and long-lasting relationships with this tech-savvy generation.

- Digital Immigrants

Digital immigrants were not born into a time of advanced digital technology but have since incorporated it into their lives. Typically, this includes Gen X and Baby Boomers. Digital immigrants have embraced technology as it evolved, but they faced challenges initially. Unlike digital natives who grew up with technology, digital immigrants had to learn how to use it as adults.

Integrating technology into their daily routines can be a transformative experience for digital immigrants. However, the learning curve can be steep as they navigate through various digital devices, online services, and social media platforms. Once they become comfortable with these tools, digital immigrants can benefit significantly from the convenience of online communication, access to vast information resources, and the ability to maintain connections with distant acquaintances.

Businesses catering to digital immigrants recognize the importance of user-friendly interfaces and clear instructions to facilitate engagement. Digital immigrants may require additional support and guidance to fully embrace and leverage the potential of digital technologies. As this demographic becomes more digitally adept, they represent a valuable market segment with distinct preferences and habits. Tailoring products and services to suit the needs of digital immigrants can help bridge the digital divide and promote inclusivity in the digital age.

- Digitally voyeurs

Individuals who are digitally voyeurs are aware of the importance of embracing digitalization but are hesitant to fully engage with digital technologies. They understand the significance of digital transformation, the advantages of using digital tools, and the potential benefits of integrating digital practices into their lives. However, they may lack familiarity with digital technologies, have concerns related to privacy and security, or prefer traditional methods, which causes them to rely on conventional approaches in both personal and professional spheres.

It is crucial to recognize that transitioning to a more digital-centric existence can be a gradual process, and individuals may require different levels of support and encouragement along the way. To help digitally voyeurs become more actively engaged with digital technologies, comprehensive education and training on digital tools and platforms can be provided. Highlighting the benefits and opportunities that digitalization presents can help alleviate reservations while addressing their concerns about privacy and security through effective measures that can instill greater confidence in embracing digital practices.

Creating a supportive and inclusive digital environment that respects individuals' pace of adoption can contribute to a smoother transition towards a more digitally integrated society. As digital technologies play an increasingly pivotal role in multiple facets of life, empowering digitally voyeurs to participate more actively is vital for promoting digital inclusion and enhancing overall digital literacy.

- Digital Holdouts

Some people or groups choose not to use digital technologies and the internet, preferring to stick with traditional methods and analog practices. These individuals, known as digital holdouts, prefer in-person interactions, handwritten communications, and physical media for information and entertainment. They believe that the rapid pace of digital advancement is overwhelming or unnecessary and prefer to preserve the familiarity and simplicity of pre-digital ways of life.

Digital holdouts have various reasons for their stance. Some are concerned about the vulnerability of personal data or the risks posed by cyber threats. Others worry about the impact of digital technologies on interpersonal relationships and the erosion of face-to-face communication. Additionally, some hold onto nostalgia and value traditions, motivating them to maintain pre-digital practices.

While society continues to benefit from digitalization, digital holdouts may face limited access to information, reduced engagement in online social networks, or exclusion from digital services. However, respecting individual choices and preferences regarding adopting digital technologies is important. Some digital holdouts may eventually embrace certain aspects of digitalization at their own pace, while others may continue to adhere to their traditional practices as a core aspect of their identity and way of life.

- Digitally disengaged

Digitally disengaged people are those who have limited interest and involvement in digital technologies and the Internet. Unlike those who actively resist adopting digital tools, digitally disengaged individuals have access to these resources but choose not to use them to their full potential. They generally show little interest in online activities, social media, and digital communication channels, preferring traditional methods of gathering information, communication, and entertainment.

The reasons for digital disengagement vary. Some individuals may face technological barriers, such as limited access to digital devices or a lack of digital literacy. Others may have concerns about online risks, including privacy issues and cyber threats, which make them cautious about digital interactions. Additionally, some may prefer offline experiences and view the digital world as complex or impersonal, leading them to prioritize face-to-face interactions and tangible forms of media.

To promote digital engagement among this group, addressing these barriers and nurturing digital literacy is crucial. Providing accessible digital training and support can empower digitally disengaged individuals to confidently use digital technologies. Emphasizing the benefits of digitalization, such as enhanced connectivity and abundant information access, may help alleviate concerns and cultivate a more positive attitude towards digital tools. Creating inclusive and user-friendly digital interfaces can make the digital realm more welcoming and encourage digitally disengaged individuals to explore and gradually adopt digital technologies.

To achieve success and launch a digital service, it's crucial for a company to understand the various types of customers and concentrate on the targeted generation (Shrivastava, 2017).

3.2.1.5 Digital Customers Expectations

In the contemporary landscape, customer expectations are incessantly rising, and the management of this process has become intricate. Customers anticipate seamless, real-time experiences available round-the-clock, encompassing all five attributes listed below (Shrivastava, 2017):

- Seamless

Customers now expect a flawless and intuitive experience when interacting with digital platforms like websites, mobile apps, and social media. They want user-friendly interfaces that allow quick and easy access to information, seamless navigation through products or services, and effortless completion of transactions. This demand for streamlined interactions is not only about convenience but also reflects the

sophistication and discernment of digital consumers. To stay competitive and maintain customer loyalty in the digital world, businesses must recognize and address these expectations.

- Stimulating

Today's digital customers have high expectations regarding the content presented by businesses. They want informative materials that genuinely add value to their overall experience. In addition to traditional product promotions, customers seek educational content such as articles, videos and interactive resources demonstrating an understanding of their needs and concerns. When companies offer valuable insights and emotionally engaging narratives, customers appreciate them as thought leaders. Furthermore, the data-driven analysis makes the recommendations presented more trustworthy and reliable. Businesses can build lasting customer relationships by adopting a customer-centric approach that prioritizes informative content over relentless sales pitches. This fosters genuine trust and loyalty while emphasizing the brand's commitment to meeting customer expectations and providing a top-notch digital experience.

- Sensitive

More and more customers praise businesses for their skilful use of digital platforms to gather deep insights into their preferences and needs. This approach goes beyond traditional market research methods by analyzing large amounts of data collected from various digital touchpoints. With the help of advanced analytics and AI, companies can thoroughly study customer behaviours, interactions, and engagement patterns. With this valuable information, businesses can create personalized experiences and improve their strategies to achieve long-lasting customer satisfaction and loyalty in today's constantly changing digital world.

- Synchronized

Customers appreciate businesses that prioritize real-time support and personalized experiences across all touchpoints. Utilizing advanced communication technologies and dedicated support teams to provide swift assistance and timely responses beyond conventional norms instils a sense of trust and value in the customer.

In addition, customers enjoy the personalized approach businesses embrace throughout their interactions. Acknowledging individual preferences, behaviours, and past purchases results in tailored recommendations, relevant promotions, and curated content that resonates with the customer on a personal level. This personalized touch fosters a profound sense of being understood and valued, ultimately strengthening the customer's loyalty to businesses that prioritize meeting their unique needs and preferences.

- Smart

Businesses that are responsive to current trends and adept at leveraging technology-driven opportunities are highly valued by customers. Enterprises that show a keen awareness of the ever-changing market landscape and adapt their strategies to meet evolving needs and preferences are appreciated. By aligning themselves with contemporary trends, businesses ensure that their products and services remain relevant, up-to-date, and aligned with customer expectations, making them more appealing to discerning consumers.

Customers place great importance on businesses that proactively embrace prevailing trends and capitalize on technology-driven prospects. Such customers actively seek out enterprises that are agile in responding to shifts in the market and quickly integrate technological advancements into their operations to enhance the overall CX. The responsiveness displayed by businesses demonstrates their commitment to maintaining a competitive edge, fostering a deep sense of confidence and trust among their clientele, which in turn, fuels increased customer loyalty and advocacy. In summary, customers prefer businesses that demonstrate adaptability and capitalize on technology-driven possibilities, which helps bolster brand reputation, foster enduring customer relationships, and position the enterprise for sustained success in the fast-evolving business landscape.

3.2.1.6 Customer Interface

A customer interface serves as the primary means of interaction between a user and a company's product or service, allowing customers to access and engage with the offerings provided effectively. These interfaces can take on diverse forms, from conventional in-person interactions to advanced digital interfaces featured on websites, mobile applications, and other digital platforms (Schallmo & Tidd, 2021).

The customer interface is a critical component of modern business operations. It is a vital link between a company and its customers, spanning physical and digital touchpoints, including social media platforms. The interface plays a multifaceted role in shaping the CX and significantly impacts a company's success in a competitive marketplace (Schallmo & Tidd, 2021).

First impressions are crucial, and the customer interface is the starting point for creating a lasting one. A well-designed interface should be visually appealing, easy to navigate, and function seamlessly. Accessibility features also play an essential role in ensuring the interface is inclusive and accessible to all users (Häikiö & Koivumäki, 2016).

The interface is an ambassador for a company's brand identity, conveying its ethos, values, and aesthetics to customers. Consistency in visual design and tone of communication creates a sense of reliability, which fosters brand recognition and customer loyalty (Häikiö & Koivumäki, 2016).

Interactive elements, such as AI-powered chatbots and personalized content delivery mechanisms, add layers of engagement and interaction beyond the business's transactional

nature. These components cater to the growing expectation for tailored experiences and provide a conduit for customers to connect more deeply with a brand's ecosystem (Schallmo & Tidd, 2021).

The interface also serves as a real-time customer support channel, providing live chat functionalities, comprehensive FAQs, and interactive troubleshooters. The interface enhances customer satisfaction and operational efficiency by promptly addressing customer queries and concerns (Schallmo & Tidd, 2021).

Finally, the interface provides invaluable insights into customer behaviour, preferences, and trends. This data can guide strategic decisions, optimize marketing, and steer product development initiatives. The iterative feedback loop established through the interface's data-driven insights empowers businesses to refine their approaches and tailor their value propositions with the precision that resonates with the target audience (Häikiö & Koivumäki, 2016).

As technology evolves, businesses must adapt their customer interface to meet changing expectations and new trends. The ability to seamlessly incorporate new functionalities and remain a cutting-edge facilitator of engagement and transactions is crucial for long-term success in a digital age of constant change (Häikiö & Koivumäki, 2016).

The shift towards digitalizing service delivery has been driven by the need to improve customer interfaces. Businesses understand that enhancing customer interactions is crucial for success in today's interconnected world. As a result, companies have embraced digital technologies to offer seamless, efficient, and personalized experiences, fundamentally reshaping the way services are consumed (Häikiö & Koivumäki, 2016).

Traditional customer interfaces had several challenges that impeded customer satisfaction. Lengthy wait times, convoluted paper-based processes, and restricted access to information were common pain points. However, digitalization emerged as a viable solution, empowering businesses to create user-centric, self-service platforms. This empowered customers to access information, initiate transactions, and resolve issues effortlessly. This urgent need to eradicate these impediments and heighten customer convenience catalysed the sweeping digital transformation of services (Häikiö & Koivumäki, 2016).

The rise of digitally native generations, like millennials and Gen Z, compounded the push for improved interfaces. They expected instantaneous gratification when engaging with businesses. Companies aligned their customer interfaces with these evolving expectations to remain competitive and relevant. Consequently, digitalization became an imperative strategy for retaining existing customers and captivating new ones, effectively shaping the competitive landscape across industries (Schallmo & Tidd, 2021).

Besides enhancing CXs, digitalization has brought substantial benefits to businesses themselves. The wealth of data generated by digital interactions has provided invaluable insights into customer preferences, behaviours, and pain points. This data-driven approach empowers companies to tailor their offerings, marketing strategies, and overall business operations to meet customer needs. By harnessing these insights, organizations

can unlock heightened efficiency, cost savings, and greater market agility. The dual mandate of meeting customer expectations while capitalizing on data-driven opportunities has undeniably been instrumental in driving the widespread adoption of digital interfaces across diverse sectors (Schallmo & Tidd, 2021).

To create a successful digital customer interface, it is essential to include various vital elements that work together to create a positive and practical user experience. These elements are crucial in meeting customer expectations, improving satisfaction, and contributing to business success. Some of the most critical components of a digital customer interface are (Häikiö & Koivumäki, 2016):

- **User-Centric Design**
Ensure the layout is user-friendly and intuitive, anticipating user needs and minimizing frustration.
- **Personalization**
Provide options for customization to deliver personalized experiences, such as recommendations and content tailored to individual preferences.
- **Responsive Multi-Platform Support**
Make sure the user experience is smooth and consistent across different devices, by adjusting the interface for desktops, tablets, and smartphones.
- **Efficient Navigation**
Make it easy to find information quickly by providing clear menus, efficient search features, and intuitive filters.
- **Smooth Transactions**
Make purchasing, submitting forms, and accessing accounts easier to reduce any obstacles.
- **Security and Accessibility**
It is important to maintain both strong security measures and accessibility standards in order to promote inclusivity and build trust with users.

3.2.2 Digital Maturity

Digital maturity refers to the extent to which an organization possesses the necessary readiness and capabilities to leverage digital technologies to effectively drive business transformation and innovation. It encompasses the organization's ability to adapt and flourish within a digital-first environment (Shrivastava, 2017).

Digital maturity is not solely determined by the organization's technological infrastructure or the adoption of digital tools. It encompasses several other crucial aspects, including strategy, leadership, culture, processes, and skills (Pakkala & Spohrer, 2019).

A digitally mature organization possesses several key attributes that enable it to succeed in the constantly changing digital landscape. At its core, a well-defined digital strategy aligns with the overall business objectives. This strategy outlines how digital technologies can be used to gain a competitive advantage, enhance customer experiences, and improve operational efficiency (Pakkala & Spohrer, 2019).

To navigate the digital realm effectively, strong leadership and governance are essential. Digitally mature organizations are led by determined visionaries who support digital transformation initiatives and oversee digital projects. Their leadership style creates a corporate culture that embraces change, encourages experimentation, and fosters department collaboration (Ahmad et al., 2021).

Customer-centricity is crucial in the world of digital maturity. Digitally mature organizations prioritize customer needs and preferences by utilizing digital tools and data to better understand customer behaviour. They personalize experiences and offer seamless, omnichannel interactions to increase customer satisfaction and loyalty (Jochen Wulf et al., 2017).

Operational agility is a hallmark of digital maturity, allowing organizations to adapt quickly to changing market conditions and customer demands. This agility is achieved through agile processes, flexible organizational structures, and a commitment to continuous improvement and innovation (Jochen Wulf et al., 2017).

Furthermore, data-driven decision-making is essential to thriving in the digital landscape. Digitally mature organizations collect, analyze, and interpret data to inform decision-making, optimize operational processes, and uncover new business opportunities. Data privacy and security are also important considerations to ensure the integrity and confidentiality of data (Ahmad et al., 2021).

Achieving digital maturity also requires investing in digital skills and talent. Organizations pursuing digital maturity offer upskilling and reskilling programs to their workforce and foster a culture of continuous learning to attract and retain digital talent (Shrivastava, 2017).

A resilient and scalable technology infrastructure is also crucial for a digitally mature organization. Implementing state-of-the-art technologies such as cloud computing, data analytics, artificial intelligence, and automation tools lays the foundation for digital transformation success. It enables organizations to operate efficiently in a technology-driven world and realize their digital future (Shrivastava, 2017).

Digital maturity is an ongoing journey rather than a static destination. Organizations continuously evolve and adapt to the ever-changing digital landscape, striving to outperform competitors and deliver value to customers through innovative means (Ahmad et al., 2021).

Several models can be used to assess digital maturity:

- Digital Maturity Model by Boston Consulting Group (BCG)

The Digital Maturity Model by The BCG is a framework that evaluates how prepared an organization is for digital transformation. It covers four dimensions, namely strategy, organization, technology, and culture. The assessment divides organizations into four stages, including Beginners, Conservatives, Fashionistas, and Digital Masters. This categorization helps companies discover their digital strengths and weaknesses, enabling them to create targeted strategies for successful digital transformation. By following the model's principles, organizations can align their digital initiatives with business goals, encourage cooperation, adopt new technologies, and promote a culture of adaptability and learning. Ultimately, this method enables companies to remain competitive and agile in the ever-changing digital environment (BCG, 2022).

- Capacity Maturity Model Integration (CMMI)

The CMMI is widely recognized for improving processes and assessing an organization's digital maturity. This evaluation measures an organization's ability to use digital technologies, innovate, and transform digitally. By utilizing CMMI to measure digital maturity, organizations can gain valuable insights into their digital capabilities. This approach examines the integration of digital technologies, alignment of digital initiatives with business goals, and the organization's commitment to digital transformation. By identifying key process areas and establishing progressive maturity levels, organizations can systematically measure their digital readiness, identify areas for improvement, and pave the way towards greater digital maturity. This approach fosters competitiveness and sustainable growth in the digital landscape (CMMI Institute, 2019).

- Digital Transformation Scorecard by Massachusetts Institute of Technology Center for Information Systems Research (MIT CISR)

The Digital Transformation Scorecard, developed by MIT CISR, assesses an organization's digital maturity across four domains: digital capabilities, leadership, management, and cultural enablers. This evaluation provides valuable insights into an organization's preparedness for digital transformation. By analyzing these areas, the scorecard offers a comprehensive view of an organization's digital strengths and weaknesses, making it easier to make strategic decisions to ensure a successful digitalization process (MIT CISR, 2022).

- Digital Maturity Model by Deloitte

The Digital Maturity Model by Deloitte is a complete framework that measures an organization's digital maturity in four main aspects: strategy, engagement, operations, and technology. This model is an excellent resource for businesses to understand their digital progress and pinpoint areas that need improvement. By evaluating digital capabilities in these crucial areas, organizations can plan and execute digital

initiatives more effectively, leading to improved efficiency, competitive edge, and sustained growth in the ever-evolving digital (Deloitte, 2018).

- Digital Maturity Model by Gartner

To evaluate their level of digital maturity, organizations can utilize Gartner's Digital Maturity Model that categorizes it into five levels: ad hoc, opportunistic, repeatable, managed, and optimized. This model assesses an organization's digital capabilities and provides a thorough understanding of its present digital state. It aids in identifying strengths and weaknesses in the digital arena and pinpointing areas that need improvement. With the assistance of the model, organizations can strategically enhance their digital initiatives, boost their digital maturity, and optimize their digital transformation efforts for a more competitive and successful digital landscape (Gartner, 2021).

- Digital Capability Framework by Capgemini

The Digital Capability Framework, created by Capgemini, is an evaluation tool that helps organizations assess their digital maturity in key areas. These include CX, operational agility, digital technology adoption, and digital workforce. By using this framework, organizations can gain a systematic understanding of their digital capabilities and better prepare for digital transformation. The assessment also helps organizations identify areas of strength and areas needing improvement, which allows for strategic decision-making to optimize digital initiatives. Ultimately, this approach can help organizations improve their digital maturity, streamline operations, and use digital technologies to offer exceptional customer experiences, giving them a competitive edge in today's digital landscape (Capgemini, 2018).

- Digital Maturity Model by International Data Corporation (IDC)

The Digital Maturity Model by IDC is an assessment framework that measures an organization's level of digital maturity in five crucial areas: leadership, omni-experience, information, operating model, and work source. This model is valuable for companies seeking insights into their digital capabilities. Analyzing these dimensions provides a comprehensive view of the organization's digital strengths and weaknesses. This enables companies to pinpoint areas for improvement and make informed decisions to refine their digital strategies. Ultimately, the model helps organisations achieve better digital maturity, fostering competitiveness, innovation, and success in the digital landscape (IDC, 2022).

- Digital Maturity Model by Wipro Digital

The Digital Maturity Model developed by Wipro Digital is a comprehensive framework used to assess an organization's digital maturity across six key dimensions. These dimensions include strategy, CX, operations, technology, organization, and culture. By carefully evaluating these areas, the model provides a complete and

detailed view of an organization’s digital capabilities, helping them identify their strengths and weaknesses. This assessment enables organizations to plan and execute their digital initiatives more strategically, enhancing customer experiences, streamlining operations, and fostering a culture of innovation and adaptability. Ultimately, the Wipro Digital Maturity Model helps organizations achieve superior digital maturity, essential for staying competitive and thriving in the rapidly evolving digital landscape (Wipro, 2020).

All the models mentioned are essential for assessing a company’s digital maturity. They help organizations analyze their digital capabilities, pinpoint weaknesses, and create effective action plans for progress. Together, they provide a comprehensive evaluation tool for organizations.

3.2.3 Digital Economy and Society Index

The Digital Economy and Society Index (DESI) is a comprehensive composite index developed by the European Commission. It is a tool for assessing and evaluating member states’ digital performance and advancement within the European Union (EU). The DESI encompasses multiple indicators that gauge various aspects of a country’s digital landscape, including digital infrastructure, digital skills, utilization of digital technologies by businesses and individuals, and the availability of digital public services (European Commission, 2022).

The DESI comprises four key indicators (European Commission, 2022):

Table 3.1: DESI Dimensions

Dimension	Sub-Dimension
Human Capital	Internet User Skills
	Advanced skills and development
Connectivity	Fixed broadband take-up
	Fixed broadband coverage
	Mobile broadband
	Broadband prices
Integration of digital technology	Digital intensity
	Digital technology for businesses
	e-Commerce
Digital Public Services	e-Government

- Connectivity

This indicator evaluates the accessibility, quality, and affordability of broadband services and the extent of coverage provided by high-speed broadband networks.

- Human Capital

It assesses the digital skills and competencies of the population, encompassing factors such as digital literacy, proficiency in fundamental and advanced digital skills, and individuals' utilization of the internet.

- **Integration of Digital Technology**

This indicator examines the level of digitalization within businesses, encompassing factors such as the utilization of e-commerce platforms, engagement on social media, adoption of cloud services, and utilization of digital collaboration tools.

- **Digital Public Services**

This indicator assesses the availability and quality of digital public services, encompassing elements such as e-government services, electronic identification mechanisms, and the extent of digital interaction between citizens and public authorities.

By employing the DESI, policymakers, businesses, and stakeholders can effectively benchmark the digital performance of EU member states, identify areas requiring improvement, and formulate policies and strategies to enhance further the digital economy and society within the European Union (European Commission, 2022).

3.3 External Shocks

An external shock refers to an unexpected and significant event or occurrence originating from external sources beyond a specific system, organization, or economy, which profoundly impacts it. These shocks are generally unpredictable and may arise from diverse sources, such as natural disasters, geopolitical developments, economic downturns, technological advancements, regulatory changes, or global health crises. External shocks can disrupt a system's functioning, leading to abrupt changes in its dynamics, operations, or overall performance. As a result, the affected entity must react and adapt quickly to mitigate the consequences of the shock and restore stability and functionality. In this section, several external shocks and events that occurred recently will be analyzed.

3.3.1 COVID-19 Pandemic

The emergence of the CoronaVirus Disease of 2019 (COVID-19) pandemic towards the end of 2019 significantly impacted numerous industries, particularly the technology and digital services sector. The pandemic compelled businesses and individuals to adjust their practices to accommodate remote work, online shopping, virtual events, and telemedicine, among other digital solutions. The rapid shift to digital platforms and services during the pandemic has highlighted the crucial role of digital technologies in ensuring business continuity and facilitating daily activities (Diebner et al., 2020).

The COVID-19 pandemic has accelerated the digitalization of services, causing businesses, institutions, and governments to transform their operations. Remote work and

online learning became the norm, leading to innovation in virtual collaboration tools and a reimagining of pedagogical methods. Telehealth emerged as a critical lifeline for healthcare, enabling remote consultations and patient monitoring. E-commerce experienced an explosive surge, reshaping retail landscapes and accelerating the adoption of contactless payment systems (Litchfield et al., 2021).

However, this digitalization journey has also exposed inequalities in access to technology and the internet, particularly for vulnerable communities lacking resources. This gap is imperative for equitable access and digital literacy (Loginov et al., 2020).

As the world emerges from the pandemic, the impact of digitalization will leave an enduring imprint. Society's interaction with technology will be reevaluated, emphasizing resilience, adaptability, and inclusivity as foundational principles in the digital age (Ramsetty & Adams, 2020).

3.3.2 Economic Crises

Economic downturns can act as a driving force for developing digital services as organizations search for cost-effective solutions and inventive methods to remain competitive. In such challenging economic conditions, businesses may use digitalization to enhance operational efficiency, expand market reach, and optimize productivity. Cloud computing, SaaS, and e-commerce are digital services that can reduce costs and sustain productivity during economic crises (van der Marel, 2022).

3.3.2.1 2008 Economic Crises

The economic crisis of 2008 played a crucial role in advancing digital services. It catalyzed technological adoption and innovation across various industries. Businesses looked for digital solutions to streamline their operations and remain competitive in the face of economic uncertainty and cost-cutting measures. This drive for efficiency led to a rise in automation, online platforms, and digital communication tools. Remote work gained popularity, marking a significant shift from traditional workplace dynamics and paving the way for remote and flexible work arrangements (van der Marel, 2022).

The crisis prompted a reevaluation of traditional business models, with companies exploring new revenue streams through digital channels. E-commerce saw a boost as consumers sought cost-effective alternatives and convenience, leading retailers to invest in online storefronts and digital marketing strategies. Additionally, data-driven decision-making gained importance, leading to increased adoption of analytics and digital tools to better understand market trends and consumer behaviour (van der Marel, 2022).

After the economic downturn, the financial services industry underwent a significant transformation. Vulnerabilities in traditional banking systems were exposed, leading to a push for greater transparency, accountability, and efficiency. This environment encouraged the growth of fintech startups and digital banking platforms, disrupting established financial institutions and offering consumers more accessible and user-friendly financial

services. This laid the foundation for the fintech revolution, reshaping how financial services are accessed, managed, and transacted (van der Marel, 2022).

Despite the financial turmoil and uncertainty brought about by the 2008 economic crisis, it also sparked a technological renaissance in service delivery. The lessons learned from that period continue to influence the trajectory of digitalization, reinforcing the importance of adaptability, innovation, and technology-driven solutions in an ever-evolving economic landscape (van der Marel, 2022).

3.3.2.2 Oil Price Collapse (2014-2016)

Between 2014 and 2016, the collapse of oil prices significantly impacted the need for increased efficiency and technological innovation across various industries. Countries heavily dependent on oil exports faced economic challenges, leading to a renewed focus on diversification and the digital economy. Governments and businesses recognized the need to transition away from traditional revenue streams and emphasized digitalization to create new economic opportunities (Baumeister & Kilian, 2016).

One of the significant outcomes of the oil price collapse was the adoption of digital technologies within the energy sector. Oil and gas companies sought ways to optimize their operations and reduce costs in response to declining profits. This resulted in the implementation of advanced digital tools such as IoT sensors, data analytics, and artificial intelligence for predictive maintenance, making exploration, production, and distribution of energy resources more efficient. The crisis underscored the potential for technology to enhance resource management and improve operational resilience in the face of market volatility (Baumeister & Kilian, 2016).

The oil price collapse also prompted governments to invest in digital infrastructure and innovation as part of broader diversification strategies. Countries that relied heavily on oil revenue recognized the need to develop digital industries and knowledge-based economies to mitigate the impact of future price fluctuations. This shift led to establishing of technology hubs, incubators, and investment in digital education and skills development. The crisis catalyzed digital entrepreneurship, encouraging the emergence of startups and tech-focused initiatives aimed at driving economic growth through innovation (Baumeister & Kilian, 2016).

Moreover, the oil price collapse highlighted the role of digitalization in fostering resilience in supply chains and international trade. As oil-exporting countries faced economic uncertainty, they sought to diversify their trade partnerships and explore new avenues for export. This push toward diversification and advancements in e-commerce and digital platforms enabled businesses to pivot toward global markets more easily. Digital tools facilitated cross-border transactions, streamlined logistics, and enabled market access for products beyond the oil sector, contributing to the overall economic recovery and transformation in affected regions (Baumeister & Kilian, 2016).

3.3.3 Natural Disasters

When natural disasters like hurricanes, earthquakes, or floods occur, standard services and infrastructure may be disrupted, leaving people more reliant on digital alternatives. Digital services like online communication platforms, emergency response apps, and remote collaboration tools become critical in linking people and providing aid during and after disasters (Marshall et al., 2023).

For instance, in the aftermath of a devastating earthquake, a city's infrastructure is severely damaged, causing widespread power outages, communication network disruption, and transportation systems in chaos. In such a situation, digital technologies are crucial in coordinating relief efforts and aiding recovery. Social media platforms offer a vital means for survivors to communicate their needs and location, enabling rescue teams to respond more efficiently. Digital mapping tools assist in identifying areas of high damage concentration, guiding first responders to prioritize their efforts. Moreover, remote collaboration tools and cloud-based platforms enable displaced businesses to continue their operations and show the resilience of digitalization in the face of physical disruption (Schwertner et al., 2018).

During the recovery phase, urban planners and engineers use Geographic Information Systems to map out the extent of the damage and plan reconstruction efforts strategically. Advanced data analytics help identify areas prone to future seismic activity, guiding decisions about rebuilding resilient infrastructure. Smart technologies, such as earthquake-resistant building materials and sensor-equipped structures, are integrated into the reconstruction process, aiming to mitigate the impact of potential future earthquakes. The disaster catalyzes the city's prioritisation of digital infrastructure, ensuring more reliable communication networks, robust power grids, and efficient transportation systems (Fujii et al., 2021).

3.3.3.1 2011 Earthquake and Tsunami

The 2011 earthquake and tsunami in Japan, caused by a powerful undersea earthquake with a magnitude of 9.0 off the eastern coast of Japan, had a profound impact on Japanese society, particularly in the digitalization of services. Along with the immediate devastation and loss of life, this catastrophic event prompted a significant shift in how services were provided, accessed, and managed throughout the country (Canis, 2011).

The disaster caused severe damage to traditional infrastructure such as communication networks and physical facilities. This highlighted the vulnerabilities of relying solely on conventional systems for service delivery. As a result, there was a renewed emphasis on the importance of digitalization to enhance resilience and ensure the continuity of essential services. Both public and private organizations began to explore innovative ways to leverage technology to provide vital services, communicate with affected populations, and coordinate disaster response efforts (Canis, 2011).

The need to rapidly restore critical services and infrastructure catalyzed advancements in digital technology adoption. Online platforms, mobile applications, and digital communication channels emerged as essential tools for disseminating real-time information, facilitating emergency response coordination, and aiding affected communities. These digital solutions enabled more efficient resource allocation, data sharing, and communication among various stakeholders, ultimately aiding recovery and rebuilding (Canis, 2011).

Moreover, the 2011 disaster served as a wake-up call for businesses and government agencies to rethink their operational strategies. The need for remote work capabilities and digital collaboration became evident, leading to increased investment in cloud computing, remote access technologies, and digital communication tools. The disaster catalysed digital transformation across industries, ushering in an era of increased reliance on digital services and remote operations that continues to shape the landscape of service delivery in Japan and beyond (Canis, 2011).

In summary, the 2011 earthquake and tsunami in Japan highlighted the importance of digitalization in ensuring the resilience of services during times of crisis. The disaster prompted a reevaluation of traditional service delivery methods and spurred a rapid embrace of digital technologies. As a result, the continued integration of digital platforms, remote communication tools, and innovative solutions into various sectors can be observed, fundamentally changing how services are accessed, managed, and delivered in a more resilient and adaptable manner (Canis, 2011).

3.3.4 Geopolitical Events

Changes in global relations, such as trade conflicts or geopolitical events, can affect the development of digital services. For example, companies may need to find alternative markets or digital solutions to overcome restrictions caused by sanctions or trade barriers (European Union, 2023b).

3.3.4.1 September 11 Attacks

The tragic events of September 11, 2001, profoundly impacted the digitalization of services, triggering significant changes in security measures, communication strategies, and global interconnectedness. In the aftermath of the attacks, there was a heightened urgency to enhance security protocols, accelerating the adoption of digital technologies for surveillance, data monitoring, and counterterrorism efforts. Governments and organizations worldwide began investing in advanced digital tools to detect, analyze, and prevent potential threats, marking a pivotal moment in the evolution of security and intelligence practices (Levi & Wall, 2004).

Communication underwent a seismic shift as a direct response to the 9/11 attacks. Traditional methods of information dissemination were quickly supplemented by digital platforms that enabled rapid, real-time communication. Social media, email, and digital

news outlets became instrumental in providing instant updates, connecting affected individuals with their loved ones, and disseminating critical information to the public. This event underscored the power of digital communication in crises, emphasizing the need for reliable and resilient digital infrastructure (Levi & Wall, 2004).

The aviation and transportation industries also experienced a substantial transformation. The attacks prompted a comprehensive overhaul of air travel security, introducing sophisticated digital screening technologies, biometric identification systems, and enhanced passenger data collection. The shift toward digital identification and screening aimed to improve security and redefined the travel experience, ushering in an era of more streamlined and efficient processes, even as privacy and data protection concerns emerged (Levi & Wall, 2004).

The 9/11 attacks highlighted the global interconnectedness of economies, cultures, and societies. This realization spurred the digitalization of international cooperation, diplomacy, and intelligence sharing. Countries began collaborating more closely on counterterrorism efforts, utilizing digital channels to exchange vital information and coordinate strategies. The events of 9/11 demonstrated the importance of leveraging digital platforms to foster collective security measures and address global challenges, paving the way for increased digital collaboration and diplomacy in the following years (Levi & Wall, 2004).

3.3.4.2 Brexit

Brexit, the UK's decision to leave the European Union, has had a complex impact on the digitalization of services, affecting cross-border trade, data transfer, and regulatory frameworks. Businesses in the digital field faced new challenges as the UK sought to redefine its trade relationships and regulations, causing uncertainties about data protection, e-commerce rules, and cross-border data flow (Garcia, 2023).

The digital economy depends on data transfer, and Brexit raised concerns about data adequacy and privacy regulation. Questions were raised on the seamless transfer of personal and business data between the UK and EU, making data adequacy agreements critical for uninterrupted data exchange. This affected various sectors, including financial services and online retail. The UK aligned its laws with the General Data Protection Regulation (GDPR) standards to facilitate smooth data interactions with EU member states (Garcia, 2023).

Brexit also impacted e-commerce and online services. Companies that were used to operating within the EU's single digital market had to adapt to new regulations governing online transactions, digital VAT payments, and consumer protection measures. E-commerce platforms and digital service providers had to navigate different regulatory landscapes between the UK and EU, requiring compliance with different standards for each market (Garcia, 2023).

To address these challenges, some businesses took the opportunity to speed up digital

transformation efforts. They optimized their online presence, supply chains, and distribution networks to align with new trade realities. However, this also highlighted the importance of harmonizing regulations and fostering cooperation in the digital field. As the UK forges its path outside the EU, both parties are prompted to negotiate agreements that promote data flows, protect digital consumers, and facilitate cross-border digital services, reflecting the broader need for collaborative solutions in the evolving digital age (Garcia, 2023).

In conclusion, external shocks play a significant role in driving the development of digital services. Whether triggered by unforeseen events like the COVID-19 pandemic or technological breakthroughs and changing consumer preferences, these shocks push businesses and industries to embrace digitalization and leverage technology to adapt, innovate, and remain competitive in an ever-evolving world (Garcia, 2023).

3.4 Innovative Technology Strategies

Technology is driving a rapid and profound shift towards digitalization across many industries, from finance to healthcare, education to retail. This changes how businesses engage with their customers, leading to a fundamental transformation in service delivery. Factors such as improved computing power, widespread high-speed internet, and the growing use of mobile devices contribute to this trend. As a result, traditional in-person services are being replaced by digital alternatives that offer greater convenience, efficiency, and accessibility. This section will analyse the impact of AI, IoT and Cloud Computing (Laudien & Pesch, 2019).

3.4.1 Artificial Intelligence

AI technology is revolutionizing how we think about computing systems by replicating and emulating human cognitive functions. It involves creating and developing sophisticated algorithms and computational models that can perform tasks associated with human intelligence, such as logical reasoning, problem-solving, language comprehension, pattern recognition, and decision-making (Verhoef et al., 2021).

The landscape of AI technology is diverse and rich, drawing on various evolved methodologies and techniques. Machine learning is a prominent example, enabling AI systems to learn from extensive datasets, adapt to changing circumstances, and refine their performance iteratively. Neural networks, particularly the advancements in deep learning, have enabled AI models to simulate the complex neural structures of the human brain, enhancing their ability to process and understand intricate patterns and data (Wirtz et al., 2023).

AI has vast implications across numerous industries and sectors, including healthcare diagnostics, financial modelling, autonomous transportation, and entertainment. It can potentially revolutionize these domains by increasing efficiency, productivity, and

innovation. However, the rapid evolution of AI also raises ethical, legal, and societal considerations that require careful contemplation and regulation to ensure responsible development and deployment (Wuest et al., 2020).

Integrating AI into service provision has become an essential driving force for digitalization. This integration has brought about operational efficiencies, innovation, and improved user experiences (Makridakis, 2017).

One of the most significant impacts of AI is its ability to automate and optimize tasks. AI streamlines previously labour-intensive and time-consuming processes, eliminating manual intervention and improving procedural precision. This increases operational efficiency, reduced errors, and expedited service delivery. Additionally, personnel resources are freed up to undertake strategic endeavours of greater importance (Wuest et al., 2020).

The capability of AI to process vast amounts of data at high speeds is another critical component of service digitalization. By leveraging sophisticated algorithms and machine learning methodologies, AI can dissect complex datasets, uncovering hidden insights and patterns. This approach leads to informed decision-making, personalized service customization, and prescient forecasting of market trends, giving organizations a competitive edge (Jarrett & Choo, 2021).

Personalization is another hallmark of AI's contribution to digitalized services. Through meticulous analysis of user behaviours, preferences, and historical interactions, AI algorithms create bespoke recommendations and immersive experiences. These tailored engagements result in profound customer engagement, heightened satisfaction, and increased brand loyalty (Wirtz et al., 2023).

AI's predictive capabilities also enable anticipatory strategies. AI can anticipate future exigencies and opportunities by analyzing historical data and identifying emerging trends. This leads to judicious resource allocation, optimized supply chains, and improved service quality, fostering an adaptive and agile operational environment (Makridakis, 2017).

AI's influence extends beyond operational realms and into security and risk management. By detecting anomalies and recognizing patterns, AI enhances the security architecture of digital services, safeguarding against cybersecurity breaches, fraud, and vulnerabilities. This allows organizations to enact preemptive measures to uphold user data and system integrity (Makridakis, 2017).

The tenet of continuous learning intrinsic to AI ensures ongoing service enhancement. AI systems assimilate insights from user interactions, feedback loops, and evolving market dynamics, leading to algorithmic refinements and functional enhancements over time. This iterative augmentation guarantees digital services' perpetual relevance, adaptability, and resonance (Makridakis, 2017).

In contexts where geographical constraints prevail, AI-infused digitalization enables remote and autonomous operations. Among others, industries spanning logistics, health-care, and manufacturing benefit from AI-driven automation, circumventing physical limitations and fostering an environment of unimpeded operation across expansive spatial domains (Wuest et al., 2020).

Finally, the catalytic role of AI in kindling innovation and creativity is invaluable. AI's generative algorithms and data-driven analytical capacities inspire novel ideas, designs, and concepts, spurring the expeditious evolution of new products, features, or service paradigms, making AI an indispensable conduit for fueling innovation (Jarrett & Choo, 2021).

3.4.2 Internet of Things

The IoT is a technology that connects physical objects, devices, and machinery through the Internet. This enables them to communicate, exchange data, and collaborate without human involvement. IoT goes beyond traditional computing devices like computers and smartphones and includes many tangible devices (Verhoef et al., 2021).

IoT involves embedding sensors, actuators, and communication interfaces in previously autonomous items. This enables devices like household appliances, industrial machinery, vehicles, and even urban infrastructure to capture and transmit data about their environment, usage patterns, and operational status (Verhoef et al., 2021).

This data is analyzed in real-time through centralized systems or cloud-based platforms, providing insights for informed decision-making, operational optimization, anticipatory maintenance, and the creation of innovative services and solutions. IoT also enables automation and remote administration, such as intelligent thermostats that regulate temperature based on occupancy, security cameras that detect anomalous activity, and illumination systems that adapt to occupancy (Laudien & Pesch, 2019).

IoT significantly impacts sectors like healthcare, agriculture, and industry. It allows for remote patient care, efficient allocation of resources in agriculture, and real-time monitoring of machinery and supply chains in industry (Laudien & Pesch, 2019).

However, IoT also poses challenges related to security and privacy. Systems are susceptible to breaches due to the increased interconnectedness and data interchange. Prudent data management, interoperability protocols, and robust communication infrastructures are necessary to ensure seamless functionality (Abolhassan, 2017).

The IoT significantly digitalises services across various industries. It integrates physical and digital realms, enabling physical entities to possess digital capabilities, ultimately transforming operational paradigms (Abolhassan, 2017).

IoT facilitates the convergence of real-time data from physical environments into digital systems. With data ranging from device performance metrics to environmental variables, industries can make informed decisions, create predictive models, and optimize processes. Consequently, operational efficiencies improve, and service delivery efficacy increases (Abolhassan, 2017).

IoT's automation potential is also a significant benefit. Objects can autonomously communicate and initiate actions based on predefined conditions. This feature streamlines processes attenuates downtime, and boosts productivity in sectors requiring remote

monitoring and control, such as healthcare. For instance, IoT-driven wearable devices can transmit critical health data to healthcare providers in real-time (Abolhassan, 2017).

Predictive maintenance is another pivotal aspect that leverages IoT-generated data to pre-emptively detect equipment malfunctions, which averts potential downtimes. This proactive approach prolongs the lifespan of assets and curtails maintenance costs, which yields substantial operational benefits (Abolhassan, 2017).

Moreover, IoT enhances customer experiences by meticulously analysing IoT-derived insights, allowing businesses to personalize interactions. By tailoring offerings and services based on discerned preferences and behavioural patterns, businesses can establish a more intimate and responsive relationship with their clientele, enhancing customer engagement and satisfaction (Laudien & Pesch, 2019).

The confluence of IoT and evolving business models merits attention. The granular insights offered by IoT data engender the formulation of novel monetization strategies. Enterprises can diversify revenue streams through subscription-based models, value-added services, or usage-based propositions, augmenting their financial resilience and market positioning (Laudien & Pesch, 2019).

IoT's prowess lies in real-time tracking and optimization in supply chain management. This translates to enhanced inventory management, reduced wastage, and optimising logistical endeavours, bolstering efficiency along the supply chain (Laudien & Pesch, 2019).

3.4.3 Cloud Computing

Cloud computing is a revolutionary technology that has transformed the way individuals and businesses manage and access computational resources. It provides on-demand access to shared computing resources like servers, storage, databases, software, and more over the internet. This virtualized and scalable model offers enhanced flexibility, cost efficiency, and accessibility (Abolhassan, 2017).

One of the significant advantages of cloud computing is its scalability. Organizations can easily scale their computing resources up or down based on demand. This elastic scalability enables businesses to handle fluctuations in workload, ensuring optimal performance and resource allocation while curtailing unnecessary expenses (Abolhassan, 2017).

Cloud computing also facilitates cost efficiency through a pay-as-you-go model, where users only pay for the resources they consume. It allows businesses to allocate financial resources strategically, directing investments towards innovation and growth rather than infrastructure upkeep. Additionally, the cloud's shared resources and automated management result in economies of scale, which can significantly reduce the overall cost of IT operations (Abolhassan, 2017).

The accessibility and collaborative potential of cloud computing have also revolutionized remote work and global collaboration. With data and applications in the cloud,

individuals can access their work virtually anywhere with an internet connection, promoting a more flexible and productive work environment. Cloud-based collaboration tools enable seamless sharing, editing, and real-time co-authoring of documents and projects among geographically dispersed teams, fostering a new era of cross-functional cooperation and innovation (Abolhassan, 2017).

Despite the many benefits of cloud computing, some concerns have been raised regarding data security, privacy, and regulatory compliance. It is crucial for organizations leveraging cloud services to ensure robust security measures, data encryption, and compliance with relevant regulations. Despite these challenges, the evolution of cloud computing continues to reshape the digital landscape, driving innovation and enabling businesses to harness the full potential of modern technology (Abolhassan, 2017).

The widespread adoption of cloud computing has had a significant and transformative impact on the digitalization of services in various industries. With cloud computing, businesses can easily access computing resources over the internet on demand, resulting in a more agile, efficient, and customer-centric approach to service delivery (Abolhassan, 2017).

One of the most notable benefits of cloud computing is its ability to facilitate the quick development and deployment of applications. Cloud platforms offer readily available infrastructure and tools that streamline the software development lifecycle, reducing the time it takes to launch new services. This flexibility enables companies to respond rapidly to customer demands and market trends, giving them a competitive edge in the digital landscape (Abolhassan, 2017).

Furthermore, cloud computing makes advanced technologies such as artificial intelligence and big data analytics more accessible. These technologies play a vital role in service enhancement and personalization. Cloud-based AI services enable businesses to integrate intelligent features like chatbots for customer support or recommendation systems for personalized experiences without requiring extensive in-house AI expertise. Similarly, cloud-driven big data analytics empower organizations to extract valuable insights from massive datasets, facilitating informed decision-making and service optimization (Abolhassan, 2017).

The scalability and resource allocation capabilities of cloud computing are also noteworthy. Businesses can easily scale their service infrastructure up or down based on fluctuating demand, ensuring optimal performance and cost efficiency. This flexibility eliminates the need for overprovisioning resources and minimizes the risk of service disruptions during peak usage periods. Consequently, cloud-enabled scalability promotes a seamless and uninterrupted user experience, enhancing customer satisfaction and loyalty (Abolhassan, 2017).

3.5 Governmental and Regulatory Drivers

The Recovery and Resilience Facility is a financial mechanism established by the European Union (EU) to support its member states in recovering from significant economic challenges, crises, or major disruptions. The facility is designed to enhance the resilience of EU economies by promoting sustainable growth, job creation, and structural reforms. It is a part of the EU's broader efforts to address economic and social consequences, such as those caused by the COVID-19 pandemic or other significant shocks (Coreynen et al., 2020).

The Recovery and Resilience Facility presents a momentous opportunity for countries within the European Union to undertake significant investments in their respective digital transformations and enhance digitalization across the European zone. This instrumental initiative fosters economies' sustainability, resilience, and readiness for the forthcoming green and digital transitions (European Union, 2022).

As per program regulations, every Member State must allocate at least 20% of its Recovery and Resilience plan towards facilitating the digital transition or addressing the challenges that arise from it. In Portugal, 22% of its program is dedicated to digital objectives, which exceeds the mandated 20% (European Union, 2022).

The Portuguese Recovery and Resilience Facility has designated 60 million Euros to support Industry 4.0 companies that invest in cutting-edge technologies, digital transformation, and the enhancement of environmental sustainability. The objective is to provide financial support to projects that require an investment of €200k, and this program can have a positive impact on more than 200 Small and Medium Enterprises. The projects must operate in one of the following areas (Albuquerque, 2023):

- Digital transition of operational processes involving production, logistics management, and planning;
- Solutions for advanced data storage, management and processing;
- AI solutions applied to the production process;
- Digital twins (new digital models), simulation, and industrial modelling;
- Design and additive manufacturing;
- Augmented reality, virtual reality and artificial vision projects applied to processes;
- Collaborative and cognitive robotics, human-machine interface, cyber-physical systems;
- Advanced sensing and electronics, IoT, Cloud and Edge solutions;
- Networking, communication and advanced computing infrastructures associated with processes;

- Innovative software, interoperability of systems.

The most prominent measures included in this facility are (European Union, 2022):

- Education and digital competence formation
- Digital transformation
- Government digitalization as leverage to:
 - Public Finance Sustainability
 - Competitive business environment
 - Efficient public administration

Portugal 2030 is a partnership agreement between Portugal and the European Commission that outlines the major strategic objectives for allocating 23 billion € between 2021 and 2027. The program has five main goals that seek to make Europe (Portugal, 2021):

1. Smarter
2. Greener
3. More connected
4. More Social
5. Closer to people

It is implemented through 12 programs, divided between thematic and regional programs (Portugal, 2021):

- Thematic Programs

- Pessoas 2030 (5,7B€)

This program is committed to promoting demography, inclusion, and qualifications. Its objectives include generating more and improved employment opportunities, enhancing working conditions and gender equality, encouraging adult reeducation, supporting people at risk of exclusion, and increasing access to quality services.

- Sustentável 2030 (3,1B€)

This program is dedicated to taking action on climate change and promoting sustainable practices. Its primary goals include transitioning to clean energy sources, promoting sustainability and efficient transportation in urban areas, and investing in railway transportation.

- Mar 2030 (393M€)

This program aims to promote sustainable fishing practices, preserve biological resources, encourage sustainable aquaculture activities, support the development of the blue economy, and facilitate international sea governance.

- Compete 2030 (3,9B€)

The focus is on innovation and digital transformation, specifically for small and medium-sized enterprises. Its mission is to achieve four key strategic objectives:

1. Portugal + Competitivo (2,6B€)

Encourage funding for research and development, embracing technology and digitalization, boosting companies' ability to compete internationally, focusing on targeted areas of expertise and transitioning to more advanced industrial practices. It is divided into three main areas:

- a) Investigation and Innovation

- b) Digitalization

The purpose of this program is to assist the business environment through collaborative efforts, mobilization, and clustering actions that promote favourable conditions for the growth of business investments. This is achieved by sharing knowledge, facilitating technology transfer, identifying digitalization and innovation prospects, and training companies to develop advanced business strategies and expand their operations overseas.

- c) Productive Investment

2. Portugal + Verde (815M€)

Encourage progress by promoting decarbonization, renewable energy sources, and energy efficiency.

3. Portugal + Social (400M€)

Enhance qualifications to facilitate the adaptation of employees and companies to changes.

- Regional Programs

- Norte 2030 (3,4B€)

- Centro 2030 (2,2B€)

- Lisboa 2030 (381M€)

- Alentejo 2030 (1,1B€)

- Algarve 2030 (780M€)

- Açores 2030 (1,1B€)

- Madeira 2030 (760M€)

– PAT 2030 (168M€)

The Portuguese Recovery and Resilience Facility and Portugal 2030 program offer significant opportunities for Portuguese businesses to improve their digital capabilities that benefit employers and employees. Implementing these programs can lead to advancements in sustainable development, economic growth, digital transformation, climate resilience, and decentralization.

On 10 March 2020, the European Commission unveiled the Industrial Strategy, laying the groundwork for transitioning to a green and digital economy. This strategy aims to enhance the global competitiveness of the European Union’s industry and reinforce European autonomy in the process. The following day, the World Health Organization announced COVID-19 as a pandemic (European Union, 2023b).

The Eu Industrial Strategy was updated in 2021 to consider the consequences and effects of the COVID-19 pandemic, and it focused on the lessons learned from past experiences (European Union, 2023b).

This strategy aims to:

- Strength the resilience of the single market
- Support Europe’s Open Strategic Autonomy through dealing with dependencies
- Support the business case for the twin transitions

As previously expounded, Portugal currently ranks 16th in the DESI, scoring below the average. The DESI report further displays that the percentage of micro-enterprises engaging in online sales in Portugal is significantly below average. This has prompted the European Commission to prioritize promoting digital transformation by allocating European funds towards this initiative (European Union, 2023a).

3.6 Sustainability

In today’s world, sustainability has become increasingly important due to numerous global challenges. With the growing human population, there is also an increase in demand for resources, energy, and consumer goods. This high demand puts much pressure on the Earth’s ecosystems and natural resources, leading to severe consequences such as environmental degradation, loss of biodiversity, and climate change (European Union, 2021).

In light of the pressing sustainability challenges facing humanity today, one issue that stands out as particularly urgent is climate change. The negative consequences of human activities, such as burning fossil fuels, deforestation, and industrial processes, have led to the release of greenhouse gases into the atmosphere, thereby contributing to global warming. The implications of climate change are far-reaching and include rising sea levels, extreme weather events, melting glaciers, and ecosystem disruptions. To address this

challenge effectively, it is essential to adopt sustainable practices that reduce greenhouse gas emissions and promote the use of cleaner, renewable sources of energy (European Union, 2021).

The decline of biodiversity is a pressing issue in sustainability. Humans have played a prominent role in this decline on a worldwide scale. Many plant and animal species have gone extinct due to the loss of their habitats through deforestation, pollution, overfishing, and the introduction of invasive species. Preserving biodiversity to keep ecosystems balanced, supporting agriculture, and providing essential ecosystem services is essential. Therefore, adopting sustainable practices that protect and restore biodiversity is crucial for our planet's health and future generations well-being (Ciocoiu, 2023).

The challenge of resource depletion is a major obstacle to achieving sustainability. The Earth's natural resources, such as freshwater, minerals, and fossil fuels, are limited and cannot be replenished. Overuse of these resources can worsen scarcity and lead to social conflicts. Therefore, achieving sustainability requires responsible use of resources, support for circular economy principles, and investment in renewable and alternative energy sources to reduce our dependence on finite resources (Ciocoiu, 2023).

Sustainability is not just about the environment but also includes social and economic aspects. It is important to meet the current needs without harming the ability of future generations to meet their own needs. This involves addressing issues like poverty and ensuring access to education, healthcare, and basic necessities while also promoting fair labour practices. Ultimately, sustainable development aims to create a fairer and more just society that benefits everyone across the globe (Ciocoiu, 2023).

In addition, sustainable practices can strengthen communities and societies in times of crisis. Whether it's a natural disaster, an economic shock or a pandemic, societies that have adopted sustainable approaches are more adaptable and better equipped to recover. Therefore, it is vital to establish resilient systems and infrastructure to prepare for an uncertain future (Ciocoiu, 2023).

In business, integrating sustainable practices has become increasingly imperative due to the growing demand from consumers and investors for corporate accountability in matters about environmental and social issues. Companies that embrace sustainability contribute to the preservation of the environment and tend to cultivate steadfast customer loyalty, and generate enduring value. As such, sustainability confers a strategic advantage in the fiercely competitive business arena (Ciocoiu, 2023).

Governments across the globe are increasingly recognizing the significance of sustainability and are taking proactive measures to address environmental and social issues through the implementation of regulations and policies. It is imperative for both individuals and organizations to adhere to these regulations and prioritize sustainability (Ciocoiu, 2023).

The imperative of sustainability is intricately intertwined with the ongoing process of digital transformation and the burgeoning digitalization of services. The convergence of these two trends holds significant potential to propel sustainable practices forward and

address pressing environmental and social challenges with heightened efficacy (Ciocoiu, 2023).

Digital transformation entails seamlessly integrating digital technologies into diverse aspects of businesses and organizations, fundamentally reshaping their operational paradigms and delivering value to stakeholders. The widespread adoption of digital technologies facilitates heightened efficiency, productivity, and innovation, engendering a more agile and responsive approach to meeting evolving market demands (Ciocoiu, 2023).

Within the context of sustainability, digital transformation assumes a transformative role. For example, deploying IoT devices, smart sensors, and advanced data analytics can optimize resource utilization and energy consumption in buildings and industrial processes. This, in turn, engenders waste reduction, energy conservation, and diminished greenhouse gas emissions. The real-time monitoring and management capabilities enabled by digital technologies empower organizations to make data-driven decisions that engender more sustainable practices (Ciocoiu, 2023).

Moreover, digitalising services, wherein traditional services are translated into digital platforms, significantly contribute to sustainability endeavours. The ascendance of e-commerce and digital marketplaces can diminish the necessity for physical retail spaces, leading to reduced energy-intensive brick-and-mortar operations. Additionally, the transition from physical paperwork to digital documentation reduces paper consumption, fostering resource preservation and mitigating carbon emissions from printing and transportation (European Union, 2021).

Digitalizing services also facilitate remote work and telecommuting, aligning harmoniously with sustainability principles. By empowering employees to work remotely from home or alternative locations, companies can curtail the environmental impact of daily commuting, resulting in diminished carbon footprints and augmented work-life balance for personnel (European Union, 2021).

Furthermore, digital platforms have become potent tools for inculcating sustainable practices among consumers and citizens. Digital channels allow companies and governments to engage with the public, amplify environmental awareness, and instigate eco-friendly behaviours. Digitalization offers a broader reach and a more personalized approach to sustainability advocacy, from educational campaigns to gamification strategies and incentivised rewards for sustainable choices (European Union, 2021).

Nevertheless, it is essential to acknowledge that the rapid advancement of digital transformation and digitalization also entails environmental challenges. The escalating demand for data centres and the energy consumption of digital devices can precipitate heightened electricity usage and escalating e-waste generation. Hence, it becomes incumbent upon organizations to embed sustainable practices within their digital infrastructure, including using renewable energy sources for data centres and fostering responsible recycling of electronic devices (European Union, 2021).

In conclusion, the confluence of sustainability initiatives with digital transformation

and the digitalization of services represents a potent and propitious force in combatting global challenges. By harnessing the potential of digital technologies, organizations can bolster their sustainable practices, optimize resource utilization, and diminish their environmental impact. Moreover, digital platforms afford a powerful avenue to engage with the public, instil a broader comprehension of sustainability, and foster positive behavioural changes. Nonetheless, pursuing these digital advancements responsibly remains imperative, ensuring that sustainable practices permeate the digital landscape, thereby nurturing a more harmonious coexistence with the environment (European Union, 2021).

3.7 Key Performance Indicators used during the process

Throughout transitioning from a non-digitalized service to a digital service, it is imperative to monitor and evaluate several key performance indicators to gauge the progress and effectiveness of the transformation. These Key Performance Indicator (KPI) encompass the following metrics:

- **Digital Adoption Rate**

The digital adoption rate measures how quickly and extensively people, companies, and societies incorporate digital technologies and tools into daily routines and interactions. It's an essential indicator of technological progress and transformation, showing how well digital solutions are being used to enhance efficiency, streamline processes, and improve user experiences. A high digital adoption rate means that people are open to new ideas and use technology to communicate, analyze data, and make decisions across different areas while promoting inclusiveness for all.

To fully assess digital adoption in each country, we can use the Digital Adoption Index (DAI), a global index created by the World Bank. The DAI measures digital adoption across three key areas of the economy: individuals, government, and businesses (“Digital Adoption Index”, 2016).

The top countries in 2014 and 2016 can be seen in figures 3.1, 3.2, 3.3 and 3.4 :

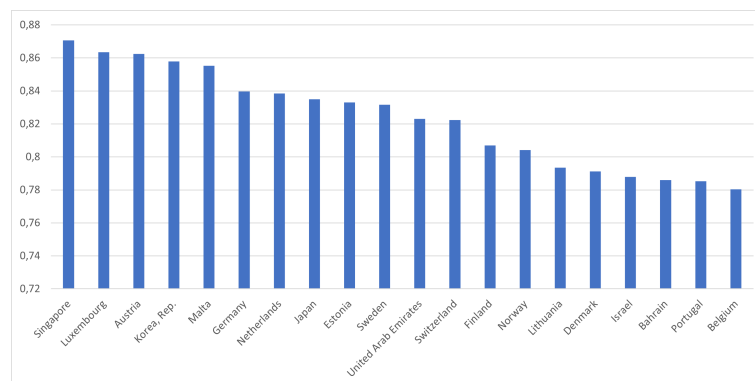


Figure 3.1: Digital Adoption Rate Top20

3.7. KEY PERFORMANCE INDICATORS USED DURING THE PROCESS

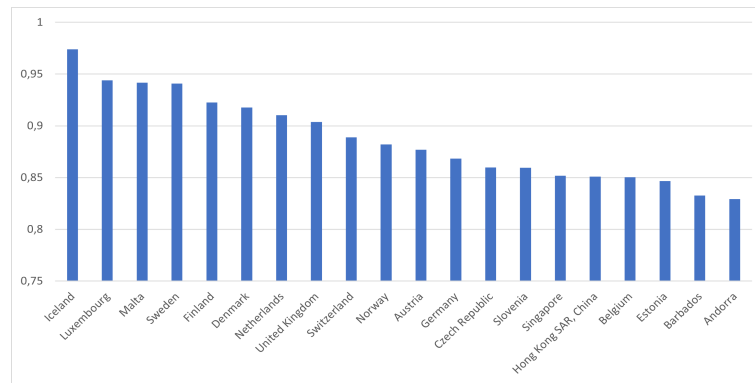


Figure 3.2: Digital Adoption Rate Business sub-index Top20

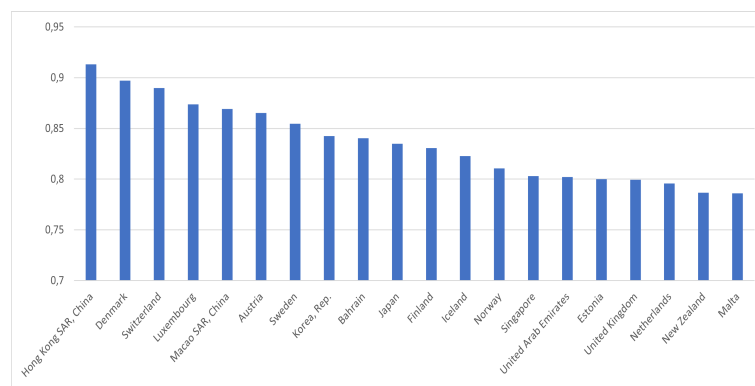


Figure 3.3: Digital Adoption Rate People sub-index Top20

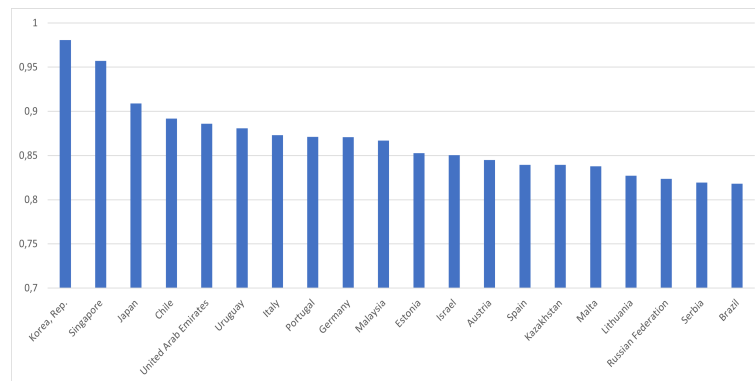


Figure 3.4: Digital Adoption Rate Government sub-index Top20

According to the Global DAI, Portugal ranks 19th and is considered one of the most developed countries in the world. Although it dropped out of the top 20 in the business and people indexes, it still holds 8th place in the Government Index (“Digital Adoption Index”, 2016).

- **Special Framework for service innovation**

This framework enables firms to gain a holistic view of digital innovation, helping them to motivate and keep track of their digital innovation efforts. As described in table 3.2,

it involves five key areas: user experience, value proposition, digital evolution scanning, skills and improvisation (Nylén & Holmström, 2015).

- User experience

The success of a company's digital products and services depends on how engaging they are for users. To create compelling digital offerings, companies must focus on values that can make users' interactions more meaningful.

- Value proposition

There are three key factors to consider to evaluate the value of digital products and services. The first is customer segmentation, which involves analyzing the demographics of customers to effectively reach different groups through the company's digital offerings.

After segmenting the customer base, companies must determine how to differentiate and package their digital products and services. This includes finding the right balance between paid and free offerings and deciding on the role of advertising in each. It also involves clearly defining the individual components within each offering.

- Digital evolution scanning

The integration of digital innovation has paved the way for new avenues of creativity. It is important for companies to actively embrace these opportunities by creating digital products and services that utilize existing components to add value.

To achieve this, it is essential to stay updated on digital technology and usage trends. Keeping track of upcoming hardware devices and mobile advancements enables businesses to incorporate digital capabilities into traditional products and take advantage of resource-intensive tasks on mobile devices.

Adapting to the evolution of technology is crucial for businesses. Digital technology has transformed sales and distribution by integrating with mobile operating systems, social media, and app stores. Facebook is a prime example of this shift, as it helps businesses of all sizes, from small enterprises to major players like Skype and Spotify, to attract and engage customers.

Lastly, understanding the changing behaviours of users is essential. Novel markets can emerge from the unexpected adoption of digital technology, which can drive fresh usage possibilities.

- Skills

When evaluating a company's digital innovation skills, there are three main factors to consider.

3.7. KEY PERFORMANCE INDICATORS USED DURING THE PROCESS

Table 3.2: Framework for managing digital innovation (Nylén & Holmström, 2015)

Dimension	Area	Scope	Element
Product	User Experience	For digital products to be successful, they must have easy-to-use interfaces, visually appealing designs, and create a sense of meaningful interaction for users.	Usability
			Aesthetics
			Engagement
	Value Proposition	Digital innovation prioritizes delivering distinct and valuable customer experiences, achieved by precise segmentation, strategic pricing, and optimal product positioning in portfolios. It also entails adept product bundling and fair commission negotiation with channel owners.	Segmentation
			Bundling
			Commissions
Environment	Digital Evolution Scanning	In order to discover potential sources of innovation, companies need to thoroughly examine their digital environment. This involves gathering information about new digital tools, platforms, and the ways users interact with them.	Devices
			Channels
			Behaviours
Organization	Skills	In order to achieve the best results in digital innovation, companies need to cultivate new skills both within and outside of the organization. This involves creating innovative digital positions, encouraging ongoing education in digital technologies, and promoting agile and adaptable innovation teams.	Learning
			Roles
			Teams
	Improvisation	In the digital era, managers must create an environment that balances structure and flexibility, enabling cost-effective improvisation. This involves nurturing creativity within limits, optimizing time allocation, and coordinating improvisational endeavors to enhance efficiency.	Space
			Time
			Coordination

The first is adapting traditional analogue product development skills to fit the digital world. This means encouraging continuous learning about new digital technologies and recognizing spontaneous digital innovation efforts within the organization.

The second factor is the potential need for external recruitment of specialized digital roles to complement current positions. It's important to balance in-house efforts with external expertise for the best outcome.

Lastly, digital innovation success depends on adapting existing skills, promoting learning, and strategically integrating both internal and external talent.

- **Improvisation**

When it comes to the digital world, improvisation means rearranging things using the flexibility of digital technologies. With lower costs for mistakes, managers can allow for creative improvisation while still maintaining some structure. Setting aside time for self-initiated projects, like Google's 20% policy, is important. It's also crucial to document successful results and coordinate efforts to avoid unnecessary duplication and waste in digital innovation.

- **Special key metrics to analyze digitalization**

According to, there are five main fields to analyze the evolution of digitalization: Economy, Society, Industry, Enterprise and Client. The main metrics for each dimension are presented in the table 3.3 (Marcin KOTARBA, 2017):

Table 3.3: Digitalization dimensions and their primary metrics (Marcin KOTARBA, 2017)

Economy	Connectivity
	Human Capital
	Use of internet
	Digital Public Services
	Making markets
Society	Smart Infrastructure
	Internet users
	Growth of the Internet
	Digital Technology
	eGovernment
Industry	Digital Spending
	Digital Asset Stock
	Digital transactions
	Work digitization
Enterprise	Conversion funnel
	Digital traffic sources
	Customer engagement
	Digital revenues/sales and assets
Client	Online solution usage
	Application world performance
	Evolution of online experience
	Digital serl-service ratio

These KPIs serve as valuable indicators of the success and impact of the transition from a non-digitalized service to a digital service. They enable organizations to monitor progress, identify optimization opportunities, and make informed, data-driven decisions throughout the transformation process.

CASE STUDY

In order to confirm the previous recommendations and literature review, a case study was conducted in the real estate industry. This chapter provides a brief overview of the present state of the real estate market, followed by a characterization of the company eXp and an analysis of the key factors which contributed to its success.

4.1 Interview Methodology

An online interview was conducted with a real estate agent to gain new insights and analysis. The interviewee had previously worked for thirty years as an IT specialist in the technology sector before transitioning to the real estate sector in 2015. Currently, the interviewee is employed in the eXp Luxury sector and has been serving as a teacher for the company since 2021, offering valuable insights to new members. The interviewee signed a recording consent form, which is available in the annexes.

The interviewee participated in an interview through the Zoom platform, which consisted of two parts. The first part of the interview was an individual interview, while the second part was a virtual tour of the eXp metaverse. This virtual world can be accessed through any computer with an internet connection. The first part was conducted on the twenty-sixth of July and had a duration of approximately one hour and fifteen minutes. The second part lasted one hour and took place on the fourth of September.

An individual interview is a type of qualitative research method where a researcher has personal conversations with participants to obtain detailed information, insights, and perspectives on a specific topic, issue, or research question. These interviews provide an opportunity for a personalized and thorough examination of an individual's thoughts, experiences, and emotions, making them an essential tool for comprehending complex human phenomena.

4.2 Real Estate Market

The real estate market is constantly changing due to a variety of factors. The COVID-19 pandemic presented challenges, but the market has remained resilient, with many regions experiencing increased property values and demand. Government stimulus packages and low-interest rates have played a significant role in maintaining this momentum.

One noticeable trend following the pandemic is a shift in housing preferences. Many individuals are seeking larger homes with dedicated office spaces, resulting in increased demand for suburban and rural properties. This has led to decreased demand in some urban markets.

Technology has also played a significant role in the real estate sector. Online platforms, virtual tours, and digital tools have become integral to property searches and transactions. Blockchain technology is being explored to streamline and secure property transactions, promising increased efficiency and transparency.

Considerations for environmental sustainability and social responsibility have gained prominence in real estate investment and development. Building practices that are sustainable, energy-efficient, and use green energy solutions are becoming increasingly important to attract environmentally conscious tenants.

Despite the overall resilience of the market, rising property prices have raised concerns about affordability in many regions, particularly major cities. Policymakers are working to address this issue while ensuring the stability of real estate markets.

International investors are still playing a significant role in the global real estate market. Cross-border investments from institutional investors and high-net-worth individuals are diversifying portfolios and intensifying competition in prime urban areas.

The commercial real estate sector has undergone significant changes due to the pandemic. Remote work has impacted office space utilization and shifts in consumer behavior have affected the retail sector. Property owners and developers are exploring innovative concepts and experiences to meet evolving demands.

Regulatory changes are also affecting the real estate market. Governments and regulators are increasingly focused on issues such as housing affordability, property taxation, and landlord-tenant relations. Policies are being crafted to strike a balance between tenant protection and the sustainability of the real estate market.

The real estate market is constantly adapting to meet changing economic, societal, and technological forces. Despite challenges such as affordability concerns and changing demand patterns, the industry is embracing technological innovations, sustainability, and evolving consumer preferences. As the market continues to evolve, it will shape the way we live, work, and invest in property.

The figure 4.1 presents the projected growth of the US real estate market until 2030, expected to increase by 5.2% in the next seven years.



Figure 4.1: US Real Estate Market Size (“Real Estate Market Size & Trends Report”, 2022)

4.3 Company Characterization

eXp Realty is an American corporation established in 2009, boasting a presence in 24 nations, encompassing ten distinct languages, and employing 88,000 individuals. It is part of the wider eXp World Holding, comprising 5 companies.

Besides eXp Realty, the group holds:

- Virbela

The first virtual world platform designed for remote collaboration, wherein users can hold meetings, events and control their entire workforce;

- SUCCESS Enterprises

An expansive array of media channels and platforms, encompassing newsletters, magazines, podcasts, and digital courses, has been meticulously cultivated as an ecosystem to facilitate professional and personal growth.

- Showcase IDX

A real estate search and consumer plug-in provides agents and brokers with mobile-ready and indexable content, augmenting their ability to cater to prospective buyers and expand their online presence.

- Zoocasa

A platform supported by machine learning algorithms which provide agents with an enhanced home search experience, comprehensive market insights, and curated content, all aimed at empowering agents to surpass their performance goals and elevate their professional achievements.

eXp Realty is segmented into two distinct divisions: North America Realty, which encompasses the United States and Canada, and International Realty, which encompasses 22 other countries. In 2019, eXp expanded its operations to include Australia and the United Kingdom. Subsequently, in 2020, eXp further expanded its presence to encompass

South Africa, India, Mexico, Portugal, and France. In 2021, eXp continued its expansion by entering Puerto Rico, Brazil, Italy, Hong Kong, Colombia, Spain, Israel, Panama, and Germany. The year 2022 witnessed eXp's entry into the Dominican Republic, Greece, New Zealand, Chile, and Poland. Notably, Portugal holds the distinction of being the first European country in which eXp established its operations.

The company presents a distinctive value proposition characterized by the absence of physical office spaces. This operational model allows employees to work from any location of their preference while reducing fixed costs incurred by the organization. Notably, the broker's commissions the company offers surpass those of competitors, reaching a notable 75%. Upon reaching a commission milestone of 25,000€, agents are eligible for an increased commission rate of 100%.

The activities of eXp are built upon a cohesive framework comprising nine interconnected principles:

1. Community

Establish a substantial and enduring legacy through collaborative engagement with the local community.

2. Service

Effectuate constructive transformations that benefit all stakeholders engaged in the process.

3. Sustainability

Contribute actively to advancing and preserving the environment, fostering its future sustenance.

4. Collaboration

Foster a cohesive team dynamic by fostering a collective approach and synergy.

5. Transparency

Ensure transparency and accountability in all actions, refraining from clandestine undertakings.

6. Integrity

Uphold ethical conduct and execute endeavours with genuine intentions.

7. Innovation

Anticipate future trends and developments as an effective means of forecasting.

8. Agility

Advocate for change as a means of adapting, thriving, and expanding.

9. Fun

Cultivate a conducive and harmonious work environment that promotes well-being and productivity.

- Founder

"The best way to predict the future is to invent it"

Glenn Sanford

eXp was founded by Glenn Sanford, now the CEO of eXp World Holdings, Inc. and Chief Strategy Officer for VirBELA. He worked on several startups and founded eShippers.com, a revolutionary eCommerce and Logistics company that combined internet storefronts with a vast network of 212 pick-and-pack fulfilment centres across the US. It offered small to mid-sized manufacturers and retailers a complete solution, encompassing online clicks and final-mile deliveries. He also launched a restaurant delivery service (similar to Uber Eats or Glovo), but thirty years before they became famous.

In 2002, he started a highly successful real estate career, working for several companies, including Prudential Kelstrup REALTORS, Keller Williams and BuyerTours Realty. In only his fourth year in the business, he ran one of the top 50 Keller Williams real estate teams in the country, doing over 60M€ a year in production.

In 2008, he founded eXp with 24 agents.

- Origins

In 2008, amidst the global financial crisis that affected numerous industries, including real estate, Glenn Sanford founded eXp Realty. This was a time of economic uncertainty, but the founder's resilience and innovative spirit led him to create a new real estate brokerage model that could withstand future challenges.

Traditional real estate models were being challenged at the height of the crisis, and many professionals faced the consequences of the market collapse. Sanford had to close its company offices and relocated to its garage. There, he recognized an opportunity to reimagine the real estate brokerage model and create a virtual, cloud-based platform that would be more efficient, flexible, and technologically advanced.

Sanford's vision for eXp Realty was to provide a platform allowing real estate agents to collaborate and conduct business from anywhere with an internet connection. This fundamentally changed how real estate transactions were conducted and transcended geographical constraints.

Rather than just surviving the turmoil of the 2008 crisis, Sanford embraced disruption and built a forward-looking model that could weather future challenges. His belief in the potential of technology to reshape the industry and his determination to provide a solution to real estate professionals navigating uncertainty led to the creation of eXp.

eXp Realty's foundation during a crisis aligns with the spirit of innovation that often emerges during such periods, as described previously.

- Customers

At eXp, individuals can purchase a house online without needing physical presence or in-person meetings. This unique opportunity caters to digital nomads and customers wishing to relocate far from home.

Digital nomads use technology to work remotely, allowing them to break free from traditional office settings. They rely on laptops and smartphones to stay connected to work while exploring the world. This lifestyle offers flexibility and work-life balance but may present challenges such as productivity and reliable internet access. Digital nomads share experiences and insights, showcasing a pioneering approach to work and personal exploration. Even eXp workers can be considered digital nomads.

eXp's clientele consists of tech-savvy individuals who desire a unique real estate journey. This includes immigrants who plan to relocate and wish to buy a home in advance. With the advancement of digital communication and the rise of remote work opportunities, people seek out new areas and nations where they can flourish and achieve better living standards while continuing to contribute financially.

- One Office Culture

Real estate businesses are often organized into franchises, which provide agents and brokers with a recognized brand name, established marketing strategies, centralized resources, and a more comprehensive support network.

A real estate franchise is a partnership between a franchisor, an established real estate company, and franchisees, individual agents or brokers looking to align themselves with the brand. Franchisees pay an initial franchise fee and ongoing royalties in exchange for the right to use the franchisor's brand, business systems, and support services. This partnership allows franchisees to leverage the reputation and credibility of the brand, which can lead to increased client trust and a competitive edge in the market.

Joining a real estate franchise provides immediate access to a recognized and trusted brand. Franchisees can tap into the franchisor's established marketing materials, advertising campaigns, and digital presence, saving time and effort to build their brand identity. This is particularly beneficial for new or experienced industry agents looking to expand their reach.

Centralized resources offered by real estate franchises can significantly enhance efficiency and productivity. These resources might include technology platforms for transaction management, lead generation tools, customer relationship management systems, and marketing collateral. By leveraging these resources, franchisees can streamline their operations and focus more on serving clients and growing their business.

However, it's important to note that real estate franchises have certain obligations and limitations. Franchisees must adhere to the franchisor's business practices, branding guidelines, and operational standards. While this framework provides a structure for

success, it also means that franchisees have less autonomy and flexibility compared to independent agents or brokerages.

eXp is a unique real estate company that operates globally as a single entity. Unlike other businesses, no franchises are involved, and the different divisions within the company work together instead of competing against each other. This unique approach eliminates franchises' costs and increases agents' revenues.

The borderless approach of eXp Realty encourages global collaboration, making it easy for agents and staff from different regions to interact and share insights. The absence of physical offices also helps the company save on overhead costs, which allows them to invest more in technology, training, and supporting its agents. This virtual model provides agents with unmatched flexibility, enabling them to work from home, co-working spaces, or any location that suits them best. The use of the metaverse enhances this virtual model.

- Employee-focused culture

In traditional real estate companies, agents and brokers had to give a considerable part of the profit to desk and franchise fees and had no control of that money. In addition to these problems, a typical agent can not be a shareholder in a real estate company, and they didn't get any revenue for bringing people into the company.

eXp revolutionized the real estate industry by digitizing its operations to boost profits and foster collaboration and camaraderie among its staff. The company entered the real estate sector with this business model because its goal is to become the most agent-centric company on the planet. eXp prioritizes its employees through its innovative revenue-sharing model and utilization of the metaverse.

4.3.1 Financial Analysis

From 2014 onwards, eXp has experienced a rise in both revenue and gross profit. As described in Figures 4.2 and 4.3, the company's revenue and gross profit increased exponentially in recent years.

As described in Figure 4.4, the largest portion (98.9%) of revenue is generated from the operations in North America. The remaining revenue is generated by the international division, as well as Virbela and other related services.

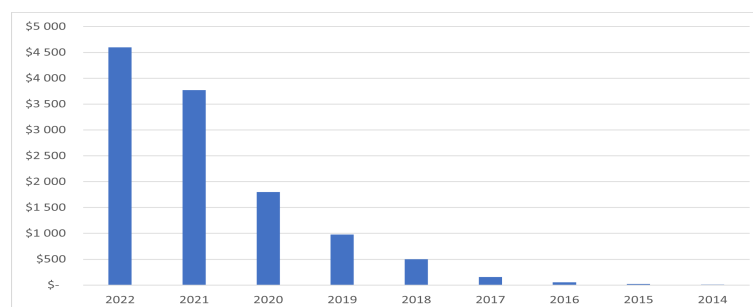


Figure 4.2: eXp Revenue (in millions \$)

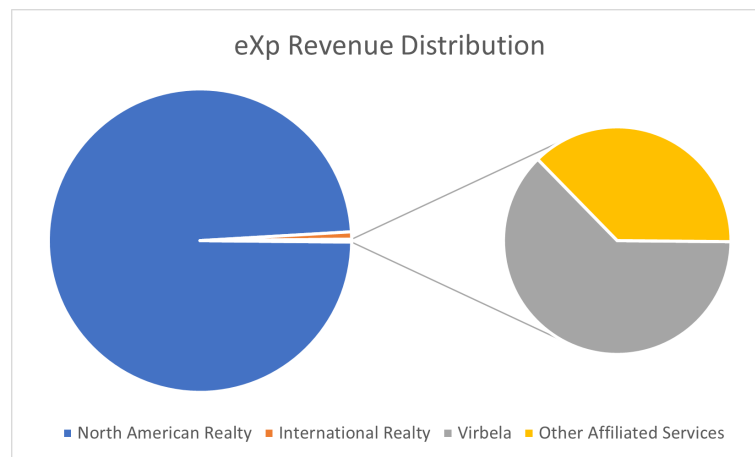


Figure 4.3: eXp Revenue distribution

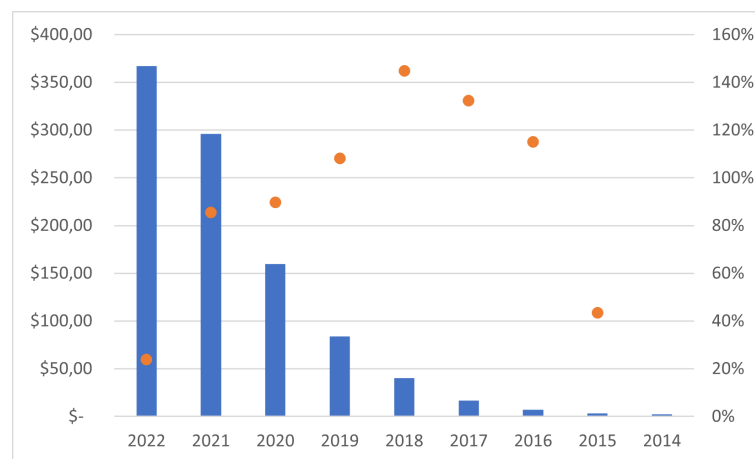


Figure 4.4: eXp Gross Profit (in millions \$)

4.3.1.1 Income

At eXp, agents can earn money through commissions, revenue share programs or equity opportunities.

- Commissions

Real estate agents earn commissions by assisting their clients in buying or selling properties. They divide their commission with the brokerage at an 80/20 ratio. The commission limit is 16000\$ per year for each agent. Once this cap is reached, agents are entitled to keep 100% of the commission for all transactions for the rest of the year.

- Revenue-sharing model

This program allows a portion of the agents' earnings to be shared with those who referred them to the company.

4.3. COMPANY CHARACTERIZATION

Revenue Share is essentially derived from the company’s 20% share of the commission split. This share is applied to each transaction until the agent reaches their annual cap, which is set at \$16,000 in gross commission income paid to eXp. This means that for a total commission of \$80,000, \$16,000 will be directed to eXp.

After the cap reset, the Revenue Share program recommences, allowing agents to continue benefiting from the program’s structure and incentives.

In addition, agents receive monetary compensation for each sale made by an agent they referred to the company. The percentage of commissions they earn is described in Table 4.1. In Table 4.2, the compensation overview for agents is presented in various ranges.

Tiers	Expansion Share % of Gross Commission Income	Exponential Share % of Gross Commission Income	Tier 1 Agent Count Needed
1	-	3,5%	0-4
2	0,2%	3,8%	5-9
3	0,1%	2,4%	10-14
4	0,1%	1,4%	15-19
5	0,1%	0,9%	20-24
6	0,5%	2,0%	25-39
7	0,5%	4,5%	40+

Table 4.1: eXp Revenue Share Tier Distribution

Compensation from eXp	% of total productive agents paid in 2021
<100\$	0,40% (196)
<2500\$	10,03% (4872)
<10k\$	23,52% (11426)
<20k\$	16,21% (7876)
<50k\$	21,26% (10329)
<100k\$	12,91% (6271)
<500k\$	14,09% (6842)
<1M\$	1,16% (565)
>1M\$	0,41% (198)

Table 4.2: Agent Compensation Overview

- Equity Opportunities

Agents can be rewarded with EXPI stock shares for completing specific tasks or achieving certain goals, in addition to the income opportunities mentioned earlier. They earn shares through an ESOP program. An Employee Stock Ownership Program (ESOP) is a forward-thinking initiative allowing employees to own a share by allocating company stocks. This approach helps align the goals of the workforce with the success of the company and instils a sense of ownership, dedication, and motivation among employees to contribute to the growth and profitability of the organization.

The agents earn shares on their first transaction when they fully cap and when a sponsored agent closes their first transaction. The ICON Agent Award also recognizes

agents meeting their cultural and production goals throughout the year, with potential stock awards of up to 16000\$. As an agent, you can also gain ownership in NASDAQ:EXPI by receiving 5% of each transaction commission in the form of discounted stock at a rate of 10%.

This program allows agents to diversify their investment portfolios, which can help them create a stronger and more varied financial strategy. It also provides agents with the tools to create a comprehensive retirement plan, ensuring their financial security and well-being after they retire from their profession.

4.3.1.2 Metaverse

The metaverse is a digital world that goes beyond traditional virtual environments. It combines physical and digital realities so that people can engage in immersive experiences and interactions. In this vast digital cosmos, people can socialize, work, innovate, and explore various digital domains and pursuits, often using avatars.

Participants can do many things in the metaverse, from attending virtual concerts and collaborating on creative projects to traversing fantastical landscapes and conducting professional meetings. They can also access educational sessions and even buy virtual property. The metaverse is built on user-generated content, meaning that individuals and communities contribute to its ongoing evolution, creating a decentralized virtual society.

While the idea of a metaverse has gained attention due to advances in virtual reality, augmented reality, and blockchain technology, it is still a developing concept. As technology progresses, the metaverse has the potential to transform human interaction, entertainment, education, commerce, and more, changing the digital landscape in new and exciting ways.

The eXp Metaverse is a virtual platform designed to enable real estate agents to connect, learn from, and uniquely collaborate with one another. The platform was designed by Virbela, allowing agents to explore virtual properties, attend meetings and training sessions, and even meet clients in a virtual environment. To have full control of the platform, the eXp Group acquired Virbela in 2018 and developed it into a worldwide company.

Although the eXp Metaverse is still in its developmental stages, it can potentially revolutionize the real estate industry. Agents can now access resources and information that were once limited to them and network with colleagues from all over the globe. This can increase productivity, more closed deals, and improved customer service.

Inside eXp's metaverse, there are virtual offices and common areas for workers to gather and collaborate as a global community. With the help of avatars, agents can engage in various activities such as socializing, playing games, making purchases, and even learning, all within the eXp World.

4.3.1.3 Sustainability

One of the primary reasons eXp adopted this business model was to decrease CO2 emissions by reducing the need to travel by car and plane. Since agents can hold meetings in the metaverse without commuting to the office, a significant amount of CO2 emissions is avoided.

By implementing this business model instead of a physical one, there is a reduction in the amount of paper used in daily activities and a decrease in energy consumption, resulting in the conservation of natural resources.

RECOMMENDATIONS FOR THE DEVELOPMENT OF DIGITAL SERVICES

In this chapter, a series of recommendations for the development of digital services will be presented. The purpose of these suggestions is to streamline the process, given the intricate combination of factors involved.

As previously noted, the most common reasons for startup failure are insufficient funds or inability to secure new funding, as well as a lack of demand in the market for their product, which can also lead to financial insolvency. Therefore, a correct assessment of the market needs is essential to guarantee a business's viability. It involves a systematic and thorough investigation into the desires, preferences, and pain points of a target market. This research helps businesses gain a deep understanding of their customers and potential customers, enabling them to tailor their products, services, and marketing efforts to meet these needs effectively.

In today's rapidly evolving business environment, identifying customer needs involves utilizing a combination of traditional and modern methods, as well as technology and data-driven insights. The following steps represent how customer needs can be effectively identified in a non-digital service context:

- Face-to-Face Interaction

It is essential for businesses to ensure that their staff engages directly with customers when they visit the physical location. Staff members should be trained to maintain a high level of attentiveness and proactivity in assisting customers. Encouraging open dialogue and prompting customers with questions about their preferences and expectations can contribute to a more personalized and customer-centric experience.

- Customer Feedback Forms

It is advisable to implement physical feedback forms or suggestion boxes at the location. This allows customers to provide comments, and suggestions, or express concerns anonymously. Regularly reviewing and taking action based on the received

feedback is essential to enhance the customer experience and address their needs effectively.

- In-Person Surveys

It is recommended to conduct in-person surveys with customers while they are present on the premises. The surveys should be designed to be concise and focused on capturing insights into their experiences, needs, and any encountered issues. This approach allows businesses to gather valuable feedback directly from their customers in order to improve their services.

- Observation

It is important to ensure that staff members are trained to keenly observe customer behaviour and non-verbal cues. This practice can unveil unexpressed needs or frustrations. For instance, detecting extended lines at the checkout may suggest a requirement for expedited service.

- Competitor Benchmarking

It is advisable to conduct a thorough analysis of competitors and make comparisons with one's own offerings. This examination aims to identify strengths in competitors' services and areas where they may have shortcomings. Through this process, businesses can pinpoint potential customer needs that remain unaddressed within the market.

- Customer Interviews

It is beneficial to arrange one-on-one interviews with specific customers to acquire a more profound insight into their needs and expectations. This personalized approach facilitates in-depth conversations and offers the chance to cultivate more robust customer relationships.

- Employee Feedback

It is recommended to foster an environment where employees are encouraged to share their insights and customer interactions. Frontline staff often possess valuable information pertaining to customer needs and concerns, making their input a valuable asset.

- Regular Business Reviews

It is advisable to conduct periodic reviews of the business's performance and customer feedback in collaboration with the team. These reviews should encompass discussions surrounding areas requiring enhancement and brainstorming of potential solutions to meet identified needs.

Conducting market research is crucial to creating effective business strategies. It helps identify customer needs and challenges, resulting in a customer-focused approach that enhances satisfaction and loyalty. Market research guides product development to align with customer preferences, allowing for targeted marketing efforts that increase engagement and conversion rates. By utilizing data-driven decision-making, businesses gain a competitive edge while reducing risks associated with new product launches. Effective market segmentation and pricing strategies are made possible, supporting long-term adaptation to changing market conditions. Finally, customer feedback mechanisms such as surveys and reviews foster continuous improvement.

The case study conducted provided compelling evidence that a well-defined approach is essential for the creation and maintenance of a successful digital service. It reaffirmed the importance of understanding and addressing the diverse needs of customers, which is critical for achieving success. The study went beyond mere confirmation and delved into the intricate dynamics involved in launching and operating a prosperous digital service.

A fundamental aspect of this approach is a deep understanding of the intricacies of customer needs. It requires going beyond surface-level preferences and analyzing the underlying challenges and pain points experienced by customers. This approach enables businesses to discover new opportunities for innovation and service improvement, leading to enhanced value. It is the foundation upon which successful digital service initiatives are built. Additionally, the study highlighted the crucial role of various factors that contribute synergistically to the prosperity of a digital service. These factors include the effective utilization of emerging technologies, the cultivation of a customer-centric organizational culture, and the implementation of agile and data-driven strategies. Collectively, they enable businesses to gain a competitive edge and achieve enduring success in the ever-changing landscape of digital services.

Although there are several drivers that can enhance a business, many of them are out of the owner's control. However, it is possible to take advantage of these drivers.

During times of crisis, the resources usually dwindle, which requires efficiency. Crises, whether stemming from natural disasters, economic downturns, or global health emergencies, demand rapid, well-coordinated responses. Key components of efficiency in crisis situations encompass resource allocation, clear communication, adaptability, streamlined decision-making, and preparedness. In these situations, the digital world can be utilized to save money and coordinate a more successful response to the problem. Learning lessons during these times and applying them during regular times is crucial for success.

eXp has adeptly capitalized on shifting market dynamics during crises. The pandemic created a surge in remote work and increased demand for spacious residential properties, giving the company an opportunity to expand its global footprint. By appealing to agents worldwide looking for a virtual business model, the company attracted diverse talent, expanding its reach and unlocking new markets. This strategic global expansion demonstrated its agility and ability to pivot growth strategies in response to external challenges.

Another key factor in the company's resilience during crises is its cost-effective model. As economic uncertainties loomed, many professionals sought leaner business operations. The company's model, which eliminates physical office overhead costs, became increasingly appealing. Agents were attracted to the opportunity to reduce operating expenses while maintaining their careers. The company's adeptness in providing a cost-efficient platform was pivotal in attracting and retaining talent during turbulent times, affirming its commitment to empowering professionals with adaptable and efficient business solutions.

Another powerful driver is the correct use of technology. New technology developments are constantly emerging, which unlocks doors to innovation and creates fresh business paradigms. These advancements have a profound impact on industries, reshaping the landscape and offering transformative possibilities.

These developments disrupt conventional sectors by introducing more efficient, cost-effective, and convenient alternatives. For example, ride-sharing platforms like Uber and Lyft have revolutionized transportation through mobile apps and GPS technology. They not only challenge traditional business models but also spark innovative approaches to service delivery. At the same time, new technologies have fostered globalization, connecting businesses and consumers globally and ushering in e-commerce, remote work, and intricate global supply chains. This interconnectedness has redefined how enterprises operate on a global scale, catalyzing novel business opportunities and models.

eXp expertly caters to its customers' diverse needs using a multifaceted approach that includes innovative technology, personalized services, and a devoted commitment to agent success. Its strategy revolves around cutting-edge technology, which is prominently featured in its cloud-based platform, the eXp World. This platform equips both clients and agents with a comprehensive suite of digital tools, making virtual property tours, efficient document management, and seamless real-time communication possible. As a result, it offers a real estate experience that blends efficiency and convenience, which is in line with the preferences of today's tech-savvy clientele.

Despite its emphasis on technology, this company's commitment to its customers goes beyond that. The company acknowledges that every client's journey is unique and invests in training its agents to provide personalized guidance. This approach ensures that clients receive tailored recommendations that align with their specific goals, which enhances the overall satisfaction and success of its real estate transactions. Furthermore, the company's global expansion broadens its ability to cater to clients with international real estate interests. Through its extensive network of agents worldwide, it offers local expertise, helping clients navigate cross-border transactions and find properties that meet its specific criteria.

Investing in political funds is one way to boost the potential of a business, even with a modest investment. These funds can be strategically used to yield impactful results. For example, allocating funds towards digital marketing campaigns can enhance a business's online visibility, expand its customer base, and ultimately increase revenue. Additionally, investing in employee training and development programs can improve workforce skills,

productivity, and overall business performance, without requiring massive financial outlays.

Political funds can also support innovative research and development initiatives, enabling businesses to explore new products, services, or technologies that can set them apart in the market. Such investments can result in competitive advantages and long-term growth potential. Furthermore, funds allocated to community engagement and corporate social responsibility projects can enhance a company's reputation and foster stronger relationships with stakeholders. Essentially, by strategically directing political funds into various aspects of the business, even a small amount can catalyze meaningful change and position the company for sustainable success.

Countries with high levels of digital maturity are leading the way in promoting and facilitating digital services. They have created an environment that encourages the seamless integration of digital technologies into daily life, business, and governance. To achieve this, these countries prioritize robust digital infrastructure, widespread internet connectivity, and a tech-savvy population. These components are crucial for the successful deployment of digital services.

In these advanced digital ecosystems, governments and businesses are quick to adopt cutting-edge technologies. They use these technologies to improve the delivery of public services, optimize business operations, and foster innovation. Moreover, regulatory frameworks in these countries are designed to encourage digital entrepreneurship and protect digital rights. As a result, high digital maturity nations serve as excellent examples for the rest of the world. They show how digital services can revolutionize industries, improve citizen experiences, and drive economic growth.

The need for sustainable practices has led to the growth of digital services. The world is facing environmental challenges, and there's a heightened awareness of the importance of reducing resource consumption, minimizing waste, and lessening the ecological footprint of activities. To address these concerns, digital services have become a crucial solution. They allow businesses and individuals to streamline operations, reduce physical resource usage, and promote eco-friendly practices like remote work, digital document management, and energy-efficient technologies.

Additionally, digital services play a significant role in promoting sustainability by facilitating eco-friendly alternatives. For example, the use of digital platforms for virtual meetings and telecommuting reduces carbon emissions associated with daily commuting. Similarly, switching from physical to digital products like e-books and streaming services reduces the environmental impact of manufacturing and shipping physical goods. Overall, integrating digital services aligns with the global commitment to sustainability, providing innovative ways to tackle environmental challenges while improving efficiency in various sectors of society.

As previously observed, the company analyzed places a strong emphasis on sustainability as an integral part of its corporate responsibility initiatives. The company is committed to reducing its environmental impact and fostering eco-conscious practices

within its operations. One of its notable sustainability efforts lies in promoting remote work, which inherently reduces the carbon footprint associated with daily commuting and traditional office spaces. By enabling its agents and employees to work from home or remote locations, the company contributes to lowering greenhouse gas emissions and decreasing traffic congestion, aligning with global sustainability goals.

The advent of the eXp metaverse, eXp World, holds the potential to exert a significant influence on sustainability. By enabling virtual workspaces and meetings, eXp World can reduce physical commuting, lessening traffic congestion and emissions. Additionally, it can promote energy-efficient data centre practices and decrease demand for physical office space. The platform's support for paperless transactions and global collaboration fosters environmentally friendly practices. Moreover, eXp World can serve as a platform for sustainability education and awareness. However, its ultimate environmental impact will depend on its development and management with a strong focus on sustainability.

This study has a limitation in that the number of interviews conducted was small. While the insights gained from the interview are valuable for the specific area under examination, the study's findings may be limited by the small sample size. To improve the robustness and comprehensiveness of the results, it would be beneficial to broaden the research's focus and include more diverse areas such as healthcare, retail, education, or banking.

By expanding the scope of investigation to different domains, the study can obtain a more comprehensive dataset and explore the impact and applicability of its core findings in a more nuanced way. Each sector presents unique challenges and opportunities in the context of digitalization, and a broader analysis covering these sectors could provide a more holistic understanding of the dynamics at play. Additionally, this approach could improve the external validity of the research, allowing for the confident extrapolation of insights to a wider range of industries and discovering cross-cutting themes that transcend specific domains. Ultimately, this multifaceted perspective could provide a more accurate portrayal of the implications and ramifications of digital services in various sectors, enhancing scholarly discourse in this field.

CONCLUSION

The objectives of this study were to discover how to correctly identify the key market drivers that could be used in the development of digital services, more specifically in typically non-digital services and to find out how organizations can respond to evolving customer needs in today's dynamic digital services landscape. The exploration of these questions has illuminated critical aspects of the digital services landscape, offering valuable insights for businesses and organizations seeking success in this ever-changing environment.

This study provides a thorough understanding of how to identify the important factors that drive the development of digital services in the market. After examining economic, technological, social, and regulatory factors, the study emphasizes that these drivers are constantly changing. The research highlights the importance of continuously monitoring and adapting to these changes, using data-driven insights, and focusing on the needs of customers. By being adaptable, organizations can make informed decisions and allocate resources effectively to keep up with changing market dynamics.

The study has revealed ways for organizations to respond well to changing customer needs in the constantly evolving digital services world. It highlights the importance of understanding customer behaviour and preferences. By incorporating customer feedback, engagement data, and advanced analytics, organizations can gain real-time insights into shifting customer needs and adapt their digital services accordingly. The research also emphasizes the importance of being agile and innovative in addressing these changing needs. This highlights the need for organizations to cultivate a culture of continuous improvement and customer-centricity.

This study has highlighted the link between market forces and customer demands. The recognition of key market influences can directly impact an organization's ability to meet customer needs. Conversely, an organization's response to changing customer requirements can shape market drivers. Thus, businesses need to adopt a comprehensive strategy that combines market analysis and customer insights. They should also be able to adjust their digital services in real time.

To sum up, this research has offered a complete view of the development of digital services, including the identification of market drivers and the response to customer

needs. In today's rapidly changing environment, companies that embrace adaptability, data-driven decision-making, and customer-centricity are better equipped to succeed, innovate, and stay competitive in the dynamic digital services industry.

In order to gain a better understanding of market drivers, future research can explore the use of advanced data analytics techniques, cross-industry comparisons, and a global perspective to uncover commonalities, variations, and regional nuances. Additionally, it is important for this research to take into account the ethical considerations surrounding data privacy and responsible technology usage, as these issues are becoming increasingly relevant in the development of digital services. By utilizing emerging technologies, fostering interdisciplinary collaboration, and conducting long-term trend analysis, organizations can gain valuable insights and strategies to succeed in the constantly evolving digital landscape.

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