METAVERSING THE CORPORATE STRATEGY:

The opportunities and challenges of digital transformation

Editors:

Polona Domadenik Muren, Matjaž Koman, Tjaša Redek

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PREFACE

"Metaversing the Corporate Strategy: The Opportunities and Challenges of Digital Transformation" is the result of an entire year's work of a selected research team *(Andreja Cirman, Barbara Čater, Tomaž Čater, Polona Domadenik Muren, Eva Erjavec, Daša Farčnik, Tanja Istenič, Matjaž Koman, Hana Končan, Mitja Kovač, Mateja Kos Koklič, Denis Marinšek, Marko Pahor, Tamara Pavasović Trošt, Tjaša Redek and Nada Zupan)*, and the students of the XXIXth generation of the International Master in Business and Organisation Programme (IMB) at the School of Economics and Business, University of Ljubljana. Their contributions were invaluable. We would especially like to thank emore than 200 executives from 104 Slovenian companies and institutions that participated in the research in August and September 2022 and shared with us important insights about strategic and operational challenges and barriers that are facing in the process of transformation.

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Ljubljana, November 2022

Editors

INTRODUCTION

Polona Domadenik Muren, Matjaž Koman, Tjaša Redek

METAVERSING THE CORPORATE STRATEGY: THE OPPORTUNITIES AND CHALLENGES OF DIGITAL TRANSFORMATION

"If the rate of change on the outside exceeds the rate of change on the inside, the end is near."

— Jack Welch, former Chairman and CEO of General Electric

Introduction

The challenge of digital transformation has become a top priority topic in the boardrooms due to the exceptional pace of the development of new technologies and swiftly changing business models of newcomers and incumbent companies. Applying IT technology with unlimited connectivity, big data, automation and robotization reshaped the value proposition for the final customer and enabled substantial gains in process efficiency in the past decade. Fast-growing digital entrants (like Alibaba or Amazon in retail, TiVo and Netflix in broadcasting, Airbnb in hospitality or Spotify in the music industry[1]) have surpassed many traditional corporations, while many other traditional giants (like Toys 'R'Us, Sears and RadioShack in retail) went bankrupt. Incumbents with well-developed digital competencies were better off in a battle with digital natives (BCG, 2022). However, these new digital companies are successfully diversifying their business portfolios and using their digital mindset and resources to enter and disrupt completely unrelated markets in search of further growth opportunities. Many

1 See Ansari et al. (2016), Zach et al. (2020) and Wlömert & Papies (2016) for more details.

financial companies, such as ING or Mastercard, consider Amazon or Alibaba as major potential competitors (BCG, 2022).

Although the recent pandemic has expedited technology initiatives in many traditional organizations, so that they were able to continue with operations, only about 30 percent of the companies in the S&P Global 1200 index are successfully implementing digital strategies and transforming themselves into digital incumbents (BCG, 2022). Companies that were more digitalized and embraced digital transformation more successfully before the pandemic outbreak coped with lockdowns during the Covid-19 pandemic in 2020 and 2021 more easily. However, implementing digital solutions based on enabling technologies is just the first step. Building digital competencies at the individual and organizational levels is a more challenging task that increases resilience – the ability to react to changing market situations faster and more efficiently. True bionic capabilities that improve human competencies with the most cutting-edge technological advancements in the field of augmented reality and human-centric robotization demand digital proficiency and will represent the foundation of bionic organizations in the future.

Developing a new digital business model that helps create and appropriate more value (Kane et al., 2015; Liu et al., 2011; Schallmo et al., 2017) is the transformational part that brings the major concerns. Dramatic changes in processes, working culture and value proposition redesigned the business models of traditional companies. A survey by Harvard Business Review Analytic Services among global executives shows that process-driven priorities (i.e., increasing productivity/efficiency, improving business continuity and resilience, and increasing agility) that have been on the top of "2021 Business Goals" have been surpassed in 2022 by prioritizing objectives that increase business value by enhancing customer satisfaction, analyzing enterprise data to uncover new business and operation insights, continuing to increase productivity/efficiency and drive their organization forward (HBR Analytic Services, 2022).

In many cases, digital transformation is just lip service, and many executives complain that organizations are struggling with the challenges of a "no change" culture, retention and human resources along the process of digital transformation. Pure business survival which most companies focused on during the pandemic has been replaced by strategizing on how to optimize their data strategies, find ways to be more innovative, and improve the customer experience. The "no change" culture that sometimes blocks or paralyzes any transformational initiatives is usually related to a lack of clear strategy on how

to apply complementary technologies to increase the business value. The CEOs of the most successful companies are constantly communicating the digital transformation story. Spending a lot of financial resources on technology and infrastructure upgrades is very inefficient if there is no clear strategy on how it will increase productivity, deliver a good employee experience and/or drive a good customer experience (HBR Analytic Services, 2022).

In continuing, this chapter first explains the main narrative and key concepts related to digital transformation. Technological, organizational and environmental factors that foster or inhibit the process are explained in the second part followed by the identification of enablers and barriers. The final section concludes by presenting the structure of the next chapters.

1 Digital transformation in a nutshell

Digital transformation can be described as a company-wide change that leads to the development of a new business model - a digital organization (Iansiti & Lakhani, 2014; Kane et al., 2015; Pagani & Pardo, 2017). A new business logic to create and capture value is developed upon two more incremental phases, digitization and digitalization (Loebbecke & Picot, 2015; Matt et al., 2015; Parviainen et al., 2017).

Digitization is the process of encoding analog into digital information, i.e., the information that computers can store, process, and transmit[2] (Dougherty & Dunne, 2012; Loebbecke & Picot, 2015; Tan & Pan, 2003; Yoo et al., 2010). Research also defines digitization as a change from analog to digital tasks (Li et al., 2016; Sebastian et al., 2017), or conceptualizes it as the integration of information technology with existing tasks. More broadly, it is defined as the developer or enabler of cost-effective resource configurations using information technology solutions (Lai et al., 2010; Vendrell-Herrero et al., 2017). Digitization itself does not have any direct impact on value-creation activities.

On the other hand, digitalisation describes how firms apply digital technologies to optimize existing business processes by allowing more efficient coordination between processes, and/or by creating additional customer value through enhancing user experiences[3] (Pagani & Pardo, 2017). Cost savings and process

2 The use of digital forms in ordering processes, the use of digital customer surveys or the use of digital applications for internal financial declarations are the examples of digitized internal and external documentation processes.

3 The creation of new online or mobile communication channels that allow all customers to easily connect with firms, and which change traditional firm-customer interactions is an example of digitalization that improves customer experience (Ramaswamy & Ozcan, 2016).

improvements that may enhance customer experiences are the main drivers. In digitalization, information technology serves as a key enabler to seize new business possibilities by changing existing business processes, such as communication (Ramaswamy & Ozcan, 2016; Van Doorn et al., 2010), distribution (Leviäkangas, 2016), waste management or business relationship management (Baraldi & Nadin, 2006).

Digital transformation goes beyond digitalization by changing simple organizational processes and tasks, changing the corporate business logic (Li et al., 2018) or its value creation process (Gölzer & Fritzsche, 2017). It utilizes digital technologies to enable interactions across borders with suppliers, customers and competitors (Singh & Hess, 2017). Moreover, the fast-moving incumbents which implemented new transformational technologies quickly gain a competitive advantage by transforming the organization and leveraging existing core competencies or developing new ones (Liu et al., 2011). Therefore, digital transformation is inherently linked to strategic changes in business models (Sebastian et al., 2017), which allow firms to respond quickly to business disruptions enforced by new digital entrants. In summary, digital transformation is a company-wide phenomenon with broad organizational implications in which, most notably, the core business model of the firm is subject to change (*business model innovation*) through the use of general-purpose or complementary digital technology (Agarwal et al., 2010; Iansiti & Lakhani, 2014). However, the magnitude and speed of change depend on different industry-related factors. The digital transformation in the healthcare sector, for example, is manifested by the broad and deep use of transformative general-purpose information technologies that are fundamentally changing the existing business processes and the provision of healthcare services (Agarwal et al., 2010). Improved and more efficient business processes, new routines and digital capabilities allow healthcare providers to enter new or exit current markets (Li et al., 2018).

Although the business community is aware that either embracing the digital future or being destined to be disrupted represents the most likely outcomes in the next decade, the academic literature has so far paid surprisingly little attention to digital transformation. Until now, digital change has received the most attention within specific business disciplines like marketing focusing on digital advertising, social media (Lamberton & Stephen, 2016; Kannan & Li, 2017) and multi-channel and omni-channel developments (Verhoef et al., 2015). Strategic management literature studies the conceptualization and operationalization of (digital) business models (Foss & Saebi, 2017; Osterwalder & Pigneur, 2010), while the information system literature focuses mostly on

technical developments regarding the adoption and use of digital technologies like artificial intelligence (AI) or machine learning (ML) (Nambisan et al., 2017; Sambamurthy et al., 2003). Treating digital transformation in functional silos would potentially lead to ignoring relevant aspects of information systems, marketing, strategic management, innovation, and operations management to make sound organization-wide decisions about how to respond to digital technologies and implement digital organizational changes (Verhoef et al., 2021).

Based on in-depth surveys, there are only a few multidisciplinary, cross-industry-driven discussions of digital transformation. It is defined as a change in how a firm employs digital technologies to develop a new digital business model and align the processes within the organization to support the transformation (Kane et al., 2015; Liu et al., 2011; Schallmo et al., 2017). A multidisciplinary discussion is required, given that digital transformation is multidisciplinary by nature, as it involves changes in strategy, organization, information technology, supply chains and marketing. In today's business world, managers are increasingly confronted with responding to the advent of new digital technologies that blur market boundaries and change agent roles (e.g., customers become co-producers, competitors become collaborators.

2 Technological, organizational and environmental factors of digital transformation

This transformative journey is, in essence, a very demanding one and companies will need to identify the challenges that threaten their success and address them accordingly. When studying the process of how a company views, seeks and adopts the need for digital transformation, the literature often applies the Technology-Organization-Environment Framework (TOE). The TOE framework emphasizes that an effective organization should have a structure that is consistent with its environmental needs which influence the firm's decision for technology adoption (Tornatzky & Fleischer, 1990). From the technological context, the TOE approach presents the technologies that are currently being used within the organization and identifies also new emerging technologies that are relevant for specific firms. Based on the impact of technologies on productivity, the technologies can be divided into two groups, general-purpose technologies and enabling technologies (Teece, 2018).

General-purpose technologies (GPT) are core technologies that have a substantial and pervasive effect by stimulating the long range of downstream

innovations across the whole of society and represent a high potential for innovation and application in different industries (Bresnahan & Trajtenberg, 1995; Bresnahan, 2010; Bresnahan, 2012). These technologies are transformative and generate unusually large productivity improvements after applying them in innovation processes, consequently pushing the production possibility frontier upward (Mramor et al., 2021).[4] A GPT could be a process, a product, or even a whole organizational system. The most relevant examples of GPTs are the steam engine, electricity at the turn of the 19th century, the spread of microelectronics in the last quarter of the 20th century and the internet since the eighties (Lipsey et al., 2005; Youtie et al., 2008). Many recent breakthrough technologies have aspects of these features but lack the monumental impact on the economy needed for them to be classified as GPTs[5]. However, there is a set of related digital technologies (big data, data mining, data science, machine learning, Internet of Things and natural language processing)[6] that are very likely to be classified as GPTs (Goldfarb et al., 2023).

Enabling technologies encompass equipment or processes that in combination with other technologies or alone facilitate a significant increase in the user's performance and/or capabilities. The development of enabling (often referred also as "complementary") technologies is based on society's decision to employ the GPT in several areas of production due to cost efficiency and scope for improvement. Enabling technologies can facilitate the development of entirely new ecosystems upon which other innovations are being built (Autio & Thomas, 2014). Examples of relevant enabling technologies for the Internet of Things[7] as a GPT are wireless sensor network, cloud computing, big data analytics, communication protocols and embedded systems (Patel et al., 2016). The key enabling technologies for cloud computing are distributed computing (cluster and grid computing), internet technologies (service-oriented architecture, Web 3.0, etc.) and hardware technologies (multi-core chips, virtualizations, etc.). Key enabling technologies (KETs), an umbrella EU policy concept introduced in 2009, denote the multidisciplinary knowledge-intensive technologies (the latest generation of advanced technologies) to enable product, process or business model innovation throughout the economy and are of systemic relevance (European Commission, 2012). In research and innovation frameworks, such KETs

4 Due to high potential productivity gains and benefits from agglomeration economies that GPTs bring to the society, the basic research in technologies is usually largely financed by public research funds. (Hidalgo & Hausmann, 2009; Delgado et al., 2014)

5 The potential of the technology will not be realized if the technology is not widely adopted throughout most of the economy. For example, hydrogen fuels cells have many of the characteristics that provide the potential to become a GPT but they lack a sufficient efficiency increase to become pervasive and hence to realize that potential.

6 For more details on technology see Mramor et al. (2021).

7 Internet of Things is a mixture of hardware and software technologies used to provide solutions based on the integration of IT technology.

include industrial biotechnology, nanotechnology, micro- and nanoelectronics, photonics, advanced materials, and advanced manufacturing. Their increased accessibility is highly advocated in policy initiatives (i.e., Smart specialization strategy) (European Commission, 2012).

The organizational resources and capabilities, organizational strategy, organizational structure, and managerial traits that promote the process of digital transformation are important layers in the organizational context and provide the needed interaction between the internal organization and the external environment (Ji & Li, 2022). Environmental factors in the TOE framework often refer to the characteristics of the external (macro and industry) environment in which the organization conducts its business (Oliveira & Martins, 2010; Ven & Verelst, 2011). The main triggers for creating and delivering new value propositions are macroeconomic megatrends (ageing of the population, climate change, disruptions and geopolitical instability) and industry-related factors (intense industry competition, significant changes in customer demand due to technology adoption and digital transformation along the supply chain). Firms need to change their existing strategies due to the dynamic, uncertain and complex nature of the environmental forces (Gupta & Bose, 2019). The digital transformation pace depends also on the pressures imposed by the competitors' and partners' digital development (Xiaowen et al., 2015). The supportive governmental policy promotes digital transformation, especially in medium and small firms, which often lack adequate financial resources and a skilled workforce (Vogelsang et al., 2018). The conceptual model is outlined in Figure 1.

Figure 1. Conceptual technological, organizational and environmental digital transformation framework

Source: Adapted from Ji & Li (2022).

Skilled and competent leadership plays a very important role in the process of digital transformation, more exactly in developing dynamic capabilities[8] (El Sawy et al., 2016). Industry analysis suggests that less than 30 percent of digital transformation programs succeed with having the right digital-savvy leaders in place, representing an important critical success factor (De la Boutetière, Montagner & Reich, 2018). Therefore, companies appoint a Chief Digital Officer (CDO), a digital specialist, to design and implement their transformative actions (Haffke et al., 2016). The scope of actions is usually greater than anticipated because of changes needed in an organization. The literature stresses that digital transformation leadership is a team sport, and competencies provided by a digital strategist and a digital architect should be complemented by an organizational agilist, a digital culturalist, and a customer centrist (McCarthy et al., 2021). The emerging skill set, such as data advocate, business process optimizer and digital workplace landscaper, is expected to play a major role in differentiation in the future.

Transformational leaders put a lot of emphasis on human resources. In the field of strategic management, aligning digital transformation with business objectives and key performance indicators (KPIs) is an important part of the strategic plan that organizations must reevaluate. The most undervalued metric that should be used more to measure digital transformation success is employee satisfaction. This KPI was the fifth most cited in the survey (37 percent) overall. Digging deeper into the results, however, shows that respondents whose organizations were identified as leaders cite this metric at a much higher rate – 45 percent versus 35 percent of the remaining sample (HBR Analytic Service, 2022).

3 Enablers and barriers to digital transformation

The process of digital transformation is seen as the omnipresent challenge which companies in all industries are currently facing. Disruptive innovation that requires adaptation of almost all business processes is associated with obstacles that seem to hinder the smooth implementation of digital approaches. Earlier works classified types of barriers with tangible (e.g., cost-related barriers) and intangible characteristics (e.g., human, social, strategic, technological). The literature, in general, distinguishes between internal and external barriers which are further divided. Internal barriers include resource-related, management-, time-, culture- and system-related as well as human-related challenges. External barriers are subdivided into supply-related, demand-related and environment-related

8 Dynamic capabilities resemble the firm-level actions to continuously adapt to and build competitive advantage in a changing environment (Teece et al., 1997).

challenges (Hadjimanolis, 2003). Digital transformation builds on different digital technologies to improve process efficiency and value for the customer. Summarizing the main barriers might be extremely difficult due to the high variability of industry specifics that demands different transformational activities. For example, Bilgeri & Wortmann (2017) identified 16 different barriers in an IoT context. In the automotive industry, big data analytics applications faced different barriers related to acquiring sufficient and skilled resources, the collaboration of different business departments, appropriate organizational structures, a data-driven culture, a defined business value and access to relevant data pools (Dremel, 2017). In the context of the development of digital services through innovation contests, specific barriers like difficulties in finding competent team members are discussed. Table 1 summarizes the main groups of barriers.

Table 1. Barriers to digital transformation

Barriers	Description
Economic barriers	• Cost of intangible investment (i.e. training, system adaptation) • Cost of IT infrastructure • Liquidity constraints • Difficulties in long-term planning of resources • Overuse of standard financial indicators • Lack of investment criteria
Organisational constraints	• Difficulties in buyer-supplier relationship • Set-up preparation difficulties
Technology barriers	• Production (shop-floor) disruptions • Technology system issues • Cybersecurity threats
Human resource barriers	• Employee resistance • Skills development (upskilling and reskilling challenges)
Policy and regulations	• Lack of reference architecture and standardization • Intellectual property threats • Lack of information • Lack of government support • Limited understanding on ethics and safety

Sources: Chan et al. (2018), Dwivedi et al. (2017), Müller et al. (2018), Harrington et al. (2017), Sjödin et al. (2018), Kamble et al. (2018), Lin et al. (2018), Luthra & Mangla (2018).

An important stream of literature deals with the "enabling factors" (enablers) that organizations and the surrounding systems should develop to take advantage of the digital era (Evangelista et al., 2018). Developing new bundles of skills (Butschan et al., 2019) for new models of leadership (Heavin & Power, 2018), activating appropriate human resource management practices (Carls-

son, 2018) and improving change management capabilities (Grover & Kohli, 2013) are among most mentioned internal enablers. External enablers deal with collaborative partnerships in a way that value creation is concentrated within firm boundaries, in inter-firm relationships (Sommer et al., 2017; Farrington & Alizadeh, 2017) and in open innovation dynamics (Frishammar et al., 2018).

Based on different groups of barriers, challenges to digital transformation can be distinguished into three broad categories (Yoo et al., 2010, and Tiefenbeck et al., 2018):

1. Market challenges that refer to the transformation of specific business models, supply chain reconfiguration and/or producer-consumer relationship,
2. Organizational challenges that deal with knowledge management based on the accessibility of information-based platforms, and
3. Economic and societal challenges that refer to the impact of new technologies on labor demand, environmental sustainability and energy efficiency.

Conclusion

To provide managerial guidance for digital transformation, there needs to be an improvement in the understanding of how firms can gain a sustainable competitive advantage by building on specific resources, which strategies they should adopt to win, and how the firm's internal organizational structure must change to support these strategies. This book, therefore, aims to contribute to this understanding in several distinctive ways. Firstly, it represents a comprehensive model of digital transformation based on real-life examples in the most important manufacturing and service industries in Slovenia, a small export-oriented EU economy. Combining in-depth interviews with companies' executives and data on digitalization and human resource investment will enable investigating top-down and bottom-up approaches to scan the digital transformation in Slovenian companies.

Secondly, the approach builds on identifying technological, business and societal impacts on developing new business models in the industries. The digital revolution has impacted and transformed almost every part of life (Makridakis, 2017). As consumers, people are eager to be part of the value-creating process – they co-create what they consume. Since most of the purchases are made online, there is a huge scope for developing complementary digital technologies fueled by the power of big data (Caputo et al., 2017). The world of work has also changed tremendously

as a consequence of digital transformation. Applying complementary technologies that enable work from everywhere, at least for a part of the world population, is increasing the digital divide in different regions of the world and among certain demographic groups. Constant disruptions in technological advancement demand individuals and societies to pace up relentlessly. Designing a proper set of education, training, and other incentives for digitally illiterate people is needed urgently.

Thirdly, this book identifies the most important challenges and barriers to the process of digital transformation. Evolving technologies already do and will continue to represent a major threat to existing routines and competencies. Organizations need not only to reevaluate their hiring strategies to attract younger generations but to support reskilling and upskilling to alleviate current hiring challenges, adopt the right technologies and know where to apply them, and reassess how their transformation efforts align with business objectives and key performance indicators. Successful transformational stories recognize the importance of people within the organization and involve them in the process by changing the "no change" culture and closing the digital divide between employees at all levels of the organization.

Digital transformation extends significantly beyond digitalization itself and is much more than just applying new technologies in business processes. From the societal perspective, the key purpose of digital transformation is to gain progress in green transition with digital solutions that also improve process efficiency. Both are very relevant in light of the current energy crisis. Moreover, robotization and automation indirectly solve challenges related to the ageing of the population. However, digital transformation requires not only sufficient (digital) resources but also a different and smart regulatory framework. Digital society applies different digital technologies to learn, entertain, work, explore, and fulfil ambitions. To gain strategic autonomy, the EU must increase its strategic autonomy in technology and develop new rules and technologies to protect citizens from counterfeit products, cyber theft and disinformation. Most importantly, the EU needs to address the digital divide by focusing on building digital competencies in the general population and increasing the number of highly skilled digital professionals. It should also support building and enabling a secure and sustainable digital infrastructure, promote the faster digital transformation of businesses and digitalization of public services. All those four aspects are incorporated in the Digital Decade Policy Programme (European Commission, 2021[9]).

9 See European Commission (2021) for more details.

The leading example of initiatives that build on the idea of smart industrial policy supporting a key technological area is the European Chips Act, which has been prepared in 2022 and will most likely be adopted at the beginning of 2023. The act presents a clear plan for building a sufficiently strong industrial and technological capability, based on own capacity-building and partnering with other countries to strengthen technological leadership and enhance strategic control of the semiconductor industrial ecosystem. Unlike the US Congress Chips and Science Act (2021)[10], it allocates more than €43 billion of public and private investments until 2030 for setting up factories for advanced chip production, stepping up semiconductor research in the EU, supporting innovative start-ups and SMEs, and fostering skills in microelectronics (European Commission, 2022).[11] The planned investment in chip technology will boost Europe's share of global chip production capacity to 20 percent from its current level of about ten percent (European Commission, 2022).

Top organizations are not afraid to make mistakes and their relationship with failure distinguishes them from others. Embracing digital transformation demands taking risks so companies need to build a culture where it is safe to try new things and success is not defined by not failing or not taking risks. The same notion could be applied to policymakers – changing the focus of the state from solely correcting market failures to becoming a co-creator of future digital solutions (Mazzucato, 2020). Similarly, European Commission positioned itself as an enabler of the digital transformation of companies in the EU to catch up with the USA and China. Other important issues for policymakers remain in the field of standardization and regulation to curb platform dependency, forcing them to behave more responsively and increase supply chain resilience.

10 US Congress, for example, passed the CHIPS Act as part of the National Defense Authorization Act in 2021 but never appropriated a budget for its programs. Therefore, some large companies like Intel warned the government they will move to other countries if they do not get subsidies for a new chip factory.

11 The European Chips Act supports the following: investments in next-generation technologies, providing access across Europe to design tools and pilot lines for the prototyping, testing and experimentation of cutting-edge chips, certification procedures for energy-efficient and trusted chips to guarantee quality and security for critical applications, a more investor-friendly framework for establishing manufacturing facilities in Europe, support for innovative start-ups, scale-ups and SMEs in accessing equity finance, fostering skills, talent and innovation in microelectronics, tools for anticipating and responding to semiconductor shortages and crises to ensure security of supply and building semiconductor international partnerships (European Commission, 2022).

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Eva Erjavec, Tjaša Redek

THE CHARACTERISTICS OF DIGITAL TRANSFORMATION AND NEW TECHNOLOGY USE IN SLOVENIA

Introduction[1]

Digital transformation has been one of the major drivers of companies' growth and competitiveness in the last decade (Gao et al., 2012; Müller et al., 2018). It has been argued by Chawla and Goyal (2021) that new technologies related to digital transformation bring companies additional revenue streams but also reduce costs and cost-efficiently improve old products and processes. European companies have made huge progress in new technology implementation in the past two decades, especially after 2010. Nonetheless, the level of digital intensity is still relatively low, both in the EU and Slovenia (Eurostat, 2022). Over 40 percent of companies have very low digital intensity in Slovenia, which is comparable to the EU. Sixty percent of all companies face problems with digital transformation, with the biggest problem being the lack of suitable personnel. In Slovenia, large companies are comparatively more digitized, as 26 percent of them are highly digitally intensive compared to only 17 percent on average in the EU. There are also considerable differences in the use of technologies across industries, and the intensity of the use of more complex technologies is also low (Eurostat, 2022).

The goal of this chapter is to present the key characteristics of digital transformation in Slovenia and the EU, focusing also on the differences between

1 The research is based on linked datasets, provided by the Statistical Office of the Republic of Slovenia. This analysis would not be possible without their expert support, in particular the User relations section of the Data publication and communication division. The research is partially funded by the project: V5-2121 »Digitalna preobrazba, Industrija 4.0 in struktura slovenskega gospodarstva ter vpliv digitalizacije in uvajanja novih tehnologij na dolgoročno gospodarsko rast in vzdržnost javnih financ v Sloveniji« and research program P5-0128 »Izzivi vključujočega in trajnostnega razvoja v prevladujoči paradigmi ekonomskih in poslovnih znanosti«.

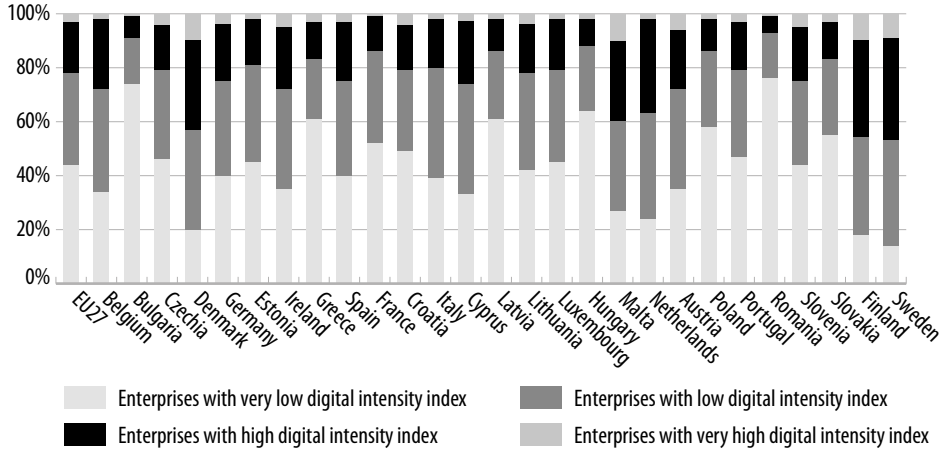
different sectors in Slovenia. The analysis relies on available statistical data as well as protected micro-data sets.

In continuing, the paper first briefly summarizes the main motives, drivers and expected impacts of digital transformation. The focus of the paper is on the analysis of comparative differences in the use of new technologies between Slovenia and the EU and on an in-depth analysis of the situation in Slovenia.

1 The use of new technologies in Slovenia and the EU

The intensity and use of digital technologies differ among EU countries. According to the Eurostat (2022) digital intensity index, which divides countries based on the share of companies with very high, high, low and very low digital intensity, the most digitalized country is Finland, with ten percent of companies having very high digital intensity and another 36 percent having high digital intensity (Figure 1). In the EU, on average three percent of companies fall under the category of "very high digital intensity", 19 percent are highly digitally intense, while 44 percent of EU companies have very low digital intensity. Slovenia is at par with the EU in the share of companies with very low digital intensity, while 20 percent of companies have high digital intensity and five percent have very high digital intensity, which puts Slovenia above the EU average.

Figure 1. The digital intensity of companies in EU countries, 2021 (10+ employees)



Source: Eurostat (2022).

Among the companies with at least ten employees, Slovenia has no companies with very low digital intensity within the accommodation sector. Slovenia is notably below the EU average of 45 percent within the retail sector with 16 percent of Slovenian retail companies having very low digital intensity. In the construction sector, Slovenia is lagging behind the EU average with 73 percent of companies with very low digital intensity and only five percent with high digital intensity (none of the companies has very high digital intensity). Within the manufacturing sector, Slovenia is at the EU average. Within the ICT sector, Slovenian companies on average have better digital intensity than EU companies (Table 1).

Table 1. The digital intensity by industry in Slovenia and EU27 in percent, 2021

Indicator/Industry		Manufacturing	Construction	Retail trade*	Accommodation	ICT
Enterprises with very low digital intensity index	EU27	48	62	45	22	10
	SI	47	73	16	0	3
Enterprises with low digital intensity index	EU27	34	28	32	38	32
	SI	35	21	29	33	26
Enterprises with high digital intensity index	EU27	16	9	18	31	47
	SI	14	5	40	52	48
Enterprises with very high digital intensity index	EU27	2	1	4	9	11
	SI	4	0	15	15	23

Note: data for companies with ten or more employees and self-employed people; * except for motor vehicles and motorcycles.

Source: Eurostat (2022).

The intensity of the use of specific digital technologies in Slovenia is comparable to the EU average (Table 2). Usage of IoT is standing out with almost 50 percent of Slovenian companies using it compared to the EU average of 29 percent. Slovenia is slightly below the EU average with 22 percent of companies using CRM software, compared to 35 percent of EU companies. Almost all companies have a broadband connection, around 80 percent of companies have a website or home page, and usage of social media is above 58 percent. Almost 60 percent of employees are using a computer with internet access for their work. Surprisingly, there is still a very low percentage of companies performing big data analysis in Slovenia, only around seven percent, which is one-half of the EU average. Regarding ICT specialists, 26 percent of Slovenian companies provided any type of training to develop ICT-related skills of the people employed, compared to 20 percent of the EU average. Slovenian companies are lagging behind the EU average with new employment of ICT specialists (17 percent), which is compensated with additional training.

Table 2. The intensity of use of technologies in Slovenia and the EU in percent

Indicator	All businesses (ten people employed or more)	
	EU27	Slovenia
Businesses with a broadband connection – includes both fixed and mobile, 2021	97.41	98.83
Businesses with a mobile broadband connection, 2021	72.34	91.55
People employed using a computer with internet access, 2021	58.02	58.24
Businesses with a website or home page, 2021	77.69	83.3
Businesses with a website allowing for online ordering or reservation or booking (e.g., shopping cart), 2021	21.71	21.88
Businesses using ERP (Enterprise Resource Planning) software, 2021	38.09	35.79
Businesses using CRM (Customer Relationship Management) software , 2021	34.68	21.83
Businesses purchasing cloud computing services, 2021	40.96	42.69
Businesses having performed big data analysis, 2019	14.22	6.56
Businesses using 3D printing technology, 2019	5.24	4.84
Businesses using the Internet of Things (IoT), 2021	28.62	49.46
Businesses using Artificial Intelligence (AI) , 2021	7.91	11.73
Businesses which employed ICT specialists, within the last 12 months, 2020	19.27	16.79
Businesses which provided any type of training to develop ICT-related skills of the people employed, within the last 12 months, 2019	19.67	25.73
Businesses that offered positions for ICT specialists, within the last 12 months, 2019	8.47	6.77
Businesses that offered positions for ICT specialists, within the last 12 months, that were difficult to fill, 2019	4.68	4.69
Businesses using social media, 2021	58.7	58.9

Source: OECD (2022).

Slovenian companies are lagging behind the EU average in the construction sector but are outperforming EU companies in the usage of IoT in all sectors (Table 3). Slovenia also significantly lags in the share of companies performing big data analysis only with their own employees. In manufacturing and construction, Slovenia lags in the share of businesses which employ ICT specialists. The retail sector stands out when observing the usage of specific technologies in Slovenian companies. On average, 15 percent more of Slovenian companies are using specific digital technologies than the EU average.

Table 3. Differences in the intensity of use of technologies in Slovenia and EU27 by industry in percentage points*

Indicator	Manufacturing	Construction	Retail trade**	Accommodation & food and beverage service activities	ICT
Businesses with a broadband connection – includes both fixed and mobile, 2021	2.02	-2.45	2.83	5.83	0.75
Businesses with a website or home page, 2021	4.42	0.49	24.85	15.1	5.93
Businesses using the Internet of Things (IoT), 2021	23.02	12.6	31.45	24.96	20.83
Businesses using Artificial Intelligence (AI), 2021	5.33	-0.64	5.89	1.07	14.2
Businesses having performed big data analysis only with their own employees, 2019	-4.41	-11.60	-5.19	-9.00	-0.17
Businesses which employ ICT specialists, within the last 12 months, 2019	-0.42	-4.76	1.97	0.93	16.00
Businesses which provided any type of training to develop ICT-related skills of the people employed, within the last 12 months, 2019	5.11	-0.92	11.91	9.83	20.99
Businesses using social media, 2021	0.3	-7.58	23.73	16.95	8.3

Notes: *calculated as Slovenia minus the EU; **except for motor vehicles and motorcycles

Source: OECD (2022).

2 A closer look at the use of new technologies in Slovenia

2.1 Methodology

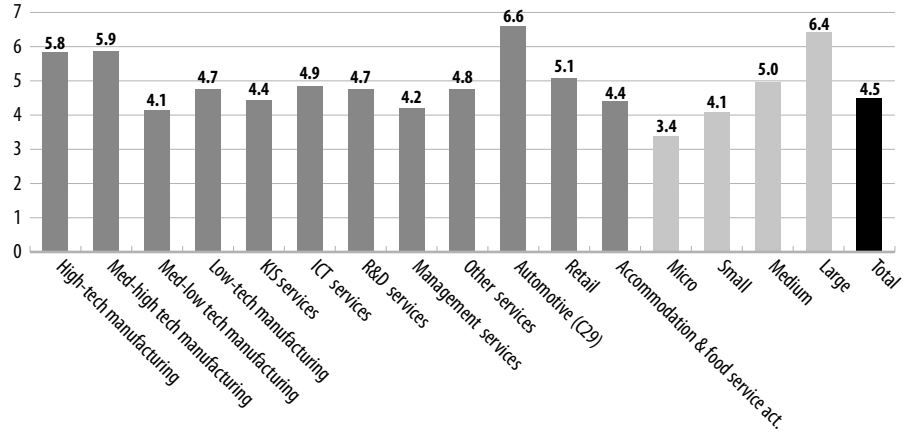
The analysis relies on a combination of four different databases. The proprietary data from the "Agency of the Republic of Slovenia for Public Legal Records and Related Services (AJPES)" together with the data of the "Slovenian Business Registry" provide the basic demographic characteristics of Slovenian companies. AJPES financial statement data provide details on the entire population of Slovenian firms (in total 130 thousand). These two datasets were accompanied by information about the employee structure in each firm obtained from the population-wide "Registry of the active population" in Slovenia. Based on the employee structure by education and occupation, we were able to construct

the variables on the investments in intangible capital in each firm. The datasets were merged with the micro-data from the official EU-harmonized survey on "The use of ICT in companies" conducted by the Slovenian Statistical Office. In total, 14,687 firm-level observations were investigated (also using regression analysis) over the period between 2008 and 2020. For the analysis at the sectoral level, the companies were grouped into high-tech, medium-high-tech, medium-low-tech and low-tech manufacturing, R&D services, ICT services, management services and other services, following Bloch et al. (2021).

2.2 The use of new technologies in Slovenia

In 2020, the survey about the use of ICT and new technologies explored the use of ten different technologies, from web pages and social media to the Internet of Things (IoT), cloud computing, 3D printing, big data, e-sales, ERP, CRM and RIP (with additional details about the use of some of these technologies). On average, companies used 4.5 different technologies. Among the sectors investigated also within the remainder of this book, the automotive sector was digitally most intense, using on average 6.6 different technologies, while interestingly, medium-low-tech manufacturing had the lowest technological intensity. The use of new technologies largely depends also on company size, with micro companies being the least digitalized and large companies on average using 6.6 different technologies.

Figure 2. The average number of different technologies used in Slovenian companies in 2020, by industry and size



Source: Statistical Office of the Republic of Slovenia (2021).

The vast majority of companies already use mobile internet, and, on average, companies also have web pages. The percentage of companies without a web page is smaller among micro companies, where the percentage is around 65 percent. E-invoices are also already largely used, in more than half of companies, with the retail sector being the most digitized in this aspect, followed by ICT. RIP systems (electronic data exchange) are the least utilized, although manufacturing (in particular, the automotive sector) uses them already quite intensely. The use of robots is more common (as expected) in manufacturing, especially in high and medium-high-tech sectors, which also use 3D printing very intensely. The intensity of the use of technologies increases with company size. Expectedly, in several areas, services lag behind because the mentioned technologies are more appropriate for the manufacturing industry (Table 4).

Table 4. Percent of companies by sector using specific technology

	Mobile internet	Web page	Use of cloud	3D print	Robots	E-invoices	E-sales	RIP	IoT	N
High-tech manufacturing	94.4	94.4	61.1	61.1	44.4	50	27.8	22.2	27.8	18
Medium-high-tech manufacturing	94.1	95	59.4	33.7	52.5	55.4	14.9	37.6	43.6	101
Medium-low-tech manufacturing	85.8	78.7	35.2	7.8	17.5	55.7	5.3	9.1	19.7	395
Low-tech manufacturing	87.4	89.2	45	9	18.9	64	21.6	23.4	16.2	111
KIS services	94	85.1	50.7	4.5	0	62.7	22.4	1.5	22.4	67
ICT services	87.1	100	75.8	6.5	0	72.6	9.7	4.8	29	62
R&D services	91.2	98.2	54.4	21.1	15.8	64.9	5.3	10.5	12.3	57
Management services	90.9	78.8	60.6	3	3	54.5	12.1	3	12.1	33
Other services	89.1	87.8	46.6	1.3	4.3	74.2	42.3	9.1	21.7	558
Automotive (C29)	88.2	88.2	58.8	41.2	82.4	64.7	23.5	70.6	41.2	17
Retail	89.2	94.2	52.5	1.7	6.1	84.4	42.4	13.6	24.4	295
Accommodation and food service activities	83.5	84.4	35.8	0.9	0.9	67.9	45	3.7	17.4	109
Micro	78.3	65	21.7	0	5	50	10	0	8.3	60
Small	85.6	80.8	39.1	4.2	5.8	57.6	19	3.7	13.8	667
Medium	95.4	94.9	50.8	11.3	19	64.1	18.5	13.8	28.2	195
Large	99.2	98.3	69.7	30.3	49.6	78.2	23.5	45.4	46.2	119

Source: Statistical Office of the Republic of Slovenia (2021).

Table 5. Key obstacles to digitalization by sector, percent of companies

	Reluctance to change among employees & management	Human resources, knowledge	Lack of knowledge about benefits in management	Fast adjustment/ change is not possible	Business processes are not connected	Too many priority tasks	Financial resources	Digital transformation is not crucial for corporate success	No obstacles
High-tech manufacturing	22.2	44.4	33.3	33.3	11.1	55.6	44.4	38.9	0.111
Medium-high-tech manufacturing	23	50	34	38	18	44	39	38	0.130
Medium-low-tech manufacturing	22.8	45.4	33.3	41.5	29.5	28.2	39.5	54.1	0.105
Low-tech manufacturing	17.1	42.3	27.9	36	27.9	38.7	46.8	55	0.090
KIS services	17.9	32.8	19.4	31.3	23.9	26.9	38.8	37.3	0.149
ICT services	8.1	19.4	3.2	14.5	9.7	22.6	25.8	24.2	0.306
R&D services	12.3	38.6	29.8	38.6	21.1	29.8	38.6	47.4	0.281
Management services	24.2	54.5	33.3	39.4	24.2	27.3	30.3	42.4	0.212
Other services	20.8	44	30.7	37.2	22.6	32.3	40.6	47.8	0.129
Automotive (C29)	11.8	47.1	23.5	23.5	11.8	35.3	41.2	29.4	0.235
Retail	21.4	47.5	33.6	41.4	22.4	34.2	38.6	42.7	0.125
Accommodation and food service activities	25.7	45	33	31.2	26.6	31.2	45.9	54.1	0.101
Micro	28.3	48.3	33.3	38.3	31.7	36.7	46.7	65	0.067
Small	19.2	39.7	27	32.3	23.4	25.7	38.7	52.9	0.145
Medium	20.6	44.3	30.4	37.1	21.6	27.3	38.1	41.2	0.134
Large	21	53.8	40.3	49.6	22.7	47.9	39.5	27.7	0.185
Total	**20.3**	**43.1**	**29.8**	**37.1**	**23.9**	**32**	**39.8**	**47.7**	**0.136**

Source: Statistical Office of the Republic of Slovenia (2021).

Interestingly, almost 48 percent of investigated companies in 2020 believed that digital transformation is not crucial for firm performance, with the share being highest among micro and small companies, companies with low technological intensity and companies in accommodation and food service activities. The lack of human resources is the next important obstacle, which is especially important in large companies and management services, but in almost all sectors, more than 40 percent of companies report the lack of human resources as an obstacle. Financial resources are mostly a challenge in lower value-added

activities, although over 40 percent of companies in high-tech sectors reported this to be a challenge as well. Another important obstacle, reported by more than 37 percent of companies, is the inability to make fast changes.

Nonetheless, change and implementation of new technologies, especially if accompanied by simultaneous investment in intangible (knowledge) human resources, contribute positively towards the value-added (Bloch et al., 2021). A standard production function approach was used, where the dependent value-added was explained by several explanatory variables: capital, the average number of years of education in the company, the number of non-skilled workers, the number of ICT workers, R&D workers and organizational workers, following the intangible occupation classification of Globalinto project (Bloch et al., 2021). The data covers the period between 2007 and 2020. To assess the impact of (simultaneous) investment in new technologies and knowledge/human resources, the following group types of companies were separately controlled for: (1) firms with no intangibles and low technological intensity (below median technology intensity, measured as the share of total available technologies), which represented 15.4 percent of the sample, (2) firms with intangible investments (measured as the number of "intangible employees") and low technological intensity, which represented 23.4 percent of the sample, (3) firms with no intangible investments and high technological intensity, which represented 10.8 percent of the sample, (4) firms with intangible investments and high technology intensity, which represented 50.4 percent of the sample.

The relevant estimation equation is the following:

$$lnY_{it} = b_0 + b_L lnL_{it} + b_K lnK_{it} + b_{ORG} lnL_{ORGit} + b_{R\&D} lnL_{R\&Dit} + b_{EDU} Years_{education} + \sum_{i=1}^{4} b_i \ \delta_i + lne_{it}$$

where K_{it} is capital per firm in a specific year and b_K is the relevant elasticity. L_{it} is the "other, non-intangible" labor/work[2] employed by the firm and b_L is the relevant elasticity. L_{ORGit}, L_{ICTit}, $L_{R\&Dit}$ are the organizational, ICT and R&D workers and the coefficients b_{ORG}, b_{ICT} and $b_{R\&D}$ are relevant elasticities. The output also depends on education, measured by the average number of years of education per employee ($Years\_education_{it}$), where b_{EDU} is the relevant elasticity, and δ is the relevant group dummy for each of the mentioned categories of intangible capital and digital intensity. In the empirical specification, we control for the "group" or type of company depending on the investment in technology or complementary investment. Random panel effects estimation was used,

2 Non-intangible work refers to other work in the company, which is not R&D, ICT or organization work. This largely comprises primarily non-skilled work.

where estimates were controlled for industry (NACE, level 2) and year. Firm size and technological intensity were investigated separately. Table 6 provides descriptive statistics.

Table 6. Descriptive statistics

	p50	Mean	sd	N
Value-added per employee (in euros)	29,154	38,332	66,567	14,687
Capital per employee (in euros)	27,144	68,966	352,871	14,687
Average years of education	11.42	10.0	4.6	14,687
R&D employees	1.0	14.2	72.3	14,687
ICT employees	0.0	3.6	23.9	14,687
Organizational employees	1.0	5.1	15.0	14,687
Employment	23.0	147.2	499.1	14,687

Source: Statistical Office of the Republic of Slovenia (2021).

The results (Table 7), separated by industry and firm size, show that the impact of simultaneous investment in both human capital and new technologies, if above average, is most valuable in medium-low and low-tech manufacturing, other services and SMEs. In almost all cases, the impact of ICT human capital is positive and significant. Also, the contribution of non-skilled workers and capital is positive and significant as expected. These are preliminary results, which could be improved by using different specifications as well as additional controls. Nonetheless, the results point out the benefits of new technology implementation with regards to the value-added, in particular when accompanied by simultaneous investment in knowledge/human resources.

Table 7. Regression analysis results

	Total	High & medium-high-tech man.	Low & medium-low-tech man.	KIS services	Other services	SMEs	Micro	Small	Medium	Large
Value-added	**b/se**	**b/se**	**b/se**	**b/se**	**b/se**	**b/se**	**b/se**	**b/se**	**b/se**	**b/se**
Average years of education	0.062***	0.006	0.093***	0.066***	0.092***	0.065***	0.045***	0.076***	0.068***	0.015
	0.004	0.017	0.009	0.01	0.007	0.005	0.009	0.006	0.011	0.011
Non-skilled labor	0.693***	0.655***	0.674***	0.641***	0.760***	0.694***	0.520***	0.606***	0.579***	0.480***
	0.007	0.031	0.013	0.02	0.011	0.008	0.029	0.012	0.023	0.024
ICT workers	0.089***	0.117***	0.036	0.152***	0.054**	0.126***	0.192***	0.137***	0.112***	0.076***
	0.01	0.026	0.019	0.02	0.021	0.014	0.05	0.021	0.022	0.013
Organizational workers	0.103***	0.031	0.060***	0.121***	0.139***	0.109***	0.293***	0.123***	0.073***	0.050**
	0.008	0.024	0.015	0.02	0.014	0.01	0.041	0.014	0.016	0.016
R&D workers	0.129***	0.163***	0.140***	0.186***	0.105***	0.160***	0.362***	0.167***	0.120***	0.079***
	0.007	0.026	0.013	0.017	0.014	0.009	0.038	0.012	0.015	0.015
Capital	0.067***	0.056***	0.090***	0.044***	0.061***	0.066***	0.057***	0.062***	0.066***	0.082***
	0.002	0.011	0.004	0.006	0.004	0.003	0.005	0.003	0.007	0.01
High intangible, low ICT	0.142***	0.054	0.114***	-0.112	0.117***	0.134***	0.110**	0.078***	0.046	0.344
	0.017	0.119	0.029	0.077	0.022	0.018	0.035	0.022	0.067	0.523
Low intangible, high ICT	0.051**	-0.129	0.003	-0.035	0.058**	0.062***	0.131***	0.03	0.012	0.399
	0.016	0.148	0.036	0.092	0.018	0.017	0.03	0.021	0.069	0.544
High intangible, high ICT	0.182***	0.126	0.130***	-0.108	0.165***	0.178***	0.150***	0.114***	0.055	0.34
	0.017	0.12	0.03	0.077	0.021	0.018	0.036	0.022	0.067	0.522
Constant	10.005***	0	9.922***	11.370***	9.883***	10.000***	10.220***	10.439***	10.729***	11.885***
	0.087	.	0.187	0.293	0.092	0.088	0.177	0.116	0.204	0.702
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	14687	1435	4721	2432	6099	12529	2329	7583	2617	2146
r2_w	0.358	0.396	0.359	0.348	0.347	0.336	0.323	0.293	0.322	0.405
r2_b	0.814	0.87	0.858	0.729	0.798	0.761	0.377	0.562	0.588	0.795
r2_o	0.89	0.921	0.91	0.823	0.875	0.777	0.376	0.561	0.598	0.818
sigma_e	0.28	0.27	0.275	0.333	0.254	0.294	0.232	0.288	0.264	0.228
sigma_u	0.48	0.484	0.443	0.545	0.462	0.476	0.481	0.467	0.482	0.415
rho	0.746	0.762	0.722	0.729	0.768	0.725	0.811	0.724	0.769	0.768

Source: Own work (2022).

Conclusion

The use of new technologies has become one of the dominant features of the industrial transformation in the past decade. Several positive short and long-term outcomes are expected, from higher efficiency and lower cost to higher competitiveness. Overall, Slovenian companies are on average exceeding the digital intensity in the EU, if measured by the share of highly digitally intense companies. On the other hand, Slovenia is comparable to the EU average by the share of companies with very low digital intensity. In terms of sectoral differences, primarily the construction sector lags behind the EU average. A deeper look into the situation in Slovenia shows that a high share of companies, close to one-half, believe that digitalization is not crucial for firm performance. Other important obstacles are the lack of human resources, the inability to adjust/change production processes quickly as well as the lack of financial resources. However, given the estimates which confirm the importance of digital transformation for firm performance, it would be myopic to be a late adopter in the process of the transformation.

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I.

MANUFACTURING OF THE FUTURE

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DIGITAL TRANSFORMATION IN THE HIGH-TECH AND MEDIUM-HIGH-TECH MANUFACTURING IN SLOVENIA

Introduction

Digital transformation has changed the manufacturing industry. It has gone from an obligation to an organisation's DNA. To keep pace with the customers' expectations and disruptive competitors, organisations are pressured to digitalise. However, most of the companies have not been successful with digital transformation due to siloed efforts within the organisation (Kearney, 2021).

The purpose of this chapter is to enable better understanding of digital transformation in high-tech and medium-high-tech manufacturing companies in Slovenia. We wanted to delve deeper into the transformation process by observing its role in strategic capabilities such as leadership, culture, organisational structure, company goals and skills. To this end, we have conducted 11 in-depth interviews with Slovenian companies in high-tech and medium-high-tech sectors.

In brief, this chapter first will define and distinguish high-tech and medium-high-tech companies. This is followed by a brief description of the position of Slovenian companies in this sector, pointing out the specific technologies used therein in comparison with European companies. Second, we examine recent trends in this sector across Europe in contrast with Slovenia and report expected results and obstacles in adopting and using new technologies. Third, results of the empirical analysis are then presented. Last, the discussion and implications of our results are presented.

1 Digital transformation and new technologies in the studied sectors

1.1 High-tech and medium-high-tech companies

Classification of high-tech and medium-high-tech manufacturing industry is premised on the statistics on economic activities according to technological intensity based on NACE Rev. 2. High-tech manufacturing includes manufacturing of basic pharmaceutical products and pharmaceutical preparations, computer, electronic and optical products, air and spacecraft and related machinery. On the other hand, medium-high-tech includes manufacturing of chemicals and chemical products, weapons and ammunition, electrical equipment, machinery and equipment, motor vehicles, trailers and semi-trailers, and other transport equipment. Building of ships and boats, manufacturing of air and spacecraft and related machinery, and manufacturing of medical and dental instruments and supplies are excluded from the latter definition (European Commission, 2022).

In Slovenia, there are currently about 480 manufacturers that are classified as high-tech or medium-high-tech. Such firms account for 37.2 percent of value added in the total value added of the manufacturing sector in Slovenia. This is slightly below the EU average of approximately 40 percent (The World Bank, 2022). To keep up with innovation in other countries and stay at the forefront of capital efficiency, companies across different sectors must continuously innovate to keep their competitive edge (Kearney, 2020). The next two subsections offer a detailed description of Slovenian high- and medium-high-tech manufacturing companies position in comparison with EU with regards to new technology adoption and major trends within the sector in recent years.

1.2 New technologies adopted in the high-tech and medium-high-tech manufacturing

As the high-tech industry is continually evolving, technologies are quickly replaced by next-generation technologies. Possessing the necessary skills to master such advanced technologies has become a matter of business survival, separating the leaders from the laggards. However, not every technology is equally important. The newest general-purpose technologies include artificial intelligence, smart sensors, batteries, microcontrollers, microprocessors, the

cloud, and connectivity. Such technologies are of high business relevance for companies as they exhibit the highest market growth and possess the disruptive power to spur further innovations that will reshape industries in the future (Kearney, 2020). The most widely used general purpose technologies among high and medium-high-tech manufacturing companies in Slovenia include D2D platforms, cybersecurity systems, robotics, decision support systems, big data, and 3D printing. Namely, out of 25 companies that competed for the Slovenian Factory of the Year Award in 2018 and 2019, 96.4 percent used D2D communication platforms, 95.5 percent implemented cybersecurity systems, and 83.8 percent employed robotics (Petrov, 2020). In addition, complementary technologies like SAP, ERP and MES represent the information backbone for companies operating in high-tech manufacturing sector (Kearney, 2020).

In contrast, Germany as the county with highest proportion of medium-high and high-tech industry value added in total value added of the manufacturing industry in the EU, heavily utilizes the following technologies in its high-tech manufacturing sector: robotics, sensor chips, telecom connectivity, SAP software, electric AC drives, and semiconductor components and systems. Out of all EU member states, Germany additionally dominates patent applications for all advanced technologies, particularly leading in nanotechnology patent applications (Kearney, 2020). Moreover, 51 percent of the European manufacturing companies have implemented at least one artificial intelligence use case, whereas in Slovenia only 12 percent of manufacturers have done so (Capgemini Research Institute, 2019; Statistical office of the Republic of Slovenia, 2021). However, Slovenia surpasses the EU average in the case of robotics and cybersecurity systems (European Commission, 2020).

1.3 Recent trends in the high-tech and medium-high-tech manufacturing

Every country needs a vibrant high-tech sector to boost its economy across all sectors as technology plays a vital role in most industries. A blooming high-tech sector therefore could, represent an engine for innovation giving businesses a leg up in an extremely competitive environment. But to stay on top of the competition, one needs to closely monitor the trends that are shaping the industry (Kearney, 2015). In the following subsections, we present four such trends associated with digital transformation: production growth, employment trends, servitization, and reshoring.

1.3.1 Production growth

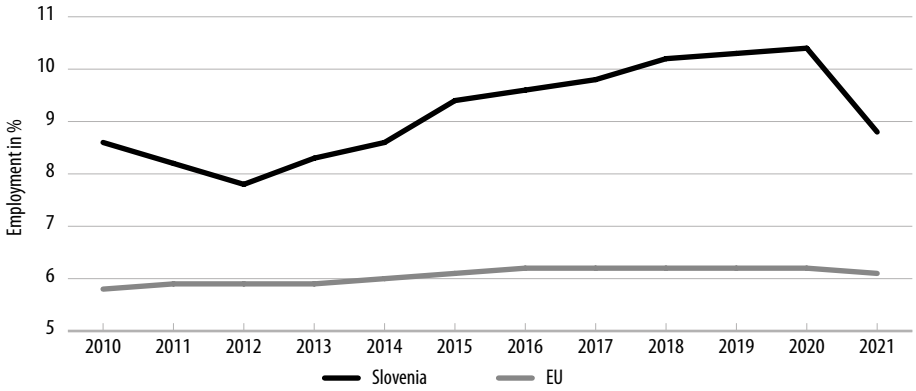
Digital transformation plays a central role in improving the productivity of the high-tech manufacturing sector. An organization can save up to 528 hours per employee in one year by digitalizing data collection alone (Xerox, 2022). Document digitalization frees up space, saves time in searching for documents, increases transparency, supports mobile workstyle, and prevents loss of papers. Artificial intelligence and cloud technology can increase the amount of work done, capacity, as well as optimize the amount of time needed by managing documents and automating data related work, and training (Xerox, 2022). In 2021, 12 percent of Slovenian enterprises utilized artificial intelligence in their production process compared to only eight percent in the EU (Eurostat, 2022a).

Growth of production in high-tech manufacturing characterized the previous decade, however in the aftermath of the COVID-19 pandemic, some fluctuations occurred. While in the EU high-tech production grew by seven percent in the period 2014-2018, in Slovenia it only increased by 6.5 percent. As for the medium-high-tech manufacturing sector, production expanded only by 2.4 percent in the EU between 2014-2018, whereas Slovenia recorded a 7.7 percent growth during the same period. However, when it comes to exports of high-tech products, Slovenia's high-tech exports represented only 5.8 percent of all exports in 2018, which is more than three times less than the EU average (Interreg, 2020). In 2020, the sold production of EU high-tech products dropped by seven percent compared to the previous year due to COVID-19 in the total amount of €311 billion (Eurostat, 2021). This year, the total value of production for high-tech manufacturing in Slovenia rose by 11.0 percent and medium-high-tech manufacturing fell by 5.1 percent compared to previous year (Statistical office of the Republic of Slovenia, 2022).

1.3.2 Employment trends

Despite the common notion that technology takes jobs, the employment in the Slovenian high-tech and medium-high-tech sector was growing between 2012-2020. Within this sector, more R&D professionals were employed in this sector. In 2020, employment in the sector peaked at 10.4 percent whereas in other EU countries, that percentage is much lower as it has been standing at approximately six percent for a decade now. However, in 2021 the employment in the sector also declined in Slovenia (Eurostat, 2022b), as Figure 1 shows.

Figure 1. Employment in the high-tech and medium-high-tech sectors



Note: Employment in the high-tech and medium-high-tech sectors in Slovenia and the EU in the period 2010-2021 (as % of total employment in all sectors).
Source: Eurostat (2022b).

With the fast pace of technological innovation, traditional manufacturing jobs may be disappearing. Yet, higher skilled profiles such as mechatronics engineers, programmers, and ICT professionals are high in demand due to the deployment of increasingly advanced digital technologies. The centrality of data and information also calls for the introduction of new skill sets in the high-tech manufacturing industry including industrial data scientists, big data statisticians, data security analysts, etc. Currently, there is a lack of graduates in science, technology, engineering, and mathematics, i.e., the ideal future occupational profile for the sector. Finding adequately skilled individuals is one of the main challenges facing the high- and medium-high-tech manufacturing industry. This skills shortage is not only attributable to a lack of young skilled talent, but also due to an aging population. Most managers from manufacturing sector believe that the challenges of aging Boomers will be felt in three to ten years (DeLong, 2014). Luckily, remote work and robotics may help mitigate potential skills crises by providing organizations with skilled foreign workers online or replacing missing human employees with robots. Furthermore, non-technical skills are becoming more and more important for the high- and medium-high-tech manufacturing sector since clear communication in such a complex environment could be challenging (Eurofund, 2019).

1.3.3 Servitization

Servitization refers to industries using their products to sell "outcome as a service", rather than a one-off sale. However, in the EU servitization business models are substantially more explored by manufacturing companies compared

to Slovenia, where traditional product sales prevail (Institute of Macroeconomic Analysis and Development, 2020). Such an alteration of the production process was enabled by game-changing technologies like the internet of things, which allows connected digital devices embedded in products to communicate with the manufacturer even after the sale, thereby facilitating the provision of after-sale services (Eurofund, 2019). Servitization increases the value added of manufacturing companies since they are now attaching services such as maintenance or predictive maintenance to the product. Therefore, more Slovenian manufacturing companies should think about innovating their business models to allow for servitization, thereby increasing the value-added. Servitization may have a positive impact on the environment as it incentivises manufacturers to make products more long-lasting to provide a profitable long-term service relationship with the customers (Eurofund, 2019).

1.3.4 Reshoring

During the past two decades, manufacturers were offshoring their production to cheap-labour countries like China. However, increased implementation of Industry 4.0 technologies also reduced labour costs domestically. For this reason, more and more companies have decided to embark on the reshoring of their production back to home country or countries nearby, especially in the high-tech manufacturing sector (Sanderson, 2022). In fact, there is a significant positive correlation between the use of Industry 4.0 technologies and the reshoring propensity of manufacturing companies. Manufacturers that have implemented Industry 4.0 technologies in at least three of the business functions in the company have a ten times higher reshoring propensity compared to manufacturers that do not use such technology (Kinkel, 2018). With the rise of smart factories, approximately four percent of the European companies actively participated in reshoring in 2017 (Kinkel, 2018).

2 Empirical study

2.1 Methodological background

To explore the digital transformation within the high-tech and medium-high-tech manufacturing sector in Slovenia, we conducted in-depth interviews in 11 companies. The companies were purposefully selected out of a broad database encompassing approximately 480 companies from the relevant sectors. The

interviews were conducted in a semi-structured manner to better understand and explore the complexity of the digital transformation topic. Using this approach, we focused on contextualisation and understanding of interviewees' perspectives rather than generalisation or prediction. The interview questions were structured into seven topics (characteristics of digital transformation in the industry/company, motives and drivers of digital transformation, obstacles for digital transformation, impact on business performance, impact on organisation, business functions, strategy and employees, HRM challenges, and policy perspective) to also allow a systematic comparison of results with other industries analysed in this book. The interviews lasted between 42 to 90 minutes and were performed both on-site and online (using MS Teams) (see Table 1).

Table 1. Sample characteristics

Company	Industry	Size	Ownership	Interviewee's position(s)	Interviewee's gender
Company 1	Agricultural equipment	Large	Domestic	Director of IT & Finance	Male
Company 2	Home appliances and TV	Large	Foreign MNE	Head of Digital Services Development	Male
Company 3	Energy	Large	Domestic	Director of Sales and Purchasing	Male
Company 4	Test and measurement	Large	Domestic	R&D Manager	Male
Company 5	Lighting	Small	Domestic	Founder CEO	Male
				IT Specialist	Male
Company 6	Steel	Large	Foreign	Managing Director	Male
Company 7	Home appliances	Large	Foreign MNE	HR lead professional	Female
				Head of IT	Male
				Senior Engineer	Male
				Specialist and Industry 4.0 Manager	Male
				Head of IT	Male
Company 8	Metal gear	Medium	Domestic, Family owned	CEO	Male
Company 9	Pharmaceutical	Large	Foreign MNE	Head of Operations	Female
Company 10	Telecommunication	Large	Domestic	Research and Strategic Development Consultant,	Male
				Strategy Innovation and Digitalisation Director	Male
Company 11	Electrical equipment	Large	Domestic	IT Director	Male

Source: Own work (2022).

2.2 Characteristics of digital transformation in the industry/company

In terms of overall characteristics and the importance of digital transformation within the sector, we found that the interviewed companies face different challenges in today's volatile environment, leading them to pursue digital transformation. Majority of interviewees believe that digital transformation is essential for business' progress and growth: *"Without digital transformation, you cannot stay in business."* Another similar response to the same question was: *"Digital transformation is the key for improving the business process."* (Company 6) Other interviewees are of the opinion that digital transformation is not static, one-time process, but rather an evolving, changing one: *"It's [digital transformation] a living process."* (Interviewee 1, Company 5) Some companies are even confident that digitisation is just the beginning: *"Digitalisation is here to stay."* (Company 2)

Although the majority are of similar opinion, adoption of digital processes differs mostly based on the industry they operate in and consequently their main customers. We found that companies from traditional industries such as steel, energy or agricultural equipment industry deal with customers on the conservative side, usually being more demanding and rather reluctant to accept any changes. The degree of digital transformation also depends on whether the company operates either B2B or B2C. Namely, we found that companies basing on B2B transactions usually focus on process efficiency and are more digitally integrated internally, for their own operations, while B2C companies tend to extend digital transformation towards the end consumer. Such reconfiguration of their business models allows companies to create and deliver value for individual customers more easily and efficiently, as the demand has moved towards custom-made products. In addition, it also makes a difference whether the products are of mass production or custom-made. For example, a lighting company has digitised their business significantly, enabling their customers to make all custom-made orders online, resulting in great success: *"Our customers tell us that it's easier to work with us than with others [due to implementation of digital platforms]."* (Interviewee 1, Company 5) Many others have moved their physical shops online since the pandemic hit in 2020 and directed their activities towards servitization. They have been progressively switching from the manufacturing industry to service-oriented business model such as product-as-a-service: *"Added value of manufacturing industry is in services. That is why we are switching to new business models like product as a service."* (Company 2) On the other hand, companies dealing with bigger buyers, such as big retailers and wholesalers, utilise digital transformation for the purpose of traceability and transparency.

Moreover, legislation and various policies impact greatly the manner and type of technologies used in companies. Namely, during our research we found that a manufacturer of agricultural machinery is required to follow certain standards and initiatives regarding standardisation of agricultural equipment. Similarly, a company producing energy and power generator transformers needs to follow different international voltage standards.

As a support system these companies use various complementary technologies such as SAP, ERP or MES: *"We don't know how to live without ERP. If the ERP would shut down so would the production."* (Company 6) Hence, from our research, we can confirm that these technologies in fact do add significant value. Up until this point, some companies have even become so dependent and used to these newly adopted technological tools that they could not even imagine how they could get all the work done before: *"I cannot imagine how we would do it without digital platforms."* (Company 2)

Not only digital platforms but also specific general-purpose technologies are widely used within this sector. Automatization, robotization and 3D printing on the production floor, big data, cloud computing, artificial intelligence and digital twins for the purpose of optimising both internal as well as external business functions, including all from decision-making, to design, marketing and sales. IoT and Device-to-Device platforms on the other hand are not as widely used. We found that the degree of integration of such technologies varies according to the industry in which the company operates. For instance, a manufacturer of home appliances has extensively implemented IoT both for manufacturing (Industrial IoT) and end consumers in a form of smart home appliances, while the manufacturer of agricultural equipment does not see any potential in adopting such technologies, due to its conservative customer base.

2.3 Motives and drivers of digital transformation

Whether a traditional or non-traditional industry, all the companies have the goal to improve certain parts of their business, differentiating according to the industry in which they operate. Increase in productivity and efficiency as the main goals of the digital transformation were the most frequently suggested. Reducing human errors and increasing quality on the production floor were additionally stated as important objectives when asking about the main purpose of the process. With these objectives in mind the companies are striving to maintain and strengthen their position in the market.

When asking about the main motives and drivers of the digital transformation, we found that both proactive and reactive motives were affecting the adoption of digital transformation, though reactive ones seem to prevail. Amongst the most frequently listed were pressures relating to competitors, customers or other stakeholders, along with volatile environment and price instability. During the interviews we learned about how powerful customer's demands and needs really are: *"Last year our new German distribution partner of spare parts had a strict logistic request about how we should exchange data and pack things. To satisfy our partner's demands we were forced to develop a solution internally because their business processes are already highly optimised and they do not want to adapt to a small newcomer."* (Company 1) The company sees itself as a follower in a rather traditional industry, due to its size as well as its highly conservative customers, with tractor manufacturers being the trend-setters in the industry. Similarly, competitor pressure was emphasised when talking about reactive motives: *"With digital transformation progressing it's impossible to do things the old way because other firms in the industry will put you out of business."* (Company 4) Also, others pointed out the effects of competitors: *"If we don't want to lag behind, we need to do the same."* (Company 2) The pattern of different pressures faced by companies is clear, however, its origin differs based on the size of the company as well as its business model, determining their main customer.

Though, not all motives are of reactive nature. We found that the main drivers for initiating digital transformation are the benefits that will accrue therefrom, such as increased competitive advantage, strengthened position in the market, faster, more efficient and more productive production, higher innovation, along with ability to predict and forecast: *"The meaning of digital transformation is multifaceted. Efficiency reigns supreme."* (Company 6)

When researching the topic of specific enablers of digital transformation, we found that the key accelerators are the presence of available funds and a willing and motivated workforce. The two were also predominantly considered as accelerators of the transformation process. Interviewees considered the next-generation technologies and already developed IT solutions as an important asset when transforming their companies. In addition, previous experience in the field and highly technically skilled employees under united leadership with a shared vision seems to be the most valuable combination in the company. Nonetheless, COVID-19 pandemic was frequently mentioned when asking about accelerators of the digital transformation: *"COVID was the push to do it."* (Company 3)

2.4 Obstacles for digital transformation

During our research we found that not all is bright and shiny when it comes to digital transformation. While budget and workforce were listed as the main enablers of the process, these two factors also presented the biggest challenges for the companies. No matter the industry the company belongs to, it always comes down to its available resources for investment into digitising the business: *"There's only one factor [that prevents faster digitalisation], workforce."* (Company 1) Other sources also mentioned the lack of human resources, especially of adequately trained and skilled new workforce who would be consequently willing to learn and participate in additional training. Not only finding an appropriately skilled workforce but also reskilling and upskilling existing employees presents a challenge. Namely, such new adoptions present a demanding learning process especially for the company's current employees of older age. Digital transformation can therefore feel somewhat intimidating for them, resulting in resistance to change.

Moreover, difficulty to measure and the inability to see immediate results in transformation are other downsides of digital transformation. Even more discouraging are the delays in implementing digital transformation due to integration issues between different technologies. The issue of integrating various tools and technologies is the most noticeable in companies from traditional industries, such as steel or energy industry: *"Our biggest challenge is to integrate traditional and sophisticated parts of the business process. The traditional part is the greater challenge because this is the part where mistakes occur. Mistakes that could have been eliminated by digitalisation."* (Company 6)

Furthermore, digital transformation usually demands a certain financial budget, forcing companies to prioritise: *"Large investment is needed for automation and many projects in an organisation need a large investment. [...] A common trade-off. Should one carry the luggage alone or should one use the elevator? Yet, there is no elevator until cheap workforce is available. That's the situation in every company."* (Company 6)

Besides, as companies move their business data and operations online and to the cloud, cyber security issues pose another obstacle in the process of digital transformation. Thus, depending on the degree of transformation and adoption of specific or general-purpose technologies, all companies need to take additional preventive measures to avoid cyber-attacks and privacy breaches.

2.5 Impact on business performance

Challenging or not, digital transformation impacted businesses and their performance both positively and negatively. We found that positive consequences of past digitalisation endeavours are evident in increased efficiency (up to three times higher) and productivity, particularly on the production floor. Interviewees reported that there is considerably less routine work required, while unnecessary activities were easier to detect and eliminate. There is significantly improved traceability and transparency in end-to-end operations, reducing task times and consequently resulting in higher overall productivity. Digitalisation significantly improves speed: *"A business process, where information is available in real time without huge delays, has advantage when it comes to important business decisions."* (Company 6)

Moreover, most of the interviewed representatives of manufacturing companies addressed the presence of fewer mistakes on the production floor, enabling companies to maintain and even increase the quality of their products. Such ability to increase performance in response to changes in application and system processes is known as scalability, which is widely known in the targeted sector of research. Companies are achieving higher rates of scalability with the help of digital platforms: *"Digital platforms contribute to the stability of the business process."* (Company 6) Implementing these platforms usually results in desirable higher output and profitability of the company: *"Digital platforms increase the value of capital assets, which in turn boosts the value-added."* (Company 6)

Although digital transformation leads to many positive outcomes, we have also heard about a few undesired impacts. Namely, some technologies are either not as successful as companies would have hoped, or are not as useful as expected. The reason being that usually such transformations take more time than anticipated and are more difficult to implement due to the above-mentioned slowing factors. Adoption failures are usually connected with problems in actual software tools or slower transmission of knowledge between key employees. During our research we came across a real-life case, demonstrating how a small malfunction in the SAP system can stop the whole supply chain for a week.

2.6 Impact on organisation, business functions, strategy and employees

Digital transformation impacted interviewed companies not only in production or purchasing, but also in other business functions and departments. The

main reason is that as companies decide to digitalise, they strive to achieve certain company goals stated in their corporate strategy. To achieve those goals, a high level of integration between business functions is necessary as all business functions are closely related and connected. Therefore, to avoid separate data islands, information flow has to be done digitally rather than manually. Consequently, most of the business functions will have to be digitalised one day: *"In my opinion digitalisation is a consequence, not a strategy. It's a supporting function if you want to earn money."* (Company 2)

Moreover, majority of the interviewed representatives of manufacturing companies explained that integrating business functions and company goals are the main reasons for digitising most of their business functions. Although, not all of them have been digitised to the same degree; for example, finance, maintenance, logistics are lagging behind. Majority of the companies interviewed said that digital transformation is a part of their midterm corporate strategy, except the smaller ones, who denied having a separate chapter called "Digital transformation" in their corporate strategy. In any case, digitalisation is the centrepiece of all their meetings: *"Digital transformation is always a topic in our meetings."* (Company 4)

2.7 HRM challenges

When delving into the topic of human resources, we found that the single most pressing HRM challenge in the high- and medium-high-tech manufacturing sector is finding adequately skilled employees: *"You don't come out of university equipped with the knowledge that the company needs."* (Interviewee 2, Company 7) Currently, the labour market might be scarce, but without such employees, digital transformation cannot occur in a company: *"Today you cannot attract young generations to come work for you if what you offer is dirty work conditions and work on Sundays. Instead, you should provide a modern environment."* (Company 6) In order to attract young talent, Company 6 is, thus, engaging in digital transformation, thereby making the workplace look more modern. Company 2 tackles the challenge of finding the right employees by offering summer student jobs to explore the employee pool. Promising candidates are then offered a full-time position. Meanwhile, Company 4 has another comment on the challenge of finding skilled employees. Highly skilled people must be paid well, especially the IT professionals that are of key importance for the high- and medium-high-tech manufacturing sector: *"You must take care of your pearls."* (Company 4) Another high-tech manufacturer, Company 3 claims

that it experiences somewhat bigger fluctuations in the production department, but overall, the company does not have troubles with employees leaving the company as it is fostering a culture where employees would want to stay.

A majority of the executives interviewed said that their company offers internal training programs for new employees and occasional training programs when needed. However, the length of such training programs differs vastly across companies. For example, in Company 2, the onboarding process can last from half a year to two years based on the difficulty of the job. In Company 3, on the other hand, every new employee goes through an expensive onboarding process with a mentor lasting 12 months. In these 12 months, the employee gains knowledge relating to all the roles in the company, including his and relative connection to others. Digitalisation also represents an important part of the onboarding plan.

Moreover, executives frequently complained that employees do not take much from training programs, or that employees are reluctant to change and learn: *"The employee must be willing to start, it is a challenge to learn something new."* (Interviewee 1, Company 5) The main problem lies in the actual perception of digital transformation: *"At the beginning, technology can be perceived as making work more difficult."* (Interviewee 4, Company 7) However, when digital transformation is concerned, managing change and motivating the employees to learn is essential. Company 6 even noted that before the company buys new advanced equipment, it must invest in reskilling the employees for as long as two years. Recognizing the real value in learning how to use new technologies appears to be the most important: *"Employees must see what the added value of digital transformation is [...]. They must see how digitalisation will make their work easier. Otherwise, forget about it. [...]. My experience was when I was pushing for digitalisation, it didn't end well. But when employees saw value in digitalisation, it was effective."* (Company 8)

Change is the staple of Company 9. An employee can undergo 200 trainings as a part of the onboarding process or even 200 trainings each year, depending on his position in the company. As Company 9 is continuously implementing new technologies, it has more than 100 employees working solely on developing and executing a wide range of trainings, majority of which are related to the topic of digital transformation. Yet, others warn that new changes must be implemented gradually: *"You need to manage change carefully because if you are making too many changes too rapidly, you are setting yourself up for failure."* (Company 1)

A majority of executives lack knowledge about any publicly available trainings related to the topic of digital transformation at the industry level or Chambers of Commerce. They feel as if the public workshops and seminars are not company-oriented enough, and thus, fail to benefit them. Conversely, Company 5 argues that the private Chamber of Commerce in Udine offers many useful webinars and seminars. Similarly, Company 7 took advantage of many EU-funded projects related to the reskilling of the workforce.

2.8 Policy perspective

Executives working in high and medium high-tech sectors strongly emphasized the need of the state to play a significant role in promoting digital transformation. Yet, it seems as if the Slovenian government is not doing enough. The following section discusses the role of the state in the process of digital transformation, highlighting some important challenges. To this end, suggestions are made for policymakers in relation to digital transformation in general.

There are two main conclusions that we can draw from the interviews regarding the role of the state. First, even though the state is encouraging digital transformation, companies operating in the high and medium high-tech sector do not feel that the state's aid is benefiting them directly. Most executives claimed that this is particularly true for smaller companies operating in the sector: *"It's a zero-sum game doing business with the state. You make some money but then you spend it on bureaucracy. Not to mention the time needed."* (Company 1)

In fact, the two most frequently cited reasons for such a perception of the state were bureaucracy and the time-consuming process of applying for state-funded projects: *"Many times, we are slaves of the bureaucracy."* (Interviewee 3, Company 7) Moreover, executives mentioned that there are few subsidies available from the government and characterised state tenders as "cumbersome", "expensive", "hard to follow", and "not transparent". The process of applying for state-funded projects are seen as convoluted: *"When you find out everything you need to do it is almost better not to apply."* (Company 3) Since state tenders are so complex the largest company with which we conducted interviews, decided to employ a team of professionals specialising in state tenders. However, smaller companies do not have the means to do so. Company 5 found an interesting solution to this problem. Due to its proximity to the Italian border, the company can additionally rely on the Italian government. The firm's CEO claims that Italy is

putting much more effort into digital transformation of the county. Namely, there are a lot more tenders for various digital transformation topics and the process for applying for state-funded projects is easier. Perhaps, Slovenia should look at its neighbour and implement some of its best practices to make the process of digitalisation-related tenders faster and more efficient, thereby improving the pace of digital transformation in Slovenia as a whole.

Secondly, a majority of executives emphasized that the state is not doing enough when it comes to the schooling system in Slovenia: *"The state should rather help universities so that we will have plenty of human resources, not us [companies]."* (Company 1) Slovenian manufacturing companies operating in the high and medium high-tech sector according to executives are already experiencing difficulties in obtaining sufficiently qualified candidates, During the interviews, we captured a few good suggestions for the state: *"What we need now is not the same as we needed 20 years ago. Therefore, revising the entire schooling system to suit the needs of the industry is of utmost importance. Maybe, policymakers should re-examine curriculums together with the industry practitioners."* (Company 2)

Discussion and conclusion

Digital transformation in companies belonging to high-tech and medium-high-tech manufacturing sector is crucial not only for maintaining their competitive advantage but also for creating new or improving existing business models. We found that the motives for digital transformation can be proactive, reactive or a combination of both. It is important to note that not all digital solutions provide the added value in practice. Based on our findings, digitalisation should be a tool or a consequence to a predetermined company's goal or strategy. This must be communicated from the top management to all employees who are going to be affected by the implementation of digital solutions. It is important to note that digital transformation of a specific company is related not only to the industry in which it operates but also its standing in the value chain. We have found that though the motives for digital transformation can either be proactive or reactive, most often it is a combination of both. Some of the important factors relevant in deciding which motives prevail are the size of the company, the industry in which the company operates, their customer base and how much their goals and motives are inclined towards digital solutions. However, during our research we have not come across many negative consequences of digital transformation. Our key findings are summarised in Table 2.

Table 2. A summary of key empirical findings

Digitalization aspect	Key highlights
The characteristics of DX in the industry/ company	• Technology 4.0. • Conservative customers. • Product-as-a-service. • Custom-made products. • Differences between traditional and non-traditional industries.
Motives, drivers of digital transformation	• Combination of proactive (productivity, scalability, quality, competitive advantage) and reactive (customer pressures, competitor pressures, supplier pressures) motives.
Obstacles in digital transformation	• Workforce and its capacity to absorb change. • Lack of skilled workforce. • Budget.
Impact on business performance	• Faster workflow. • Transparency in end-to-end processes. • Increased productivity. • Fewer errors. • Money savings.
Other impacts	• Digitalisation is part of the mid-term strategy. • All departments affected; most impacted are purchasing and sales; least impacted are finances.
HRM challenges	• Scarce labour force market. • Resistance to change. • Internal training programs. • Mentorship. • Important is willingness to learn.
Policy perspective	• State does not play an important role. • Not enough support. • Too much bureaucracy. • Educational systems should adapt to ensure sector skills.

Source: Own work (2022).

Our research raises some important implications for managers. Management has a very important role when it comes to digital transformation of a company or a business function. It is not enough if top management simply writes down digitalisation imperative in the corporate strategy. It is crucial that the top management stands 100 percent behind the decision to digitalise and communicate the reasons and consequences any digital solution will bring. As previously mentioned, digital transformation must be used as a tool for reaching the business goals of a company, and this fact must be communicated from top management to the production floor. Hence, when communicated properly, the push for digital transformation mostly results in favourable outcomes for the company.

Implications for policymakers also emerge based on our research. Policymakers should play a more important role when it comes to digital transformation. They need to find a way to stimulate smaller companies to digitalise, given the current bureaucratic issues, time and financial constraints when applying for tenders. They could resolve some of these issues by offering smaller companies some form of subsidies. Slovenian policymakers should also make application for tenders more straightforward and transparent. Currently the process is too cumbersome for smaller companies to handle. A good practice that we have found when conducting an interview with a company operating near Italian border, is that in Udine there are many tenders in various topics of digital transformation. These are also easily accessible to smaller companies. We believe that policymakers should also examine and make changes to our educational system, equipping future employees with practical knowledge hence making them more "agile". There are many good practices that our policymakers could embrace with regards to collaborating between the private sector and educational system as seen in Austria or Germany.

Finally, the empirical research presented in this chapter is not without limitations. While the results are insightful, the research could have been more thorough if qualitative interviews were combined with quantitative surveys which would allow us to gather more quantified information on the subject of research. The problem also lies with the broad classification of our industry. A way to provide some more value in future research would be to systematically divide the companies by certain similarities. For instance, by reference to the industry in which they operate, their standing in the value chain, the similarity of their business models, their size, etc. During our research we noticed that all of the mentioned factors play a significant role in digital transformation of a company.

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DIGITALIZATION IN THE MEDIUM-LOW AND LOW TECH MANUFACTURING IN SLOVENIA

Introduction

Medium-low and low-tech manufacturing sectors accounts for around 11 percent of all companies in Slovenia. Of this, the most notable sectors are the manufacturer of basic metals and metal products, food and beverage products, textiles and apparel, wood and furniture, paper, and printing. These sectors generate around 56 percent of value added in manufacturing and about 20 percent of the business economy in total (Statistical office of the Republic of Slovenia, 2022a). The sector specifics, product nature, position in the global value chain and other factors varies significantly between sectors. This is so in firm performance, and digital transformation processes as well. Despite technologically less intense production within the sectors, the transformation is still very dynamic and not far behind the manufacturing average.

The aim of this chapter is to understand the key drivers of digital transformation, its main obstacles and observed impacts on the medium-low and low-tech companies' manufacturing processes. In doing so, we intend to highlight the significance of digital transformation in altering value chains, resolving manufacturing-related problems and providing managerial and policy suggestions. The chapter first presents selected data on digitalisation for all sectors with a focus on specific ones. Thereafter it continues with an in-depth qualitative investigation of the used technologies, motives, obstacles, results as well as recommendations for the state based on the findings of the qualitative research.

1 Industry overview and the use of new technologies

The medium-low and low-tech manufacturing sectors comprise a variety of industries, totalling 11 industries.[1] The five most important industries in the sector of medium-low and low-tech manufacturing companies are the manufacture of food products, basic metals, rubber and plastic products, wood and products made of wood and cork. Furniture and repair and installation of machinery and equipment are excluded (Statistical office of the Republic of Slovenia, 2022a). Observing the companies with at least ten employees, we find that the companies in these sectors have a lower value added with 44 thousand euros per employee in medium-low and 38.4 thousand euros per employee in low-tech manufacturing than in high-tech and medium-high-tech manufacturing (54.7 and 46.9 thousand euros). The companies on average have around 60 employees and are smaller than those in high and medium-high tech sectors (AJPES, 2021).

Hereafter, we present the specifics of three sectors that have the highest added value (percent of GDP) among all medium-low and low-tech manufacturing sectors (Statistical office of the Republic of Slovenia, 2022a) and analyse accordingly which technologies are most used worldwide.

Manufacture of rubber and plastic products. Plastics and rubber manufacturing is categorized as the second largest manufacturing group globally (AJPES, 2021; Balkissoon, 2018). Business opportunities, designed to strengthen circular economy models are the starting point in this sector. Artificial Intelligence (AI), Internet of things (IoT) and robotics are the application examples that provide tracking elements, address resource waste and optimise consumption. This industry is said to be in the epicentre of new-age manufacturing processes, with the overlap of industry 4.0. Digital transformation and automation, including Manufacturing and operations management (MOM), traceability solutions for visibility of upstream and downstream supply chains and AI (Balkissoon, 2018). In future, the main obstacles to rubber and plastic industry are regulation and environmental protectionism laws (Nicholson et al., 2020).

Manufacture of basic metals. The technological transformation of basic metal manufacturers in Europe has the potential to strongly contribute to im-

1 C10 - Manufacture of food products, C11 - Manufacture of beverages, C12 - Manufacture of tobacco products, C13 - Manufacture of textiles, C14 - Manufacture of wearing apparel, C15 - Manufacture of leather and related products, C16 - Manufacture of wood and of products of wood and cork, except furniture, manufacture of articles of straw and plaiting materials, C17 - Manufacture of paper and paper products, C18 - Printing and reproduction of recorded media, C24 - Manufacture of basic metals, C25 - Manufacture of fabricated metal products, except machinery and equipment, C31 - Manufacture of furniture, C32 - Other manufacturing, C33 - Repair and installation of machinery and equipment

proving production efficiency and sustainability (Branca et al., 2020). A study involving over 85 percent of large enterprises within European Union shows a significant level (78 percent) of automation. The main countries involved in a survey that presented over 70 percent of the sample were Germany, Spain, Italy and Netherlands. Solutions like Computer-Aided Design (CAD), Product Data Management (PDM) and production control systems were standard in the industry (Branca et al., 2021). The most often applied technologies are Cloud computing, Virtual simulation (VR) and Enterprise resource planning (ERP). ERP systems consist of many highly integrated business software solutions and have become increasingly more user-friendly to support collaboration and empower employees (Asprion et al., 2018). In the next few years, most investments will be made in Analytics, Cybersecurity and the Internet of things that enable communication among different units (Branca et al., 2021). Additive Manufacturing (AM) which is a specific 3D printing process that allows the building of lighter and stronger components additionally has a lot of potential and will slowly be implemented. Some more advanced engineering-oriented companies are also implementing digital twins. A digital twin is a virtual representation of a physical system or a process and is used for simulations, monitoring and tests. An object is fitted with many sensors that show the overall performance and thereafter, the data is applied to a digital copy (Xiang et.al., 2018). Staff training seems to be crucial to overcoming new challenges. However, results show that only a few training programs are currently scheduled within companies. Overall, the steel industry is committed to Industry 4.0 and has planned many investments to increase its competitiveness (Branca et al., 2021).

Manufacture of food products. Food demand in correlation to population has increased all over the world in the last decade (Elferink & Schierhorn, 2016). This challenge can be overcome with the use of information technologies (IT) at a level even beyond the most cutting-edge IT applications that are currently in use. Here, the new paradigm of Industry 4.0 can represent an intriguing evolution (Demartini et al., 2018). Food production/processing has become more efficient. There are three promising applications in food tech: robotisation, digitalization and novel processing techniques. The production process is less labour-intensive and more stable when robots are used (greater production volume with lower personnel costs). As an illustration, more and more items are being cut, moved, packaged, and palletized by robots. Artificial intelligence and data technology both contribute to the simplified usage of production processes and increasing efficiency. For instance, connected equipment allows for more remote monitoring and control of operations. Novel processing techniques guarantee quality maintenance and present opportunities to improve

the sustainability of the production process. For example, milder manufacturing methods that maintain more flavour and nutrients include the usage of high pressure or steam (ING Economics Department, 2019). Additionally, applications of data technology (such as RFID chips) enhance the traceability of goods across the supply chain and which may be extended to 100 percent with use of data technology. To illustrate, customers are willing to pay more for antibiotic-free beef, as it adds value and results in different distinctive goods. All this is due to sharing details with consumers about the ingredients, region of origin, and method of food manufacturing (ING Economics Department, 2019; Kumperščak et al., 2019).

Effects of digitalization in medium-low and low-tech manufacturing sectors. Awareness and interest in digitalization seem to have increased tremendously in the past years. However, some companies are still struggling to identify the economic benefits of so doing and face a long time to get their yield on initial investment. A study by Cheng and Westman (2020) has analysed all the quantitative and quantified effects found in the literature for low and medium low-tech industries with main focus on the Steel industry. Value creation is the key impact brought about by digital transformation. It shows lots of positive quantitative effects such as increased productivity, shorter downtime, higher quality, reduced material consumption, lower need of low skilled jobs and more efficient energy use. The only two negative effects listed are a decrease in new jobs needed and a disturbance in production.

When it comes to quantified impacts, production and manufacturing costs decrease from ten to 30 percent, operating costs and unplanned downtime from two to ten percent, conversion costs from 15 to 25 percent and waste decreases from ten to 20 percent (Cheng & Westman, 2020; Horvat et al., 2019; Aguiar et al., 2019; Nwankpa & Roumani, 2016). Digital transformation greatly improves operations a year after its commencement but decreases profitability. A corporation should wait two to four years before expecting a return on profits. Additionally, digital transformation significantly helps an organization's operational processes to improve, but the marginal utility may decrease if it lacks a strong digital basis. If a business launches digital transformation to maximize profits, it should take advantage of favourable government legislation and its capacity for innovation (Jardak & Hamad, 2022; Guo & Xu, 2021).

At the national level, companies in Slovenia use a few different digital technologies. On average, 80 percent of the investigated sectors (C10-18[2] and C24-25[3]) have their own web page, slightly more in C10-C18, where cloud services and social media are more widely used than C24-C25. This is mainly since the share of end-consumer sectors is larger. Web-based sales are still relatively rare in these sectors, and primarily such sales bring more than ten percent of their revenue (in six percent of C10-C18, and only 0.6 percent in C24-C25). 42 percent of C10-C18 and 31 percent of C24-C25 of companies have a more advanced ERP, and only around 15 percent of companies used CRM. On the other hand, there is a large discrepancy in the use of robots, 29 percent of C24-C25 companies use robots, in comparison to 10.6 percent of C10-C18. However, the use of different technologies must also have regard to the nature of the specific processes and the obstacles companies face in the implementation of these technologies. Data for sectors C31-C33 is not available separately. (Statistical office of the Republic of Slovenia, 2022b).

Slovenian companies report several obstacles to digitalization. From the strategic perspective, it is interesting that over 45 percent of companies (even 50 percent in manufacturing) (still) believe that digital transformation is not essential for their success. This is perhaps a dangerous myopic perspective. Over 60 percent of companies (and even more in the sectors of interest) reported having problems in digital transformation. Generally, companies regardless of sector, face similar obstacles, of which lack of staff and knowledge are most important, followed by the lack of financial resources (Statistical office of the Republic of Slovenia, 2022b).

2 Empirical analysis

2.1 Methodology

To investigate the nature of digital transformation in the target sectors twelve interviews were conducted with managers of companies from different sectors, regions and sizes (Table 1) between 22nd of August and 12th of September 2022.

2 C10 - Manufacture of food products, C11 - Manufacture of beverages, C12 - Manufacture of tobacco products, C13 - Manufacture of textiles, C14 - Manufacture of wearing apparel, C15 - Manufacture of leather and related products, C16 - Manufacture of wood and of products of wood and cork, except furniture, manufacture of articles of straw and plaiting materials, C17 - Manufacture of paper and paper products, C18 - Printing and reproduction of recorded media

3 C24 - Manufacture of basic metals, C25 - Manufacture of fabricated metal products, except machinery and equipment

Nine interviews were conducted online and three face-to-face, with an average duration of 45 minutes.

Table 1. Sample characteristics

Company	Industry	Size	Ownership	Interviewee's position(s)	Interviewee's gender
Company 1	Manufacture of paper and paper products	Large	Foreign	President of the Management Board	Male
Company 2	Manufacture of other non-metallic mineral products	Large	Foreign	Head of Digital	Male
Company 3	Manufacture of fabricated metal products	Large	Foreign MNE	Vice President	Male
Company 4	Repair and installation of machinery and equipment	Medium	Domestic	Social Media manager	Female
				CDO	Female
Company 5	Manufacture of food products	Small	Domestic	CEO	Male
Company 6	Manufacture of fabricated metal products	Large	Foreign	System developer	Male
Company 7	Other manufacturing	Small	Domestic	Sales manager	Male
Company 8	Manufacture of beverages	Large	Foreign	Business Solution manager	Male
Company 9	Manufacture of basic metals	Large	Domestic	Mechanical engineering director	Male
Company 10	Manufacture of leather and related products	Small	Domestic	Finance manager	Male
Company 11	Printing and reproduction of recorded media	Medium	Domestic	General Manager	Male
Company 12	Manufacture of fabricated metal products	Large	Domestic	Chief Information Officer	Male

Source: Own work (2022).

The analysis focused on (1) the importance of digitisation and the introduction of new technologies in the company, particularly the technologies and digital platforms most important for them; (2) the main drivers and motivations for digitisation, the adoption of new technologies and their experiences with obstacles, if any; (3) the biggest impacts of introducing new technologies in their business; (4) the role of employees in the digital transformation process and required competencies; and (5) role of the state and other stakeholders' contribution to a faster digital transformation.

3 Results

3.1 The characteristics of digital transformation in the industry/company

Medium-low and low-technology intense sectors are not ground breakers. Technologies such as ERP systems and cloud storage were used by almost all our representative companies. On the other hand, technologies such as maintenance modules, sales forecasting solutions and price prediction software were only used by a few or one. *"We have a well-integrated ERP system on the 4th level, on the 3rd level we have MES and MOM with the integrated warehouse management system. Besides that, we use a fleet management system and a maintenance module."* (Company 3)

All the companies use some type of enterprise resource planning (ERP) software. Most companies have it customized and adapted to their specific needs. Systems are mostly integrated to gain all the benefits such as speed, higher flexibility and big savings. *"15 years ago, we started with consolidation of all our production companies where we now have a unified ERP system. This way information needed for decision making is always available to higher management and the owners in real-time."* (Company 6)

Business-to-customer (B2C) companies are using new technologies to bring value to their customers. For example, one company created a configurator for customers to assemble their products to see how they look. They can see all the products and get an instant price approximation. Without a doubt, this is a value-adding solution for the customer since they do not have to wait for a response and/or any further information. *"We created a configurator where clients assemble the product, get a price estimation and in the end send an automatic enquiry. This way a customer gets lots of information instantly and so do we. All needed details are gathered in one place, and it saves us a lot of time."* (Company 7)

Reducing paperwork and digitalizing production orders are some of the main goals for enterprises. An example of reducing paperwork is signing and storing contracts in digital form. The European Commission has helped substantially with eSignature directives validating electronic signatures. Many companies have also moved from paper to digitalized production orders. This is a sustainable solution where orders can be continuously monitored. *"We had to send out approximately 120 production orders in paper form each morning. We decided*

to move it to a digital form and now have a complete insight into what orders are being done and what is the overall status." (Company 3)

With systems such as ERP, used widely by companies, many challenges are reported in the phase of implementation of ERP. Finding the appropriate software that would adapt and fulfil their needs was often a challenge. Many have reported issues with interconnectivity between softwares. *"We have too many different systems and we plan to connect them together into one systematic and simple-to-use software."* (Company 9) Well-integrated ERP system is additionally beneficial when it comes to communication with customers, suppliers and internal communication. However, many have faced obstacles with implementation. For example, some suppliers are not as digitalized and hence unwilling to use their systems. Problems were also noted with internal communication where employees struggled with adapting to new means of communication.

Another useful technology is cloud storage which is used by half of the companies. Cloud storage is a service model where all data is stored securely on a remote storage system. It is mentioned, backed up and only available to users of selected network. Since files are always available to everyone, companies report that it increases their productivity and eliminates lots of unnecessary communication between employees. *"We use cloud services where all our information is stored safely and most importantly available right away from wherever you are."* (Company 3)

Investments in automated warehouses are becoming a good practice for corporations with bigger storage needs. They are fully automated and connected to an ERP system. It enables a complete overview of inventory and orders are prepared faster with reduced effort. The potential for human error is eliminated which results in savings and higher overall quality of service. Modern warehouse systems ensure better utilization due to extended height with lesser space between racks. *"We have had an automated warehouse for almost 20 years and people are still fascinated when they see it. It is of great importance since we have an overview of all our inventory, and we are easily able to practice a first in first out method to eliminate issues with product expiry dates."* (Company 8)

Some are also using artificial intelligence (AI), management execution system (MES) and manufacturing operation management (MOM), fleet management systems, maintenance modules, systems for sales forecasting and even specific software that helps to predict prices on the market, all of which add to the company's competitiveness. The most advanced companies are in the phase

of developing a system using digital twins. *"The main goal is to create a system that optimizes itself, which is going to take a long time. We are talking about a digital twin with a digital loopback."* (Company 3)

It seems that smaller companies struggle more with investing in digital platforms due to lack of capital availability. This primarily depends on the development phase and the importance of digitalization to them. Based on the experiences of the interviewees in the sample companies, it seems that for now the smaller companies still see investment into tools as too big of a risk, given the high cost and uncertain benefits. Therefore, the solution to them is less desirable.

3.2 Motives and drivers of digital transformation

Some companies have a clear digital strategy in place. A specific one has its digital strategy based on profitability and experience with its subsidiary companies. They divide technologies into three sections which are automatization, ERP system and digitalization. Automatization lowers the costs of manufacturing and has the smallest effect. Next, the ERP system ensures orders go from customers directly into production. This lowers the overall fixed costs and increases profitability. With digitalization, they can sell ten percent more and therefore this solution is most profitable but also hardest to implement. Based on their experience they realized digitalization for them is most beneficial and have therefore remodelled their digital strategy accordingly. *"Most of our competitors are quite old-fashioned and still prioritize cutting costs with automatization. They are neglecting digitalization and this is giving us a great competitive advantage."* (Company 3)

Companies differ significantly in their perceptions of the importance of digitalization. The biggest differences can be found in their production facilities. They are aware that constant improvement is needed to survive**,** and digitalization can help to this end. Many have stated that digitalizing production is of the highest importance and brings the biggest savings. Most have stated that in the end, it all comes down to reducing costs and having a high return on investment. They produce more and achieve higher quality. *"For us, most important motives for digitalization are cost reduction, automation, higher productivity and lower possibility for human error." (Company 11) "We closed two production lines due to them not being efficient. We are now building a new production line that will be due to implementation of digital technologies and automation*

be able to produce 40 percent more than both closed lines combined and will be far more energy efficient." (Company 5)

On the other hand, some stated that investments in the production department are harder to make or do not bring many benefits. The main reason is the high intensity of manual labour that cannot easily be automated. *"We are digitalized to some extent; however, our production part of the company consists of specific manual labour that is hard to automate and digitalize."* (Company 10)

Most decided on digitalization to optimize and speed up their processes and therefore become more efficient. Utilization is important for a company that implements an ERP system in a division with the most expensive and valuable machines. Utilization was additionally increased by monitoring, analysing the problem and implementing solutions.

Another motive to consider is availability of labour. Companies often have no other choice but to automate their processes since they are unable to attract enough workforce. Digital technologies additionally help reduce the work that does not directly bring value such as bureaucracy and other unnecessary or time-consuming processes. *"We digitalized and automated a line to an extent where instead of 70, only three people are needed, while the productivity doubled."* (Company 6) *"Before the ERP system was consolidated lots of reports needed to be programmed and filled out by hand which was really time-consuming."* (Company 6)

The ability to capture lots of data is another motive for digitalization. Many strive to gather as much information as possible to be able to analyse and make better business decisions. Data analysis enables better understanding of customer needs and preferences, including understanding their decisions for purchasing company' products. Others were interested to know employees' efficiency or number of errors made by them. *"To be able to increase sales we needed to know why people are deciding on our products. We achieved this by collecting and carefully analysing data."* (Company 1)

Another important factor for many companies was the pressure from the external environment. Companies reported huge pressure from their competitors or clients within the value chain and were somewhat forced to move forward quickly or be left behind. Precise requirements from their corporate clients have forced companies to transform their business models to fit clients' standards. *"As a manufacturing company for the automotive industry, where standards,*

requirements and customer expectations are at a very high level, it would be difficult to deliver anything without automation, robotics and digitalisation." (Company 12)

Businesses dealing with end customers often feel this pressure as well. Customers come to them with specific requests and companies need to adapt quickly or competitors start taking their market share. *"Our customers started asking for an app with features and systems that we didn't yet have. Our competitors saw the trend and were much faster to develop a great system. Consequently, we lost quite a few projects and a lot of work was needed to catch up. Now whenever a client has a new interesting request, we say we can do it and start developing a solution right away. That way we stay ahead of the competition, develop the company and keep our customers happy."* (Company 7)

However, this might not be the case for companies operating in a less technologically demanding environment that are able to implement new solutions based on their needs. *"The motive was purely our own, there were no external demands."* (Company 11)

3.3 Impact of digital transformation

Enterprises use digitalization to increase efficiency, support competitiveness and sustainability through global and local dramatic changes. Companies highlighted several other aspects of how the modern methods of production and monetization of the data are creating additional value for the organizations.

Automatization enabled a decrease in the number of workers having to operate in the production line. Connecting ERP systems with the production line brings much better oversight of production. Reorganization like multi-handling boosts utilization. Automated systems have an additional effect on the business model, with trends such as paperless operations. Not only does it bring a sustainable note in the general megatrends, but also enhances the business model with lean access to the data. *"Everybody has instant access, no matter where they are, they don't have to come to the office to pick it up, like they used to do."* (Company 7) The use of the cloud allows the constant availability of documents to all relevant parties. Major savings result from the decrease in administrative work. While some companies still do a lot of it manually, some have automated systems for the machinery or additional technology such as radio frequency identification (RFID). *"In the project, we are doing right now, we are adding*

RFID tags to all of the fixed assets, so it is going to be easy to scan them when listing inventory." (Company 2) Such technologies provide elements of control and tracking, which is beneficial for optimization. Further it provides additional value to the customer, particularly in the food industry where customers are sensitive to the origin and supply chain of the food. Transparency can enhance the brand reputation and change the business model as well. However, in our empirical research, that was not yet common.

Most companies are aware of the importance of cyber security and have implemented cyber-security systems, though some to a greater extent than others. One of the companies decided to stress test their employees in this regard and dissatisfied with the outcomes of the stress test, decided to increase its cyber security efforts. *"We did a stress test where employees received three different hidden threat emails one notifying them of a gift, one about the company's parking and the last one about the system upgrade where they had to put in their company username and password. The results were terrible, we showed them to employees and organized lots of workshops and most importantly we put more security measures in place."* (Company 6) This reveals the importance of cybersecurity and need for awareness on the employees to this end. However, the latter appears to be most often, non-existent. Companies also stated that they have already experienced cyber-attacks.

Achieving growth that matters is the final goal of digitalization. Improving processes, and providing less manual work, can improve the lives of individuals in the organization. Digitalization allows workers to take more responsibility, increase productivity, thereby increasing wages. Increased work flexibility, for example, working from home or providing instruction manuals in different languages, improves work environment and allows companies to recruit more easily. Providing immediate insight into the real-time efficiency of the ongoing processes via analytical screens on the workstations, allows companies to reduce the workload and provide stimulation to further improve the processes.

Companies are aware that constant improvement is key to remaining competitive. Interestingly, they mentioned that this can also be achieved also in cooperation with their rivals. Many representatives mentioned that they have good relationships with their rivals, especially in the times like this. Smaller companies, for example, buy in bulk together or develop costly software in a symbiotic way. *"In Poland twelve wholesalers organized and created a purchasing company, we are now thinking of doing the same, especially now with all the price increases."* (Company 5)

3.4 Obstacles in digital transformation

One of the goals of this research was to discover the reasons that restrains companies from digitally transforming their business models.

3.4.1 Technology challenges

Technology represents a major challenge, for smaller and bigger companies, but in different aspects. Companies that produce a variety of products in different amounts based on clients' needs have problems with automatization. Having lean operations is a challenge when companies have highly diversified product portfolios due to customization, which is often related to small series. In such cases, sometimes setting up the machinery takes more time than the actual production. Despite being lean, the end product can be very expensive.

Another issue is the variety of systems used in the organization. Smaller organizations may find using different systems in different departments, better. *"There was a lot of resistance when one system was being introduced to four different departments. We left every department to digitalize as they wish and now, they function well."* (Company 7) However, this represents a struggle for bigger organizations. Different systems can be frustrating for gathering data and managerial decisions. *"With all the new companies that we bought and all the mergers, softwares were sometimes connected and sometimes not. At some point it become unbearable. That's when we started with consolidation."* (Company 8) Furthermore, it is not necessary for a company to be the first in the production chain to digitalize. It can be a major opportunity, but it can also be a major risk since it is possible that the invested and developed solution may turn out subsequently to be inefficient. It is much easier to copy good practice when you see it functioning well. Being one step ahead can also bring obstacles, related to different levels of digitalization in the supply chain. *"Until recently, we still received orders from Germany via fax machine, which can be a big problem if something goes wrong with the machine." (Company 5)* Due to shortages and disruptions in supply chains, companies struggle with finding available and suitable technology that they need for further digitalization. In the past few years, companies experienced long delays and delivery times for ordered equipment. *"We needed 6 robots, which we used to get in two/three months. The procurement department gave up because they couldn't find them, and it took the director six months and four different suppliers to get them."* (Company 8)

3.4.2 Financial obstacles

Economic circumstances are now very unpredictable, given skyrocketing prices of energy and raw materials. Several companies are very pessimistic about the future outlook. Such uncertain circumstances require organizations to have a particular level of reserves. Representatives also mentioned increasing salaries and where there is disruption of the supply chain, where "just-in-time delivery" was temporarily switched to "buy as much as you can" or hoarding approach. Organizations cannot execute the whole system transformation towards digitalization and automatization at once. It will have to be done systematically. *"Every single thing you want to digitalize, especially nowadays, has become insanely expensive because IT workers and companies are in short supply."* (Company 8)

Financing digital transformation is another challenge faced by managers. For larger companies, the main challenge is not necessarily the availability of funds, but rather the allocation of money, i.e. where to invest funds to have the highest return. Digitalization is only one of the options to invest and strengthen a company. On the other hand, smaller companies struggle with both. Governmental subsidies are more important for smaller organizations, while big companies do not necessarily need the help. Some companies have their own ways of saving money when investing. For example, they rather buy used equipment. However, this does not necessarily result in savings since used machines have lower productivity. *"A new machine in comparison with the fifteen years old one is twenty to thirty percent more productive."* (Company 9) The following was also stated. *"...also the Germans don't always have brand new machines, but there are cases when a machine is depreciated after seven years and then sold. Then the Slovenians come and buy these old machines to save money, which means other companies will be fifteen percent more productive just because of the new machinery."* (Company 9)

3.4.3 Human Resource Management challenges

"You need to invest a lot to teach just the simple digital skills." (Company 9) This quote summarizes the challenge of HRM during digitalization. The pace of digitalization and technology development is fast, while workers in some areas are getting older and more resistant to learning new things. The resistance can mean both struggles to learn, or reluctance to change. While both have the same outcome, they are treated very differently. We heard many different approaches that companies take when introducing new technologies to employees

and perspectives of employees towards digitalization. *"The first two weeks you spend just showing employee what to click and you give instructions, for as long as one don't get used to it."* (Company 7) In the same light, Chief Information Officer stated another solution. *"We have found that if we go with big changes all of a sudden people feel it too much. So we try to make small changes and many of them and then they don't notice them. Just like a frog if you cook it, it doesn't even notice that it is cooked." (Company 12)* What was interesting was also the employees' perspective. *"How they adopt changes depends on when they see their benefits from it, that it will be easier and faster for them, that processes will run faster, data will be better managed etc. They are not interested in me having an easier way to make decisions. That's not good enough for them."* (Company 11)

When it comes to introducing digitalization to workers, some do not see the bigger picture and the savings. Often workers are already overwhelmed with their existing workload and being introduced to the new technology could be too much. *"...the thing is that people in some moment say that they are exhausted and that they can't handle nothing more, because they have already so many other things to do."* (Company 8)

The companies address these challenges using step-by-step approaches and constant IT support. There are many cases where employees have not used a computer in their life and are assigned an ERP system to handle or some machines that are digitalized. One company mentioned that they bought a brand-new machine and the productivity declined since the employees did not know how to manage it. *"We thought that a brand new machine, is going to solve some problems, but it was actually just a step back. We used to make sixteen pallets a day and now we only make twelve pallets a day."* (Company 5)

While it is very hard for the people to requalify and the companies to help them with that, it is also very hard to get newly qualified workers. There is a general shortage of both qualified and unqualified workers. For some positions, they would employ anybody, willing to work. However, with the shortage of workers, all representatives mentioned their struggles with finding a workforce. Many see solutions in robotisation and automatization of certain processes. *"In the last five years, we have been looking for them all over the Balkans, including Romania, Bulgaria and so on. This pool is shrinking and there are fewer and fewer of these staff. It is the robots that are showing that they could replace the workforce."* (Company 12)

3.5 Policy perspective

Advanced digital technologies, additionally, boost economy's efficiency and competitiveness, and promotes broader social and economic growth. Hence the state should be very interested in the digital transition of all companies. Our research shows that companies are overall quite satisfied with the current support of the Slovenian government with respect to digital transformation, but they also did give suggestions to accelerate digital transformation. The suggestions can be grouped into three categories: education, administration, and policymakers' better understanding of companies' needs.

The most common suggestion was the reduction of administration and bureaucracy. All of the respondents have already applied for the state or EU subsidy for digitalization at the least once before. Many respondents said that the paperwork to apply for certain subsidies is very time-consuming. *"We spend 40 percent of our time monitoring these projects to prove that we have done it, which could be done differently."* (Company 12) Additionally the same results can be achieved by reducing the paperwork. *"The state could cut down a lot of paperwork and still end up with the same results."* (Company 7)

One of the suggestions for this common problem was to digitalize administrative offices and the public sector in general, to allow citizens to do as much "paperwork" as possible through digital platforms. Besides, the preparation of paperwork and the time taken to receive a reply from the administrative office is very long according to the respondents. *"It takes about a year from application to result, which is a lot. Not to mention the time it takes for everything to go through the administrative office... And in the meantime, the cost of the building has increased by 100 percent. Now we have stopped the process because it is too expensive, and we have missed that deadline."* (Company 5)

The state should focus on educating citizens to be more digitally literate. Educated people can contribute to creating digital solutions easier, which can result in higher added value and efficiency. Many mentioned, that the state should start at the source of the problem, being the education system. *"The main thing the state can do is to give all our children a good digital education at primary, secondary and university level...Because if all students in primary school and high school are digitally literate, we can be the best in the world."* (Company 8)

The report Emerging Technologies' Impact on Society and Work in 2030 by Dell Technologies (2017) estimates *"that around 85 percent of the jobs that*

today's learners will be doing in 2030 haven't been invented yet", partly due to how quickly technology is developing. This highlights that the need for a highly digitally literate workforce will increase further in the future. Companies will also expect the new workforce to be able to adapt fast to new technologies and be efficient problem solvers. *"Maybe in the faculties, there is a need for more focus on the practice itself. We see that the students who come to us want to do a lot but they don't have experience with a specific tool. But the sessions don't have to be concrete, it's the way, the methods they use in software development or programming. I'm not saying they don't have useful skills, but there is a lack of that link between theory and practice."* (Company 12)

A few of the respondents mentioned that policymakers lack understanding as to how the world is developing and the kind of support companies need. There were suggestions that the state should offer support that is focused more on industry specifics since the need for digitalization varies among different industries. Some believe that focusing on increasing employment is misleading and that it more important to promote wage and value-added growth. *"The state does not support what the market demands. But here we are, we have to tell the state what we expect from it."* (Company 11)

Last but not least, many representatives are anxious about the changes in the sector of electricity and gas distribution, as the prices are expected to significantly grow in the future. Regulation of prices is, according to interviewees, now the most important role of the state, if Europe and Slovenia want to remain competitive. *"We are now in the midst of an energy crisis, where energy prices times five and gas prices times two is a somewhat abnormal situation, where we also expect help from the state. If we look at Europe and America, they don't have these problems at all and we are losing out against the huge competition in those markets, so here the role of the state is important."* (Company 12) The main key findings of the research are presented in the Table 3.

Conclusion

The analysis presented both subjective and objective insights on the level of digitalization and perception of it in medium-low and low-tech manufacturing in Slovenia. When it comes to the level of digitalization, ERP system and cloud storage is something that is considered a no-brainer by companies, many having it customized. The differences can be seen when moving to the other technologies, which depends on specific needs and companies' capabilities. Reducing paperwork, automatization and controlling are the main motives for companies to move forward with digitalization. When it comes to obstacles, there are many. To name a few, difficulty of proper automatization when there are multiple products at play, uncertainty dictating financial decisions and financial options, frustration as a human aspect, shortages and capabilities etc. The impact of digitalization on business performance is supporting the motives, rather than obstacles. Lean access to data, value chain consolidation and reduction of fixed and variable costs are just some of them. Digitalization is the only way forward, and to avoid some obstacles the state should play its role and support companies, by offering advanced digital education to young citizens and by cutting time-consuming bureaucracy.

To sum up, the importance of this research was expressed by the following quote: *"Digitalization opens up different ways of working together and it brings new opportunities."* (Interviewee 2, Company 4)

Table 3. A summary of key findings

Digitalization aspect	Key highlights
The characteristics of DX in the industry/company	• Number of different technologies, but generally not smart factories • ERP, CRM, MES, MOM, EDI1,* robots, cloud, automated warehouse, etc.
Motives, drivers of digital transformation	• Need for efficiency, quality, process control, and planning. • Competition, and pressure from within the value chain. • Company's vision.
Obstacles in digital transformation	• Employees - lack of skills, knowledge, lack of understanding of the need for change. • Different levels of digitalization within the value chain. • Lack of information and knowledge about existing and suitable technologies. • Different systems are used in companies due to a lack of comprehensive planning, and problems with integration.
Impact on business performance	• Increase in productivity, efficiency, speed quality, planning, lean production, and lean processes. • Impact on firm competitiveness, sales, profitability, important to choose the right approach.
Other impacts	• Change throughout the business processes. • Stronger cooperation within the value chain, better adjustment/ easier to cover labour needs, improved control, and value chain consolidation. • Employee flexibility required.
HRM challenges	• Lack of skilled workforce (existing and additional). • Structural change - shift to more educated/trained workers. • In-company training to support digitalization. • Employee flexibility needed.
Policy perspective	• Subsidies are important for the promotion of digital transformation. • Better targeted subsidies (fewer conditionalities, subsidies for external services to promote external support to digitalization where needed). • Changes in the educational system to make students more digitally literate. • Decrease in bureaucracy and administration. • Longer application deadlines.

Note: * ERP = Enterprise resource planning; CRM = Customer relationship management; MES = Manufacturing execution system; MOM = Manufacturing operation management; EDI = Electronic data interchange.

Source: Own work (2022).

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TRANSFORMING BUSINESS MODELS AND VALUE CHAINS IN THE AUTOMOTIVE INDUSTRY

Introduction

The automotive industry, preeminently one of the significantly important industries since the industrial revolution is facing major technological breakthroughs and transformations that cannot be avoided. The disruptive effects resulting from digitalization have also reached the automotive industry, however, this highly competitive and fast-changing industry is no stranger to rapid and turbulent change (Koerte, 2021). According to a recent IBM research, half of the surveyed automotive executives say that to succeed or even survive, in the next ten years, they need to reinvent their organizations with digital technologies (Newman et al., 2020).

This chapter aims to analyze the process of transforming business models and value chains in the automotive industry while highlighting the importance of digital transformation and its role in solving supply chain issues. In so doing, we add to the literature by highlighting links and shared ideas across a range of literature areas, pinpointing the key empirical findings into the discipline and offering well-informed recommendations for its continued advancement.

This chapter comprises of four sections. First, it provides an in-depth overview of the automotive industry, by giving a broad idea of the specifics of the industry, mainly, digital transformation trends, both in the international and Slovene context. Second, we delve into digitalization and new technologies in the automotive industry. A strong emphasis is placed on identifying the most widely used general-purpose and complementary technologies in the automotive industry. This section also touches upon the business models of the companies,

operating along the value chain at OEM, Tier 1 and Tier 2 levels, additionally emphasizing the role of digital transformation in business model innovation (BMI). The third and fourth sections of the chapter explains research design, main findings and the results. The chapter concludes with a brief discussion of the results.

1 Industry overview

Automotive industry is an important contributor to the EU economy. The turnover generated by the automotive industry represents seven percent of EU GDP (ACEA, 2022). In 2020, annual revenue of motor vehicle manufacturing industry in the EU amounted to approximately 940 billion euros, a decrease of 16 percent when compared with 2019 (Statista, 2022). The automotive industry has cemented its position as Europe's top investor in R&D by spending EUR 62 billion annually, accounting for 33 percent of all EU spending on innovation (ACEA, 2022). The EU's automotive industry employs 12.6 million Europeans in the whole automotive ecosystem, including manufacturing and services. This accounts for 6.6 percent of the total labor force in the EU. Manufacturing sector of the automotive industry in itself, employs 2.6 million people or 8.9 percent of EU employment in manufacturing. On a country basis, Slovakia has the biggest share of citizens employed in automotive sector (16 percent), followed by Romania (15 percent) and Sweden (14.4 percent) (ACEA, 2022).

Slovenian automotive industry importantly contributes to the EU automotive industry, as it employs around 18 thousand people, positioning the country on eighth place by percentage of all employees working in the automotive industry. In 2019, 8.3 percent of Slovenians worked in automotive industry (Eurostat, 2022). Slovenian automotive industry contributes approximately ten percent of Slovenian GDP and accounts for more than 20 percent of Slovenian export (GIZ ACS, n.d.). Out of all 12 million vehicles produced in EU in 2021, Slovenia produced approximately 95 thousand. On average, Slovenia produces 11,5 vehicles per worker, which is above EU average of seven vehicles per worker (ACEA, 2022).

The number of enterprises in automotive industry have increased, both in EU and Slovenia, between 2017 and 2019 (Table 1). However, the proportion in manufacturing industry remained almost the same. The number of employees per enterprise in Slovenia is approximately twice smaller than in EU. This difference is becoming lesser through the years (Eurostat, 2022).

Table 1. Indicators for Slovenian and European automotive industry

	2017		2018		2019	
	EU	SLO	EU	SLO	EU	SLO
Number of enterprises	16,732	183	17,000	190	17,322	194
Enterprises working in automotive industry (percent of total in manufacturing)	0.9	0.9	0.8	0.9	0.8	0.9
Number of employees (in thousands)	2,426	14.5	2,556	15.8	2,540	17.3
Employees working in automotive industry (percent of total in manufacturing)	9.0	7.5	9.1	7.9	8.9	8.3
Number of employees per enterprise	146	76	150	84	148	90
Labour productivity (in thousand EUR)	81	47.4	80	45.3	80.1	41.9
Investment per person employed (in thousand EUR)	15.5	14.3	15.5	17.8	15.2	11.4

Note: the automotive industry not only takes into account the C29 category of NACE classification which includes manufacturing of motor vehicles, trailers and semi-trailers, but also includes other categories. However, for the purpose of our research we took a more detailed look at C29 category since it is the most representative and provides availability of data.

Source: Eurostat (2022).

Labour productivity decreased in Slovenia in 2019 (Table 1), but still accounts for almost half of EU average. With regards to investment per person, there are no major differences between Slovenia and EU average, though for the former, investment drastically decreased between 2018 and 2019 (Eurostat, 2022).

The events that detrimentally shifted the industry are connected to global conditions in the market, with the automotive sector being hit the hardest by the first Covid-19 wave. The shutdowns in China and, most significantly, the containment measures put in place across Europe between March and May 2020 are partially to be blamed. The EU automobile industry, after having peaked production in 2019, lost 3.6 million vehicles from production in the first half of 2020, equal to a loss of EUR 100 billion. During the crisis year, production of cars fell by 23.3 percent (ACEA, 2022). The production of vehicles in Slovenia fell by more than eight thousand cars, causing many manufacturing facilities in the automotive sector to deal with production stop for a longer period (Statista, 2022).

On the other hand, the industry is currently experiencing greening of the automotive industry, digitalization, resilience and disruptive business models which are at the core of transformative trends (Brown et al., 2021). The paradigm shift represented by shared economy where transportation is transmitting from a car as a product to a car as a whole mobility service, could expand the catchment area of public transit, potentially playing a crucial role in bridging gaps in current transportation networks and promoting multi-modality. Fur-

thermore, electric cars are on the verge of becoming viable and competitive. 55 percent of all new car sales in Europe may be fully electrified by 2030 (Kuhnert et al., 2018). Though, the lack of adequate charging infrastructure, the need for greater reliance on driving ranges and price increases may pose a challenge, it is anticipated that conventional vehicles will lose market share to electric vehicles (Gao et al., 2016). Besides electric vehicles, there is also hype about fully autonomous vehicles. A significant part in preparing regulators, customers, and businesses for the medium-term reality of cars taking over control from drivers will be played by advanced driver-assistance systems (ADAS). The market launch of ADAS has demonstrated that pricing, customer comprehension, safety concerns and ethical dilemmas pose the biggest obstacles to quicker market penetration. However, once these issues are resolved, driverless vehicles will provide consumers with enhanced value, from increase in safety as a result of reduced car accidents, lesser greenhouse emissions to reduction in traffic congestion (Joshi, 2022).

2 Digitalization and new technologies

2.1 Digitalization and new technologies in the automotive industry

In recent years a lot of new technologies have emerged in the automotive industry ushering in a new renaissance with robotics and artificial intelligence at its heart. For the purpose of this chapter, we have divided those technologies into two groups, general purpose technologies (GPT) and complementary technologies. Their use and impacts are summarized in Table 2.

2.2 Business models in the automotive industry

The business model of Original Equipment Manufacturers (OEMs) is based on selling vehicles with accessories that generate majority of their revenue and services that are related to the automotive industry (Ball et al., 2018). The business model of Tier 1 companies (e.g. Bosch, ZF, Continental and Magna) is based on offering the most advanced processes in the supply chain (as evident in Figure 1) with which they prove to OEMs that they can generate reliable components aligned with safety standards in mass quantities on time (Behrendt et al., 2022). Tier 2 suppliers, that are equally important to the supply chain in the automotive industry, are sometimes limited in what they can produce due

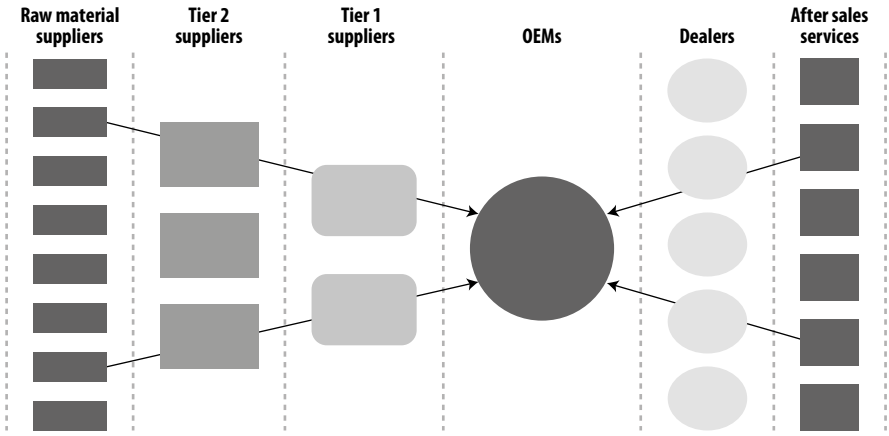
to limitations in the technology they are using or resources, while ones that are more technologically advanced can also be included in the whole design process. Similarly, as Tier 1 suppliers, their focus is on business process optimization and consequently lowering their production costs (Gelowitz & Stark, 2019).

Table 2. Important technologies in the automotive industry

Technology	Use in automotive sector	Impacts on the automotive sector
General purpose technologies (GPT)		
Artificial intelligence (AI)	• Coded driving protocols, obstacle avoidance algorithms, predictive modeling, and smart object discrimination	• Enhances a driver's field of vision while driving, thus improving road safety
Machine vision (MV)	• Imaging-based automatic inspection and analysis for automatic inspection, process control, robot guiding	• Supports safer, more reliable and robust automobiles • Provides an automated internal machine inspection method
Cognitive computing	• Human language processing, speech and object, human–computer interaction, dialog and narrative generation	• Helps identify and connect human drivers' responses to their driving behaviors in all conceivable situations
Big data analytics	• Uncovers trends, patterns and correlation in data • Combines information from business and supply chain	• Provides fleet information to managers • Optimization of supply chain, improve overall quality
Robotization	• Collaborative robots ("cobots") work independently without humans invading their workspace	• Assist human technicians by taking on a sizable portion of the workload by using machine learning
Cloud computing	• Use of remote computers • Enables storage and movement of data online	• Improves operation while securing data handling • Reduces chance of failures or breaches
Internet of things	• Monitoring a vehicle and carrying out preventive maintenance by using algorithms	• Reducing downtime and improving driving experience
Additive manufacturing	• Enable rapid prototyping • Providing great power and achievements of effect	• Weight reduction of components • Faster production
Complementary technologies		
Enterprise resource planning (ERP)	• Handling plant scheduling, order processing, inventory management, and customer support	• Optimizing business performance by giving reports on business operations
Manufacturing execution system (MES)	• Tracking and monitoring products and raw materials • Acquiring insight into manufacturing operations	• Reducing costs and boosting productivity, improving performance
Supervisory control and data acquisition (SCADA)	• Data gathering that enables remote management via monitoring equipment	• Optimization of processes using a combination of hardware and software
Virtual modeling **Digital twin**	• Simulation of the manufacturing process of vehicles	• Creating valuable information that is applied back to the original system already present in the physical world

Source: Charles et al. (2021), Marr (2019), Marr (2016), Martin (2022), Piromalis & Kantaros (2022), Ranpura, (2020), Rundle (2019), Soegoto et al. (2019), Walch (2019).

Figure 1. The conceptual framework of a supply chain in the automotive industry



Source: Adapted by Chandra & Kamrani (2004), Sturgeon et al. (2009).

Shortages in components due to crisis, electrification, long waiting times, costly shipments, improved materials and new technologies have encouraged market players, such as Toyota, to set new market trends. This has led other manufacturers to adapt and increase their competitive advantages. Toyota's keiretsu practice of involving multiple sourcing of parts coupled with a system to monitor suppliers and to be informed once the shortages occur enables constant review and chance of adaptability to uncertainties (Legget, 2022). Thus, OEMs are actively working on their business model innovation to change an organization's value proposition to customers and its underlying operating model (Ball et al., 2018). OEMs and its suppliers will have to take a far more aggressive approach to building widespread engagement and exposure with their suppliers and ensure interconnectivity. They will need a new level of cooperation and risk-sharing for this massive global supply chain to continue operating efficiently and address the issues of electrification and autonomy (Opsahl, 2021). Realizing the importance of this relationship has led to a renewal of interest in keiretsu-style relationships. Despite the flaws, the new keiretsu provides a useful template for companies seeking to enrich their relationships with suppliers for long-term benefit. A supplier's ability to learn is key to future competitiveness and suppliers that demonstrate a willingness to understand the root causes of mistakes are the most likely to improve. Nevertheless, the essence of keiretsu has proved durable, and the ability to avoid the hidden costs of Western-style supplier relationships is an important reason. Keiretsu relationships allow OEMs and suppliers to work together to detect causes of problem/s. And it's cost-

effective for OEMs to provide educational support to suppliers, because that ultimately brings down the suppliers' costs and lowers the prices they charge (Aoki & Lennerfors, 2013).

However, OEMs are not the only ones adapting their business model to recent technological changes. Tier 1 suppliers are also facing severe pressures and are adapting to a new business environment that dictates faster production and higher quality by extensively incorporating automatization and robotization of the manufacturing processes. This allows them to be aligned with higher standards regarding quality and speed. In so doing, they are responding to the industry pressures in multiple ways, including attempts to reduce fixed costs, program and operational efficiencies (Behrendt et al., 2022). Apart from Tier 1 suppliers, Tier 2 shift is more focused on the transition from manual labor to automatization and robotization in processes where the transition has not been implemented yet, and where it has been, the optimization of integrated automated or robotized processes (Gelowitz & Stark, 2019).

3 Empirical analysis

The empirical analysis is based on 15 in-depth interviews, conducted between 23rd August to 9th September 2022, with the selected executives of mostly global companies having their headquarters or subsidiary in Slovenia. We intended to analyze how all parts of the highly complex value chain of the automotive industry operate. Therefore, we created a purposive sample of companies from every part of the supply chain, ranging from OEM, Tier 1, and Tier 2 companies. Besides selecting companies listed in the NACE categorization of C29 (Manufacture of motor vehicles, trailers, and semi-trailers) and C30 (Manufacture of other transport equipment), we expanded the range of companies based on a substantive assessment of whether they are a part of automotive value chain. Table 3 shows the main characteristics of the companies and interviewees.

Table 3. Sample characteristics

Company	Position in the value chain	Size*	Ownership	Interviewee's position(s)	Interviewee's gender
Company 1	OEM	Large	MNE subsidiary	HR Director	Male
				President of management board	Male
				Project manager	Male
Company 2	OEM	Large	MNE subsidiary	Executive Sales and Marketing Director	Male
Company 3	Tier 1	Medium	MNE subsidiary	Plant Director	Male
				Head of IT	Male
				Manager Human Resources	Female
				Head of planning	Male
Company 4	Tier 1	Large	Domestic corporation	Chief Executive Officer	Male
				Director of R&D and sales	Male
Company 5	Tier 1	Large	MNE subsidiary	Vice President Mechatronics	Male
Company 6	Tier 1	Large	MNE subsidiary	Commercial Sales Director	Male
Company 7	Tier 2	Large	Domestic	Executive Manager of Production and IT	Male
Company 8	Tier 2	Small	Family owned	Chief Executive Officer	Male
				Sales director	Male
Company 9	Tier 2	Medium	Family owned	Chief Executive Officer	Male
Company 10	Tier 2	Small	Family owned	Chief Executive Officer	Female
Company 11	Tier 2	Small	Family owned	Chief Executive Officer	Male
				Deputy Chief Executive Officer	Female
Company 12	Tier 2	Small	MNE subsidiary	European Operation & Quality Satellite manager	Male
				Head of IT	Male
Company 13	Tier 1	Large	MNE subsidiary	Global Business Unit Controller	Female
Company 14	Supportive services	Small	MNE subsidiary	Managing Director	Female
Company 15	Supportive services	Large	MNE subsidiary	Marketing Coordination & Quality Manager	Female

Note: *Small company: number of employees less than 50; Medium company: number of employees more than 50 but less than 250; Big company: number of employees more than 250.

Source: Own work (2022).

3.1 Digital transformation in the industry

A high majority of the companies in the automotive industry are aware of the importance of digital transformation. *"It is clear that you are realizing that without digitalization you cannot achieve the long-term competitive advantage."* (Company 3) Interestingly, it is obvious that companies are trying to find the best possible solutions that will fit them. This shows that the need for better software, machines, robots, and skilled employees is higher than ever, and companies are heavily trying to optimize their business processes. *"The digitalization is a must to incorporate lean production and avoid human errors."* (Interviewee 2, Company 11)

Companies in the automotive industry greatly differ based on their current technological advancement. Among other things, much depends on their position in the supply chain, size of the company and the company's leadership attitude towards digital solutions. The position of the company in the supply chain dictates which functions are digitalized given the specifics of the manufacturing processes. For instance, if a company is at the top of the supply chain and is developing a product, the need for Virtual or Augmented reality will be high for prototyping purposes, while the need for such technologies will be low. For a company at the bottom of the supply chain. However, regardless of the digitalized solution used by the company it is rarely utilized to the full extent. "*We just purchased these new machines, but we are only utilizing 75 percent of its functions right now, hoping to do more in future."* (Interviewee 1, Company 11) Even if so, used to its full extent there are aspects worth changing for processes to become more user-friendly, faster or more reliable.

As one would expect, the higher a company is in the supply chain (e.g. OEM, Tier 1), the higher the need for digitalized solutions. Moreover, the implementation of those solutions, increases the need for highly skilled and knowledgeable employees. Companies that represent Tier 2 or Tier 3 suppliers are moving more towards the use of specific technologies (e. g. robotics) that improve their process efficiency, but not so much towards digitized solutions for marketing communications or sales. *"We are not that digitally advanced, we are taking it very slow and are very careful. We don't use solutions that maybe everyone uses."* (Company 7) The size of the company also plays a very important role when the company's leaders are deciding on the type of digital solution to be used to support their operations. When a company is small, communication and business processes are not so complex. Hence it would not be too hard to track them with limited functionalities of some software or manually. However,

when the company grows so does the need for better software. This is attributable to business processes becoming too complex, or requirements of buyers becoming stricter, and companies not being able to meet them without using specialized digital solutions.

Companies in the automotive industry also differ in the technologies they employ in their processes. The interviewed manufacturers are employing 3D-printed tools, since the technology is especially helpful for low-run special-edition models that might need specialized tools to install custom parts. And since 3D printing is perfectly suited for producing one-of-a-kind parts at a significantly lower price than conventional techniques, it aids in keeping costs under control for automakers. On the other hand, rapid prototyping is also made possible by the 3D printing solution. *"When I started in automotive industry 10 years ago, we were still making parts with a hammer and various models, whereas now you can practically print everything."* (Interviewee 3, Company 1) This demonstrates that this technology proves very beneficial as it saves time and ensures precision. though 3D printing for manufacturing actual car components is currently still not viable, since there are a lot of safety regulation in place preventing manufacturers to do so.

Furthermore, industrial robotic technology has traditionally been quickly and widely adopted by the automotive production industry. According to our interviewees, this trend is still present in almost every aspect of the automobile production process, ensuring higher quality and precision: *"I mean, of course, if we're speaking about production, it's becoming more and more efficient, like we have robots working, which is good because some of the processes are not easy."* (Company 15) Aside from all the benefits, generally there are a lot of ongoing concerns that robots are depriving people's jobs. However, all the interviewed companies claimed that none of the jobs were taken by the implementation of the robots, but rather produced higher quality of work and more satisfied workers. *"And now, with these robotic cells, we know that we have gained both in productivity and in the quality of the product itself, which meant that the worker is significantly less stressed in his work. And if you add it all up, you have much happier customers, happier employees and a much happier employer."* (Company 9)

Moreover, cloud storage is another technology that was frequently mentioned and used in all interviewed companies. *"It's all on the cloud. Even data our end-users receive, everything our sensors read always goes to the cloud."* (Company 6) The main reasons for using this technology in the automotive

industry is to ensure management of large amounts of data and prevent data leakage concerns. With better analytics across the enterprise, they managed to maximize uptime, improve cost-efficiency, increase reliability, improve first-time quality, optimize machine productivity and ensure better scalability.

Augmented reality is another technology used in some of the interviewed companies' production processes, primarily OEM and Tier 1 companies. With large number of production facilities all around the world, this technology particularly proves to be successfully implemented. *"The thing is, we have productions all over the world. And let's say we have the same problem in Mexico, which we had already before in Slovenia. What we do is basically someone in Slovenia who has experience, instead of flying over there for a week, puts on those glasses and is connecting to production facility in Mexico. Like that, they solve the problem, while enabling great cost and time savings."* (Company 13)

Besides general-purpose technologies, companies are intensively using complementary technologies. The three most frequently mentioned were enterprise resource planning (ERP), manufacturing execution system (MES), and supervisory control and data acquisition (SCADA). They allow industrial organizations to track and monitor their products and raw materials. Primarily they are used to acquire insight into manufacturing operations and examine ways to boost productivity, reduce costs, and improve performance. *"The MES system is the software we got from our facility supplier. It shows the whole process flow. So, we know, for example, how many cars are in the line. We see information in each and every detail, also regarding the problems in the production so that our maintenance knows what to target first. And it's a real thing. It's a good thing."* (Interviewee 1, Company 3) Moreover, they also greatly serve for managing operational activities such as plant scheduling, order processing, inventory management, and customer service. Some companies developed this system on their own, while others had outsourced. In any case, these systems were greatly customized to suit individual company needs.

Another important data-driven manufacturing concept is the digital twin. Digital twin solution was not present in a lot of interviewed companies. Some were not even aware of its existence. However, it is more widely used in OEM and Tier 1 companies, while in Tier 2 companies, this technologically advanced solution is yet to be implemented and its application in the processes is not catered its future plans. In OEM and Tier 1 companies, individual vehicle parts and even entire factories are being created in the digital space. This ensures "virtual replica" back up should something in the production go wrong. *"For us, a digital twin means*

that our output exists in numerical form. This means that we can recreate motion, work, production, film and production reliability in digital twin." (Interviewee 3, Company 1) This technology is creating a separate, comprehensively perceived manufacturing process and it is no longer just for capital-intensive processes but increasingly integrated into labor-intensive processes too.

3.2 Motives for digital transformation and used technologies

The interviewed companies do not greatly differ in their motives for digital transformation, however, there are some differences amongst the groups of companies, depending on their position in the supply chain.

We categorized motives into two groups: reactive and proactive motives. Since the industry itself has very high standards with regards to the high quality of products, industry pressures, especially coming from big OEMs, examples of reactive motives are definitely present among the companies. Moreover, traceability in the industry is a very important pressure due to increasingly stringent inventory and traceability regulations. Automotive parts and accessories manufacturers need to have business systems in place that can trace back and forth, and detail any modifications done to a product throughout its lifecycle. The majority of the companies claim that traceability is a very important aspect of their operations, meaning they must be able to clearly show where each piece they produce comes from, who made it, when it was made, and many more relevant details. *"Every car has an upfront determined buyer, and every car has its own number. This means that the product we make, we send it to our buyer, and it is exactly for that car."* (Interviewee 1, Company 12)

On the other hand, for companies higher in the supply chain, customer pressures (at B2B market) are especially high and therefore an important factor in the digital transformation process. *"Customers demand feedback immediately and I don't think we could manage this amount of data without digital solutions. And I can't imagine that, even if we were to reinforce the teams, it seems to me that there would be so many errors and our feedback to customers would be questionable."* (Company 9) In this regard, Tier 1 companies are facing extreme pressures from OEMs, while Tier 2 companies are primarily driven by proactive motives, yet still under pressure to satisfy the needs of Tier 1 customers. Finally, we have noticed that the companies, which are owned by multinational corporations are following the digital transformation path primarily in order to comply with the head digital strategy. The reason being smaller units are

obliged to follow the head company's strategy and therefore do not have the freedom to decide to this end.

As opposed to reactive motives, we also identified proactive motives. Tier 2 companies are smaller, mostly family-owned companies, which constantly have to strive to keep up with the industry novelties and requirements. Therefore, we recognized that for Tier 2 companies, proactive motives are slightly more influential. However, there is no doubt that also OEMs and Tier 1 companies realize the importance of digital transformation when it comes to improving business processes, making operations more efficient and increasing the value added. *"The digital transformation is surely enabling what is most important for all of us, which is more added value than in the past."* (Interviewee 3, Company 1) On the other hand, there are companies whose production processes require high levels of robotization. Those companies are motivated to go digital for the sole purpose of robotization, since they recognize that without digitalization the company cannot go into robotization. Moreover, some of the interviewed companies have implemented the digital solutions given the nature of their products. In their case, given the complexity of the products digitally advanced tools are required to track and produce all of them. The most often recognized proactive reason among the interviewed companies, was the awareness that without digital transformation they cannot achieve future competitive advantage. This is especially important for Tier 1 and Tier 2 companies, where the competition is high and standing out is crucial. Other proactive reasons, which were also listed during the interviews, were curiosity of the leadership for the digital transformation, enormous savings, overcoming Covid-19 related challenges, as well as the need to be more effective with end customers.

3.3 Impact on business processes

One of the major impacts of digitalization on business performance was emphasized to be the impact on cost efficiency. Most interviewed companies claim that digital transformation creates more added value given the necessity to deliver quality products to achieve higher value and consequently, higher market share. Furthermore, digital transformation in Slovenian automotive companies is enabling greater flexibility and at the same time convenience, as data is remains transparent and available. *"Digital transformation must save time, people and, after all, money"* (Interviewee 2, Company 1) aptly summarizes what the majority of interviewed companies believe the greatest impact to be, not only focusing on saving money but also saving time. Digital solutions are

efficient also from the time perspective, which indicates that by applying digital technology, work can be multiplied. Overall, having more digital solutions implemented leads to achieving substantial quality of products. *"The number of complaints has substantially lowered due to the implementation of digital solutions."* (Company 9) As the industry is becoming stricter regarding the number of mistakes allowed, measured by PPM measure (parts per million), digital solutions here create sizeable impact by substantially reducing the number of parts improperly produced. This creates a safer environment for end users, as lesser mistakes in the production of transportation vehicles could to an extent decrease the probability of vehicle failures. All things considered, digital technologies that companies implement in their processes lead to greater competitive advantage and to a better position in an already very competitive market.

Looking at productivity levels as an impact of the transformation: *"Our company managed to increase productivity levels by 20 percent by implementing digitalized solutions."* (Company 2) This is attributable to the fact that the company sees digital technologies as user friendly, which leads to processes becoming easier and more efficient.

Due to integrated solutions, interconnectivity of services and significant amount of data, a few of the companies interviewed believed that having too much data could be viewed as a disadvantage in case of a system collapse. *"Information systems are unreliable, but production must work, and we must achieve this quality. We cannot risk reducing this quality because something in the IT database went wrong."* (Company 7) Also, since the data is stored in a cloud, companies may be easier targets of cyber-attacks and data disclosures. Large amounts of data also lead to complexity in processes if the systems are not interconnected, which *"requires higher need for appropriate know-how."* (Company 15) When we speak about digitalization as a transformation of the business, it is important to include all parts and aspects of the business in the transformation. Not only processes as such, but also the people who make processes work.

3.4 Human resources

"Understanding digital transformation requires educated, as well as reliable employees." (Interviewee 3, Company 1) The fact that is challenging in Slovenian automotive companies is that employees are lacking the understanding and knowledge of digital transformation in that they are not aware of the benefits transformation could bring and new skills they might obtain when

handed with new technology. Yet as stated, certain employees are reluctant to change, as they are used to the old system. This is usually the case with older employees. Furthermore, certain employees don't recognize benefits in this transformation shift, as it might not affect their work positions, or they are fearful of losing their jobs due to digital technologies "replacing" their work. At this point, many companies' representatives were emphasizing: "I*t is not only because it's a fear of the job, but mainly a fear of the new technology."* (Company 9) On the other hand, another aspect of digitalization in the company emphasized by an interviewee is excessive use of mobile phones during their work time, even though employees don't need their personal technologies in order to work efficiently, it might in some cases even create a distraction. All the distractions and barriers towards implementing new technologies or negative aspects usually arise due to lack of education between employees, lack of appropriate competencies and age.

Nonetheless, companies also struggle when it comes to recruiting employees with the appropriate skills and knowledge for their industry, or at least the mindset to learn new things. A high majority of companies agree that the school system lacks the vision as to the kind of students they should be "constructing". *"High schools do not focus on specialized skills enough. We know five to ten years what the key occupations for the automotive industry will be, but in order to get these specialists through the school system, the whole curriculum would have to change."* (Interviewee 2, Company 4) Not to mention there are huge differences in knowledge students gain from different institutions, although they are recognized as identically educated. They believe a government should step in with significant changes in terms of the structure of the school system. *"What is needed is this cooperation between the school system and the economy, another aspect which is often forgotten during the process of digitalization."* (Interviewee 2, Company 4) At the same time, the state should create a national strategy to specialize in a specific field and start educating people in the fields the economy will demand in future.

The majority of the interviewed companies claim that educating employees throughout their career path is necessary for the company's success. For this reason, company representatives are making sure that employees attend mandatory educational seminars in order to cope with new technologies, new machines or new company practices. *"So every time something new is introduced, there is a parallel developing system in place. So there are no gaps and the employees are well qualified."* (Interviewee 3, Company 3) With regards to digital seminars, some companies in the Slovenian automotive industry already have

it integrated in their scope of education, while others: *"Let's say we already focus on theses specific skills in terms of digitalization, programming and so on with these initial interviews."* (Interviewee 2, Company 4) Besides compulsory seminars that the company provides, there are also additional optional seminars where employees can learn additional skills. The only barrier companies experience is the reluctance on the part of employees to attend non- mandatory seminars outside their worktime. Furthermore, some companies lack the number of seminars directed towards digital training, while others may be lacking appropriate financial resources to execute them. On the other hand, company found the solution to overcome the lack of appropriate knowledge among their employees for adoption of digital solutions. *"We are solving that with buying startups, because our IT department is usually used to the old system"* (Company 15), namely the ones providing software solutions to be integrated into the processes. With this practice, the company has assured needed know-how to cope with industry trends and to be in line with the competition.

3.5 Policy perspective of companies

When discussing the effects of government policy, regarding digital transition within the companies, it is noticeable that the wishes and perceived role of the state substantially differ between companies. Of course, an opinion of a company is greatly dependent on their personal needs and their experience when dealing with the government. The things that companies most notice are government subventions, tax deductions, and other policies regarding business aspects, and the role of government support or regulations in educational institutions. On the other hand, some companies do not see the state as someone that should deal with the economy, with interventions when needed, but claim they should be avoided, and the economy should set up things as they should be. However, some companies would prefer to see a stronger role of the state: *"I would say that this push from the government for digitalization or let's say some funds, subvention, would make sense because then more other companies could decide for that. Also, to educate the people, because this is at the end the hardest thing."* (Company 13) Some of the companies have had bad experiences when dealing with the government, which caused them to avoid any further attempts to seek help from the government. As argued: *"The conditions are such that companies are generally only concerned with bureaucracy and not with strategy itself."* (Company 14) Thus, some did not even try to get help from the government because it seemed extremely unlikely, they will get help, or that the reward will be worth investing time and effort.

"We expect from the state to empower people that they will know how to work." (Company 7) The Slovenian government should (again) give more attention to specifically oriented schools, impose more internships in high schools and colleges and bring more guest lecturers from the companies, to give students practical examples and enable educational institutions to be relevant and updated with their programs. This doesn't suggest elimination of all highly theoretical programs that are intended for research purposes but that it is important to additionally focus on providing practical examples and imbibing people with the latest technology. At this point, it has to be noted that some companies have a very good opinion about internships. They are happy with some of the institutions and municipalities that strive to implement the above-mentioned suggestions, however, this mentality is lacking at the national level. The main findings are summarized in Table 4.

Conclusion

The new holistic view of automotive industry combines lean production, green mobility and digital transformation. Thus, it is evident that digital transformation plays an important role in the current development of the automotive industry, and it looks like its role is just going to get bigger due to the ever-changing mobility market. It is becoming practically impossible to work in this industry if at least some of the digital solutions are not implemented in the manufacturing process. This is partly due to increasing customer pressures for customization, which is very hard to fulfill, and companies are competing to meet customers' demands better. This affects companies on many levels, from their inside operations to their business models where they must constantly innovate their value proposition to customers, to keep their position in the economy. Countries and companies throughout Europe are already well prepared to combat the challenges to bring out the best possible opportunities.

Slovenian automotive industry recently introduced the concept of GREMO (GREen MObility), whose mission is to create a strong ecosystem for the development of solutions in the fields of electrified mobility product development, cutting-edge manufacturing technology, the accelerated deployment of advanced robotics and digitalized manufacturing and the provision of circular economy solutions in manufacturing processes (GIZ ACS, 2021). As all companies nowadays realize, the faster and better you are with the implementation of digital solutions into your business processes, the easier it is to create a competitive advantage and consequently increase your market share.

Table 4. A summary of key findings

Digitalization aspect	Key highlights
The characteristics of DX in the industry/ company	• Huge importance of DX. • Companies greatly differ in their digitalization phases. • General purpose technologies (AI, augmented reality,additive manufacturing, cloud computing, robotization etc.) and complementary technologies (ERP, MES, SCADA, digital twin etc.). • High ambitions for the future (regarding DX).
Motives, drivers of digital transformation	• Need for greater efficiency, better quality, bigger capacity utilization, faster processes, better responsiveness and higher added value. • Industry and customer pressures. • Enormous savings. • Greater competitive advantage – becoming the industry leader.
Obstacles in digital transformation	• Unskilled employees – lack of skills and appropriate know-how. • Older and reluctant employees - lack of understanding the benefits of digital transformation • The fear of unknown. • Too much data, too many softwares – confusing and hard to use. • Expensive solutions, enormous costs. • Cyber security issues.
Impact on business performance	• More cost efficient processes. • Creates higher added value. • Increase in market share. • Increase in competitive advantage.
Other impacts	• Increase in productivity. • Higher quality and precision of processes and products. • Higher need for know-how. • Better control over processes and employees. • Greater flexibility of processes.
HRM challenges	• Lack of skilled workforce (workforce is too generally educated, not enough specialized). • Lack in flexibility/mobility of employees. • Employees lacking interest in non-obligatory trainings. • Overall no major issues.
Policy perspective	• Companies are in general not in close cooperation with the government due to several reasons. • Too much bureaucracy and administration. • Changes in the educational system to provide better workforce for jobs that are needed in the economy. • Need for education in generic competencies.

Source: Own work (2022).

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II.

METAVERSING THE SERVICE SECTORS

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TRANSFORMING BUSINESS MODELS IN BANKING AND INSURANCE

Introduction

In this chapter, digitalization in the banking and insurance sector will be explored in detail, especially how different factors such as fintech alternatives, regulations, Covid-19, government initiatives, and lack of IT resources affect the transformation of business models and digital transformation of the industry in Slovenia. Therefore, semi-structured in-depth interviews were conducted with top executives of key players in the banking and insurance industry in Slovenia such as banks, insurance companies, fintech alternatives, and bank associations.

The chapter begins with a thorough industry and literature overview followed by empirical analysis which outlines the research design, the impact of different factors on digitalization and business models, and the obstacles to adopting new technologies. The research assessed the impact of digitalization on employees, and the view of customers on digitalization, and discussed how technologies have changed business models. To conclude, there are proposed solutions on how to promote digitalization at the state and corporate levels in the banking and insurance industry.

1 Industry overview

The digitalization of the banking industry is seen as an omnipresent challenge. As new market entrants (fintech) are emerging in the wide-ranging industry of financial services, incumbent banks are facing disruptive innovation that requires adaptation of all cooperative processes (Diener & Špaček, 2021).

Fintech experienced a boom in the past years due to the Covid-19 pandemic. Investments in fintech amounted to 210 billion USD globally in 2021, while investments in Europe jumped over two-fold (compared to the previous quarter) to four billion EUR in only the first quarter of 2021 (Statista, 2022a). The number of employees of domestic credit institutions fell by 4.5 percent in Slovenia compared to the EU28 drop of 3.4 percent in 2021 compared to the previous year (ECB, 2022). This drop in the number of employees can be observed for the past five years in Slovenia as well as in the EU, which is the same timeframe in which fintech alternatives have gained market share (Statista, 2022a). Furthermore, the transition to mobile banking emphasizes the importance of cybersecurity and standardization. New regulatory frameworks of data protection as part of the privacy act and open-banking directives are becoming more important, especially regulations such as General Data Protection Regulation (GDPR) (Wewege et al., 2021).

On the other hand, the insurance industry is less disrupted (De Ferrieres, 2020). Insurtech start-ups have experienced a massive decline for the past five years (Statista, 2022b). One of the reasons for this could be that this is a complex industry which requires insurance expertise and experience beyond digital know-how (De Ferrieres, 2020). There are also high barriers to entry as required insurance expertise favours the position of incumbents and challenge the ambition of digital entrants. Insurance companies use various technologies (predictive analytics, artificial intelligence (AI), machine learning, Internet of Things (IoT), etc.) to help them understand and predict customer behaviour (Wargin, 2022).

1.1 Digitalization and new technologies in the banking and insurance industry

Western banks' market share has been diminishing on the global stage. Among the causes for such a decline was the reality in which banks had to operate during the crisis aftermath, a low interest rate environment (pressure on profitability), as well as *"digital disruption stemming from increased competition in retail from fintech and platform-based competitors"* (OECD, 2020a). In recent years, digital transformation has deeply affected the overall preference in the market across all sectors. This transformation includes both internal and external activities. In the banking sector, digitisation is not a new phenomenon, as it can be traced back to the 1950s when "Electronic Bookkeeping System" and ATMs were introduced (Barclays, 2019). Modern technologies open up new opportunities to engage in new internal and external business activities, to an extent in which these tech-

nologies could lead to a change in the perception of information, communication, business operations and business models (OECD, 2017). As a result, the processes, labour, products, and culture are being transformed and redesigned (Kitsios, 2021). One sector in which investments in technological developments are becoming more prevalent is the financial sector (Statista, 2020a). Among the most common practices of banks globally, as a reaction to the rise of fintech, was the initiation of start-up programs to develop fintech, either to set up venture funds to fund such firms or directly partner with them (Statista, 2015).

Table 1. Main technologies used in banking and insurance

Technology		Use in the sector	Impacts on the sector
General Purpose Technologies (GPT)	**Banking**		
	Artificial Intelligence (AI)	Chatbots are used on websites to help customers with questions and in risk assessment.	Better and faster customer experience; cost savings as some queries can be automated.
	Cloud computing	Data of online and mobile banking solutions are saved, protected and stored on the cloud - AWS.	Better and faster acquiring of data; comes with high risk and high investments into cybersecurity to meet regulatory requirements.
	Insurance		
	Cloud computing	Acquiring customer feedback through CRM (customer relationship management) - PowerBI.	Better claims management, better insights into customers' wants and needs; improved informational organization, enhanced communications; allows automation and advanced data analytics and reporting.
	Big data analytics, predictive analytics	Statistics and analytics are used to better estimate the required premium to be paid; collecting, storing, analysing and interpreting data regarding driving skills - DRAJV.	Lower premiums, effective behavioural pricing model, better retention and acquisition of new customers, cost savings, increased efficiency, enhanced accuracy of execution.
Complementary technologies	**Banking and Insurance**		
	Project management (cloud)	Project management through issue tracking - Jira.	Allows for agile and thus faster development of software.
	Cybersecurity	For protecting systems and data which is public on the internet from cyber-attacks. To strengthen and enhance security and protocols in online banking and insurance processes.	High investments in this sector; makes data more secure but prolongs the development process of the solutions.

Source: Čater (2019), Maurer & Nelson (2021), Salesforce (2022), Suhel et al. (2020).

Digital transformation means the *"process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies"* (Kitsios, 2021). Adopting modern digital technology has helped in maintaining operations during the pandemic (Romdhane, 2021). While restrictions on mobility were imposed globally, the need for virtual meetings became vital in successfully operating the economy. Providers of live video calls have been able to offset the need for physical presence for communication with online video calls. Going further with this technology integration, employees will be able to commute less and positively contribute to both the environment and their mental freedom and productivity (OECD, 2020b).

Another technology which is currently attracting growing attention from entities and society is artificial intelligence (AI) which allows for data interpretation and constant learning to deliver better service and forecasts (Table 1). AI technology is being implemented within external activities such as (Čater et al., 2019) *"a conversational agent which uses the natural language to communicate with users"* (Suhel et al., 2020) but it is also used in some internal activities, e.g., in risk assessment. Another example of the use of modern technologies is the mobile app DRAJV initiated by Triglav Zavarovanje (Čater et al., 2019). Such technology leads to an effective behavioural pricing model together with enhanced benefits in the retention and acquisition of new customers which translates into cost-saving benefits, increased efficiency and enhanced accuracy of execution (Čater et al., 2019).

Blockchain's inherent nature makes it a suitable technology for cybersecurity as the ledger technology serves well across a variety of industries whether it is medical or financial data sharing to anti-money-laundering monitoring (Deloitte, 2013). Blockchain technology offers better capital optimisation due to a significant reduction in operational costs while improving contractual performance due to smart contracts. The use of blockchain technology in banking systems and financial institutions worldwide grew by 71 percent in 2019, and it is expected to grow by 73 percent on average for the following three years (Statista, 2020b).

The banking sector is thus faced with many uncertainties in relation to the implementation of AI technology, automation and digital transformation, as well as the risks that these processes may bring. The regulatory framework around the banking sector has created uncertainty in terms of digitalizing and whether institutions can implement advanced technology in the operational process because *"the regulatory framework lacks the agility to accommodate the increasing pace*

of technological developments" (OECD, 2019). Automating business activities provides faster execution with fewer errors, however, since the banking sector is heavily regulated due to its inherent nature, automation becomes limited.

2 Empirical analysis

2.1 Research design

The main goal of the research is to gather relevant information on the factors that influence digitalization in the banking and insurance industries in Slovenia and digitalization's impact on business models. To do so, a qualitative analysis of primary research was conducted and it consisted of ten semi-structured interviews with chief executive officers (CEOs) and members of the management board of leading banks and insurance companies in Slovenia. Four interviews were conducted with banks and another four interviews were conducted with insurance companies. To get a comprehensive overview of the industry, interviews were also conducted with a CEO of a fintech company and the CEO of the Bank Association. Interviews were around an hour long and were conducted in the period from 24th August to 7th September.

Table 2. Sample characteristics

Company Code	Industry	Ownership	Size*	Interviewee's Position	Interviewee's Gender
BANK1	Banking	Foreign	Large	CEO	Male
BANK2	Banking	Foreign	Large	CEO	Female
BANK3	Banking	Foreign	Large	CEO	Female
BANK4	Banking	Foreign	Large	CEO	Male
INSUR1	Insurance	Domestic	Medium	Board member	Male
INSUR2	Insurance	Foreign	Small	CEO	Male
INSUR3	Insurance	Domestic	Medium	CEO	Male
INSUR4	Insurance	Domestic	Large	Board member	Male
FINTECH	Fintech	Foreign	Medium	CEO	Male
ASSOC	Association	Domestic	Small	CEO	Female

Note: *Small company: number of employees less than 50; Medium company: number of employees more than 50 but less than 250; Large company: number of employees more than 250.

Source: Own work (2022).

2.2 Impact of new technologies on business models

A handful of businesses have started to use cloud-based solutions such as CRMs and visualization tools like PowerBI. These technologies enable them to better manage and coordinate their customer relationships and ultimately be more successful.

Due to digital transformation, new digital products have been introduced in the banking sector. Some digital products fit the company's existing business model and provide the same services. However, others offer new services such as peer-to-peer money transfers or paying a bill by scanning a QR code. These products require the incumbents to alter their already existing processes but they also introduce a new revenue stream for the banks because these new digital features are paid for by customers. *"Digital transformation helps reduce the fees associated with the transaction. They also improve the accessibility of financial services."* (ASSOC) Since someone needs to develop these kinds of products, the banks' need for IT developers has increased significantly. Additionally, the company also needs to implement agile methods for the software development lifecycle such as Scrum and Jira software. *"Following the Scrum methodology, we have implemented two-week sprints in our projects."* (BANK2)

Insurance companies can automate and track their claims end-to-end and even acquire customer feedback through CRM. *"Our CRM system allows us to accept and process customer requests through prescribed and specified scenarios. We are then able to follow the execution of the request until it is fulfilled."* (INSUR3)

When talking about automation, more and more companies in both industries are automating their services, although with some limitations on the service provided (e.g., the amount of principal on a loan) to offset the risk and not grant automation too much power since that could result in a domino effect. However, the introduction of automation does enable companies to focus their resources and make processes more efficient.

2.3 Digitalization in the corporate strategy - Evaluating the extent of digitalization and digital transformation as part of the corporate strategy

An issue that was mentioned in interviews is the challenge of having all stakeholders be on board with digital transformation. This process requires

adopting new norms and updating values. These two elements are embedded in the fundamentals of any culture, so managers are faced with the challenge of attracting and persuading the stakeholders to adopt the new corporate norms and values. *"If you are thinking about how to transform a company digitally, you cannot do it without changing the mindset first."* (BANK4)

On some occasions, there were lay-offs as a consequence of this transformation but simultaneously new skills were required which opens up new job opportunities. Even when considering periods of economic uncertainty, managers were still able to see it as an opportunity. *"The Covid situation was an accelerator for implementing these digital solutions."* (INSUR1) Furthermore, the current situation of high inflation and high commodity prices was perceived as an opportunity for speeding up digital transformation. *"The energy crisis does not affect digitalization negatively, rather it is forcing us to digitalize in order to cut costs."* (BANK4)

Digital transformation is also perceived as an opportunity in which institutions can revive their culture by shaping the way how people act in an organization. Digital transformation emphasizes values which were already embedded in the banking and insurance corporate culture, among these values are trust and transparency. *"If I cannot trust the person, I will not hire them, that is why I trust the people to work remotely."* (BANK1) Once the pandemic struck global economies, all business activities were transferred online with almost all interactions made virtually from a distance, yet trust and freedom have allowed for better performance with great time efficiency, cost saving and less commuting. Ultimately, customers were able to receive faster service at any time with no need of leaving their homes while maintaining low error incidents and enhanced customer experience on the platforms.

Among the emphasized benefits of digital transformation is the ability to have faster execution with lower costs. Since automation can execute at hyper speed, can replace jobs with repetitive tasks and AI can learn to upgrade business processes, many jobs will vanish which translates into lower costs and lower customer fees. *"A digital app will enable the customer to get a leasing deal on the spot, this will significantly reduce costs as there will be less need for front-office employees."* (BANK1)

The speed at which internal and external activities are being executed increases the complexity of the banking system. All interviewed institutions confirmed their strength in protecting consumer data and the ability to act against cyber fraud. All institutions have prepared contingency scenarios and

are prepared to act adequately. Particularly nowadays with the unfolding global events, *"Cyber fraud is a risk now with the Russia conflict."* (BANK4)

Banks and insurance institutions in Slovenia have adopted a different approach toward fintech and insurtech firms. *"Banks were a bit sleepy and lazy, but fintech forced us. Fintech has stimulated us to think differently about client experience, they were a wake-up call for us."* (BANK1) While other institutions saw the potential of partnering with technology firms to gain specialization, none of the institutions perceived either fintech or insurtech as competitors.

The financial sector is keen on utilizing its resources to achieve ultimate productivity. Almost all institutions criticized the limitations imposed on automation technology. The process of managing the credit risk of banks and other credit providers to ensure responsible lending to individuals requires the use of the Slovenian information system on credit ratings, which allows banks the mutual exchange and processing of client data (natural persons). Data from SISBON is used as information when determining the creditworthiness of the underlying credit approval (loan, overdraft, card limit). Due to the regulatory environment, this process can be executed only manually which consequently limits automation and the use of advanced technology which could have simplified the operational process and allowed for resources to be spent on more productive activities. Based on interviews, banks and insurance institutions strongly believe they will be able to increase the surplus for all stakeholders through digital transformation. *"Digitalization is kind of a win-win for clients."* (BANK4)

2.4 Factors in digital transformation

2.4.1 Covid-19 pandemic

Both banks and insurance institutions were affected by the pandemic in their business processes. Managers admitted that the Covid-19 pandemic helped significantly in boosting the digitalization of the financial industry as some businesses also introduced new technologies in their business processes such as cloud computing. Since they dealt with more data, they needed to improve their cybersecurity and data protection and were able to perform better data analytics.

As everybody was working from home due to the pandemic, the companies needed to digitalize and provide tools and software to their employees to enable them to carry on with their responsibilities. *"We provided our agents with*

the tools so they were able to do the work remotely but the business model remained the same." (INSUR3) However, even though most of the interviewed companies encouraged working from home, some encouraged people to come to the office as they noticed some unhealthy habits of people working from home. *"We saw that some people were constantly on the clock, even sending emails late at night."* (BANK2) Furthermore, since all interviewed companies have been around for some time, people are used to working in a particular way as they did for many years before the pandemic. *"More and more we see that the people like to come back to the office."* (BANK2)

On the other hand, as all customers were at home during Covid-19, the companies in turn needed to offer new digital products and improve the user experience on the already existing ones. For example, due to the closed bank offices, users needed to use mobile banking applications to manage their money. *"We have experienced a big peak in the usage of digital financial services during lockdown. However, after the lockdown period was over, the usage dropped, but not to the levels before lockdown."* (BANK1**)** This shows that customers learned how to use digital financial apps but are still attached to the old way of usage.

This can also be seen in the insurance industry, as some insurance companies also mentioned, some employees returned to the old way of working because the agent-customer relationship is still strong at the core. *"The majority of agents switched back to the old way of doing things as they strongly believe that personal relationships are at the core of their success."* (INSUR3)

2.4.2 Regulators and regulations

Regulations and regulators play a very significant role in the transformation of business models and, with that, in digital transformation. The findings testify that the regulatory framework is very comprehensive, and it imposes certain drawbacks to digitalization in the banking and insurance industry.

As the interviewees noted, the regulation is not aligned with the segment of authentication and identification processes in the banking industry, and it requires a different setup of security processes which is costly while also requiring a big number of providers. *"There are different requirements for identification and authentication processes in different areas to access banking and other commercial services, initiating high costs."* (ASSOC)

Additionally, GDPR protects data by governing how the personal data of individuals in the EU may be processed and transferred. Then, national regulations have additional requirements which becomes an issue in further digitalization, as GDPR does not allow for automated financial services. *"It is difficult because consumer protection has additional demands. For example, it does not allow for automated processing of customers that are in the process of either landing or issuing credit cards."* (ASSOC)

Another drawback that arises is regulation interpretation. Local applications are not precise, as they are subject to different interpretations. Based on interviews, some banks are more conservative when interpreting regulation, e.g., interpreting the phrase 'digital signature/certificate' while other banks tend to be riskier in interpretation and go further in digitalization. *"As a bank, we need to comply with the highest standards. So, when everybody was using the cloud, we were still not using the cloud."* (BANK2)

Another barrier to the digitalization of services in the banking industry is related to the General Terms and Conditions Regulation. It specifies that customers have to be notified about every change in the general terms and conditions by post. Also, the usage of cash was mentioned as a barrier. *"We talk about digitalization, but then you have cash. The usage of cash should be decreased, as it is very costly. Then, we as banks can do as much as we can in terms of penetration of cards, digital channels and so on."* (BANK2)

Another obstacle that banks face in digitalization is the regulation that covers the opening of an account. The account cannot be opened in a completely digital way, and it cannot be activated without at least one physical authentication method by the customer. Then, the anti-money-laundering regulation limits the functionality and features of the account as well as the access to credit products, because no digital signature or video authentication is allowed due to personal data protection. *"We offer the opening of the account, but this account still has limited features in the sense that you cannot get more than you should get, and cannot transfer more than €15,000, which is horrible on one side. On the other side, you cannot get credit products. So, this is another hurdle."* **(**BANK1**)**

There is a widespread belief in the insurance industry that regulators are not an extremely important stakeholder in the digital transformation, as it is a given that insurance is a highly-regulated industry and should operate according to the highest level of anti-money-laundering compliance. However, another part believes that a major obstacle to digital transformation is GDPR. General regu-

lations and requirements are perceived as a barrier when insurance companies believe there is a better development of services that would suit the customers more but this development is limited by GDPR. But unlike the banks, insurance companies do not find obstacles in digital implementation and identification of new customers due to the specifics of the industry. *"We are planning to digitalize this process with the identification of the customers. It is very important to make a regular onboarding process, we have to know who this customer is and who uses a solution. So, video identification is one way to onboard customers. We do not see any important obstacles to implementing this process."* (INSUR1) Nevertheless, regulation affects the digital transformation in the banking and insurance industry as it sets several significant barriers to digitalization due to the rigid regulatory environment on the EU and national levels.

2.4.3 Financial alternatives

The banks' view is that fintech has undoubtedly sped up digital transformation. Fintech is good for the banking industry because they create solutions that would never come from the banking industry. Banks predict that in the future collaboration between banks and fintech will be crucial. Currently, banks believe that fintech companies do not understand the regulatory requests yet but on the other hand, only a few people understand how the fintech sector works and operates. *"Fintech is affecting the speed. They can optimize but they are bound by regulations."* (BANK2) Client experience is also stimulated by the fintech industry, as interviewees have confirmed. An executive of a large bank claims that fintech has forced them to introduce a compatible user experience which was followed by the launch of MasterCard debit which is global and universally accepted for online purchases, in a digital-only version, in a "wallet" on the mobile phone. They claim that a lot of fintech companies have been sold now and the banking sector is mostly ruled by MasterCard, Visa, and the banks. *"Fintech has stimulated us to think differently about client experience, they were a wake-up call for us. But they will not replace our importance in the future."* (BANK1)

The insurance industry faces thousands of different solutions offered by start-ups, from simple ways of digitalizing certain processes to claims management and so on. However, some of those solutions are used by the insurance industry along with solutions they developed on their own. Regardless, an executive of a big insurance company pointed out that they do not believe there is an 'insurtech' that can turn the industry upside down. *"They achieve economies of scale and attain a big number of customers, but are not profitable for years, like the most digital insurance company in the US - Lemonade."* (INSUR4)

There is an open opportunity for collaboration with fintech, as they are cheaper and offer flexible solutions that can stimulate the growth of the market in the future. *"This is why collaboration with fintech was made because they are cheaper and more flexible than existing solutions and they are able to enter the market faster."* (BANK3)

2.4.4 Human resources

The interviewees from the banking industry confirmed that banks are encountering difficulties in finding people with adequate skills and are facing a lack of human resources related to digitalization. To tackle this challenge, banks create training programs and initiatives for upskilling employees. However, executives stated that because digitalization efforts are technologically driven, banks need people with special skills which are hard to find as they are in big demand on the global market. *"Not being able to find resources is lagging the digitalization as it is a very specific sector-based knowledge."* (BANK2)

On the other hand, insurance companies are more optimistic when it comes to people with IT skills. Some companies tend to work completely digitally, constantly renewing the HR system and providing training on digital work. Others, if in need of people with IT skills, tend to outsource the needed capacity.

However, unlike insurance companies, the CEOs of banks mentioned that when it comes to outsourcing, they are more conservative and cautious due to security reasons and the costs of external monitoring. Therefore, the need for IT-skilled people is especially high in the banking sector and difficult to mitigate due to high costs and constrained resources. *"It is difficult to find people with adequate skills and obtain enough resources."* (BANK3)

2.4.5 Government

The government, which can generally help boost digital transformation, at the moment, presents more of a hurdle to the transformation in the banking and insurance industry. Firstly, this is because of its ineffectiveness in simplifying and modifying the legislation in favour of integrating digitalized business processes. *"It is also what the state can do. There are some registers of data regarding residency that could have been somehow integrated so we could access them and use them but we do not have a legal basis for that currently."* (BANK2) There is a widespread belief in the banking industry that banks

should be more involved in the process of preparing legislation. Banks consider the government to be quite slow in implementing changes and quite conservative with the legislative acts and rigid laws. Government should standardize the regulation in some segments on the state level so the business processes and digitalization would be eased. *"The state could play an important role in standardizing the regulation of identification and authentication processes on the state level, which would help tremendously to diminish all the regulative issues that the sector in Slovenia currently faces because in different areas different processes of identification and authentication are required."* (ASSOC)

While the government is promoting educational programs on digitalization, banks and insurance institutions agree that the government should be implementing digitalization programmes across all educational systems; students in elementary schools should be already taught certain programming languages. *"Lack of IT resources can be addressed with schooling programs early on, but they will take time."* (ASSOC) The banking and insurance industry also agree that the government can promote digitalization by digitalizing some of its services. *"Government services – if they are fully digitalized, it can be expected of other businesses to be like this too."* (INSUR3)

2.5 Impact on employees (their competencies) and firm-level training programs

As banks focus on career planning and the well-being of their employees, they try to minimize routine jobs and boost development in the workplace, upgrading their knowledge and skills to cope with digitalization. *"We offer online education, seminars and we have training programs that engage all employees in new technologies, processes, and ways of working."* (BANK3) *"Our management board teaches and manages by doing/leading by example – leading, promoting, and communicating."* (BANK1) The employees tend to quickly adapt to the new changes within digitalization as they see it to be more efficient and beneficial regarding their way of work. *"The sales staff is more stimulated as they sell digital services."* (BANK1) However, there are some exceptions. *"We found difficulties with the employees having to work from home as they were not as productive as they were in the workplace."* (BANK2) Within the banks, digitalization reduced the number of jobs slightly but also called for new ones, as new skills are required.

Insurance companies also offer a lot of initiatives and digital training programs on a self-service basis to upskill their employees. There was no recorded resistance or negative impact on the employees in terms of dealing with changes in job structure or agent-customer relationships. Employees adapted quickly to the digitalized processes and a new way of working.

Table 3: Key findings from interviews

Digital transformation (DX)	Key findings from interviews	
Industry	**Banking**	**Insurance**
Characteristics of DX	• Cloud computing. • Online and mobile banking. • Agile Scrum methodology. • Cybersecurity.	• Big data and predictive analytics. • AI Chatbots. • Cybersecurity.
Motives, drivers of DX	• Covid-19. • Competitive industry, fintech entrants, ESG agenda, inflation. • Increased efficiency and effectiveness. • Minimization of costs.	• Covid-19 • External technologies and increased customer expectations. • Better customer experience; higher client loyalty. • Work process optimization.
Obstacles for DX	• Regulatory requirements and ambiguous policies. • Non-digitalized governmental services. • Stagnation in education. • Lack of IT skills and resources.	• GDPR requirements and non-competitive environment. • Non-digitalized governmental services. • Stagnation in education. • Lack of IT skills and resources.
Impact on business performance	• Cost optimization and increased efficiency. • Competitiveness; higher profit margin on digital services and better insights on customers.	• Higher profit margins, increased efficiency and improved control. • More loyal customers. • Better and optimized claims management.
Other impacts	• High cost of initial investments. • Slight resistance from older customers.	• High cost of initial investments. • Outsourcing IT skills.
HRM challenges	• Lack of skilled workforce. • Employee's productivity. • Job structure change. • Training, initiatives and KPI's.	• Lack of skilled workforce. • Agents return to the old way of work (agent-client relationship). • Job structure change. • Training, initiatives and KPIs.
Policy perspective	• Aligned and simplified regulation. • Change in early formal education. • Enhancement in financial and digital literacy.	• Change in early formal education. • Enhancement in financial and digital literacy. • Digitalizing governmental services.

Source: Own work (2022).

2.6 Acceptance or resistance of customers and their reasons

In general, banks face acceptance from customers in terms of digitalized processes and services. They tend to keep close relationships with customers and meet their expectations. *"It did not change the customer base because customers' expectations changed in a positive way as well as their perspective on having the comfort of access from any place anytime and easy access to financial services."* (BANK2) However, some banks still face some resistance from older customers, as some of them are still used to cash and non-digitalized methods. *"As for pensions, some of them still come. There are days they come to the teller and they want to see their money."* (BANK1) Other executives pointed out that obstacles might arise with a certain share of people (marginalized groups) that have difficulties accessing their accounts. Regarding these issues, some initiatives are creating educational programs for different groups of customers. *"They try to organize programs for different groups of customers, like financial education, others that focus also on digital literacy, and especially on safety. For the elderly, for example, we have joint programs with other organizations like libraries, local communities, etc."* (ASSOC) Covid-19 also played a role in customers embracing the digitalized relationship even more in the banking industry.

On the other hand, insurance companies believe that customers have increased their expectations in terms of digitalization due to the implementation of digitalized processes and services in the banking industry. *"What is happening or what happened in the banking industry for sure helped and increased the expectations towards insurance companies as well because it is kind of similar."* (INSUR4) Hence, the insurance industry keeps up with changing customer service and experience into being more digitalized. The interviewed executives in the insurance industry did not face loss of customers or complaints from the customer base which is what brought them great results during Covid-19. Employees were working remotely in digital ways, e.g., doing transactions remotely, which testifies to increased efficiency. However, some insurance companies noted that some of the employees returned to the old way of work because the agent-customer relationship is still strong at the core. Based on interview findings, companies in both industries face some customer resistance, but general acceptance prevails.

3 Discussion

The macroeconomic and microeconomic conditions in the business environment are crucial factors to take into consideration when developing suggestions

for boosting and easing the digital transition. Suggestions are classified into two groups: those on the state level and those on the corporate level.

3.1 Policy suggestions

On the state level, considering the macroeconomic situation, three factors are emphasized that can influence digital transformation positively if dealt with correctly. The first important factor is education. All interviewees agree that education is at the core of speeding up digital transformation. Because the workforce skills in the area depend on early formal education, implementing IT programs and training on digitalization in early formal education is essential for creating the necessary human resources. However, financial literacy should be included as well because early education on this topic among young people will have a positive effect on managing the digital transformation in the financial sector. *"The government needs to put more resources into IT education."* (ASSOC)

The next important factor that influences digital transformation significantly is government. Its practices will encourage digitalization in the banking and insurance industry by introducing a top-down approach, e.g., digitalizing governmental services and providing digital solutions for customers, providing common infrastructure for commercial purposes, etc. *"Government first needs to push digitalization, for people to digitalize. They also need to digitalize their products first. They do not understand and are not changing the regime fast enough."* (BANK4)

Another solution that can be realized by the government is providing the necessary tools, equipment, and other systems that can be integrated to enable and boost digital transformation. The government plays a big role in the legislative process as well, and as interviewees pointed out, fast adoption of legislative acts in favour of digitalization and their execution is a necessity for the transition.

The third factor is regulation which is an immensely important factor in the digital transition of companies as it was identified in the research. Banks and insurance companies should be included in the legislative preparation process and there should be legislative agreements between the government and the business sector. In addition, the regulation should be simplified in a more pragmatic framework that would enable the implementation of technologies, processes, and services in the industry. Overregulation in some aspects, such as GDPR,

should be reviewed and potentially changed (minimization) as consumer data protection does not allow for automated financial services. In this aspect, the regulation is a drawback to further digitalization.

Additionally, legislation should also be standardized on the EU level whereas possibilities for a country's arrangements and national and technical requirements should also be specified in important detail on the European level. This would assure the best service to the customer and safety. *"Legislation should become regulation on the EU level, not vary between state levels. This would ensure an affordable and equal playing field where competitiveness could play a role in terms of what matters on the ground of infrastructure."* (ASSOC)

Another suggestion is standardizing the legislation in the segment of authentication and identification processes on the state level which would help diminish all regulatory issues because in different areas the processes are different. As these processes of authentication and identification are required to access services, this would help smaller banks but also banks in general to reduce costs and all institutions, no matter the size, would be able to offer similar services. That would also influence increasing security. Identification should be designed in a way that can be used for banking and other commercial services. The same process for everyone will lead to a decrease in providers.

Finally, regulation must be more precise so that different interpretations and implementations are avoided, as there were situations where due to unprecise interpretation, for example, what counts as a digital signature, some banks acted more conservatively while others took more risks in further digitalization.

3.2 Managerial implications

However, not all responsibility falls onto the government and regulators. Businesses can contribute too. Implementing the digitalization aspect in the corporate strategy is becoming more and more important. The rising energy prices and the current inflation crisis will force companies to cut costs in other areas. To cut costs, companies can optimize their processes, and they can do that by digitalizing their business.

Furthermore, businesses can be proactive and provide financial programs and/or internships to lead the way in increasing the financial and digital literacy of Slovenian people. Moreover, they can provide internal IT training

programs for the employees, to promote interest in IT technologies and tackle the shortage of people with IT skills. However, financial institutions should first determine if they are using the latest practices and technologies available for their platform. This way, they can attract talents that are willing to work with those technologies, so they can tackle potential future resistance of the employees. On the other hand, the companies can promote external training programs that focus on increasing the financial and digital literacy of customers and would decrease their resistance to adopting new financial and technological products.

Banks should cooperate with fintech as it is an effective way to digitalize. Some interviewees mentioned that they cooperated with fintech as they are cheaper and more flexible than existing solutions and can have a positive influence on further digitalization. *"This is an ecosystem. There is a place for all of us, for banks, fintech, and card schemes. We cannot operate without the banks, we need them. We need the transaction accounts; we need MasterCard and Visa. We are not competing in any way. We are complementary."* (FINTECH)

Conclusion

The Slovenian banking and insurance industry is resilient and exhibits operational excellence. Digitalization is embedded in most banks in the banking industry and is still in the process to be realized in most insurance companies. Financial institutions have full awareness of the importance of digital transformation across a diverse range of industries to create value through new data systems and enhanced technology. It is crucial to be proactive in seeking opportunities for creating a constructive environment in which the market can have a better alignment between the corporate and regulatory framework. This way, each of the two entities can exercise their soft power tools to lead society towards innovation and prosperity. The tendency to use digital technologies in the banking and insurance sector is accelerating and hence generating transformation in all types of activities, including labour. Digital transformation can increase revenues and services offered with fewer jobs and higher labour productivity. However, the same processes could give rise to the risk of high unemployment if the newly offered jobs with digital skills will not be proportionally sufficient to offset the effect of digital technologies replacing human employees. In such a case, when looking at the real economy, technology deepens the aforementioned worries and issues, instead of minimizing them. Other factors to consider are errors that might occur due

to machine failure; a relevant example could be DRAJV, as once the phone is turned off the app cannot track driving skills anymore. Therefore, dependency on these technologies must be limited and achieved only when the technology's benefits and flaws are understood.

The Slovenian financial institutions are capable of implementing all advanced technologies which can enhance customer experience and can provide greater operational excellence. But to proceed and take advantage of the full technological benefits and advancements, the regulatory environment must be in alignment with corporate progression to serve the real economy and its labour market.

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DIGITAL TRANSFORMATION IN TOURISM

Introduction

Tourism is an important sector in Slovenia since it contributes 7.7 percent of Slovenia's overall GDP (World Travel & Tourism Council, n.d. -b). However, it is also the sector with relatively low value-added (Statistical office of Republic of Slovenia, n. d. -a), therefore, its increase is one of the top priorities according to the Strategy of Slovenian Tourism (Ministry of Economic Development and Technology, 2022). The increase in the value-added could be achieved also through digital transformation. Therefore, the Strategy of Digital Transformation was introduced in 2022 to lead the digital transformation of tourism and stimulate the development of boutique, personalized and innovative tourism experiences (World Travel & Tourism Council, n.d. -a).

This chapter aims to provide an overview of the impact of digital transformation on the tourism sector in Slovenia. The research focuses on key characteristics, drivers, obstacles, impacts, human resource management challenges and policy suggestions. For a deeper understanding of the topic, the research was based on 13 in-depth interviews with representatives of the three tourism subsectors: agencies, hotels and restaurants. The analysis can help Slovenian policymakers make an action plan for the tourism sector and start overcoming its current challenges.

The chapter comprises three sections. First, it provides an overview of the tourism sector combined with information about digitalization and new technologies used in tourism. Then, it focuses on empirical analysis based on in-depth interviews and the presentation of the main findings and results. The last part includes concluding remarks.

1 Digitalization and new technologies in tourism

Tourism firms use technology for digitization, digitalization and digital transformation (Ritter & Pedersen, 2020; Lam & Law, 2019). The technology enables tourism firms to convert information into a digital format to be stored, processed, and shared (digitization). It also enables the transformation of roles, processes, and workflows (digitalization). Furthermore, digital transformation includes the reinvention of a firm's business models to provide a better customer experience, create more value, and optimize business processes while achieving higher efficiency (Ritter & Pedersen, 2020). Technology also puts customers at the centre by providing personalized and contextualized services and experiences (Buhalis & Leung, 2018). With the help of a digital service platform, consumers can search, plan and choose activities they prefer, which improves their travel experience significantly since it is more personalized (Kansakar et al., 2019).

The most used technologies in the tourism sector are big data, virtual and augmented reality, the internet of things (IoT), robotics, and artificial intelligence (Yavuz & Mesci, 2021). Kansakar et al. (2019) divide technology in the tourism sector into three different groups: guest-facing systems, hospitality services, and in-room IoT sensors. Guest-facing systems include cell phones, remote control units, in-room tablets, etc. Cell phones and in-room tablets can be used to access the company's app, while remote control units can be used for regulating the room temperature. Service providers can closely monitor the guest cycle with the use of guest-facing technologies, to gather information on particular visitor preferences, actions, and locations. The second group, as mentioned by Kansakar et al. (2019), are hospitality services which include automatic check-in and check-out, climate control, lighting control, keyless entry, etc. The third group are in-room IoT sensors that include sensors for temperature, humidity, motion, and so on. Covid-19 accelerated the application of technology especially by introducing mobile apps and chat boxes, contactless check-in, keyless entrance, and online concierge services (Jarratt, 2021).

Customer service is the communication between the company and its customer. Automated customer services are extremely common in the tourism sector. They allow for the resolution of issues of customers and guests, without them having to interact with other humans. Examples of automated customer service are databases with information on most common customer issues, prewritten automated e-mail responses to these questions and issues, an automated

phone receptionist that recognizes keywords and an in-browser/app chat feature (Zendesk, 2022).

More and more businesses in the EU are providing automated services. In the tourism sector, automation and robotics are used for visitor check-in, customer service, providing information on nearby attractions in the company's mobile app, the weather, or flights, and giving virtual tours of the hotel. Even robots are used at some restaurants to deliver food. In other tourism firms, they have switched to using iPads instead of paper menus or using a barcode scan. To increase visitor numbers, some have adopted virtual reality and driverless cars (Niestadt, 2018). The global pandemic compelled many hotels to introduce contactless check-in, keyless entrance, and online concierge services. These features accelerated the digitalization of guest communications by introducing mobile apps and chat boxes within their mobile apps for easier and more convenient communication (Jarratt, 2021).

The widespread deployment of these technologies over the past few years has significantly changed how services in the tourism sector are provided and received (Kansakar et al., 2019). Digitalization's impacts on tourism can be divided into two major branches (Campione, 2021). The first is the personalization of experiences which itself has two major components - changes in marketing and digital communication on the one hand, and changes in plant management and guest-host interactions on the other. Together, those changes can boost operational efficiencies, enhance management effectiveness, decrease expenses, increase profits, and improve sustainability (Kasavana, 2014). The second major branch is gamification with its purpose of engaging consumers. With the help of gamification, tasks such as booking a stay can become increasingly more interesting and rewarding (Sigala, 2015; Singh, 2012).

Technology has helped tourism firms increase market share, provide professional and efficient service and improve customer experience (Yavuz & Mesci, 2021). With digital transformation, firms restructure themselves to adapt and change corporate culture in a way that they can fully support their technical development and drive their businesses to new levels of success. Digital transformation refers to an organization's capacity to modify its approach to technology, people, and processes to influence business performance and provide value to customers (Hotel Tech Report, 2022). However, applying technology and digitalizing business operations is expensive and might present difficulties in the adaptation process, particularly when trying to communicate innovation to personnel and customers (Yavuz & Mesci, 2021).

In recent years, European Commission (n.d.) has put into place several initiatives to increase the ability of enterprises operating in the European tourism industry to compete globally, join worldwide value chains, and generate more employment. For example, Digital Tourism Network was launched in 2015 with the objective to exchange best practices for enhancing the innovative ability of entrepreneurs in tourism, and exploring common issues and possibilities of the EU tourism sector's digital transformation (European Commission, n.d.). The Tourism Business Portal helps entrepreneurs to learn and educate themselves about running a tourism company in the digital world. Support is also provided through webinars that emphasize useful digital and online marketing techniques and workshops referring to the development of digital literacy and access to funding for digitalization (European Commission, n.d.).

In Slovenia, the initiative for the application of new technologies, digitization, and digitalization was already included in the Strategy for the Sustainable Development of Slovene Tourism 2017–2022, which proposed a new digital marketing plan and online platforms which represented the foundation for the development of digital solutions in tourism (Ministry of Economic Development and Technology, 2017). Slovenia is trying to accelerate the digital transformation of its tourism through the Slovenian Tourism Strategy for 2022–2028. The main focus is to achieve higher competitiveness in Slovenian tourism compared to other EU countries (Ministry of Economic Development and Technology, 2022). Slovenian Tourism Digital Transformation Strategy 2022–2026 was created with a clear vision for the country to become a leader in the digitalization of the travel industry and promote the creation of creative, boutique, individualized, and sustainable travel experiences It aims to encourage the decision-makers to use data-based strategies, boost the added value and tourism's resiliency, promote sustainable transformation, and increase employee knowledge and digital proficiency (World Travel & Tourism Council, n.d. -a). The digital transformation strategy serves as a guide for coordinating and maximizing the advantages of current and emerging technology, as well as enhancing company operations and efficiency. Table 1 shows all the transformations in the tourism sector due to digitalization. The table is divided into five sections: disruption, new destination configurations, new business models, value chains and ecosystems, changing roles of consumers and producers, and new roles for tourism organizations.

Table 1. Transformations in tourism resulting from digitalization

Disruption	• Big data improves management. • Disruption to incumbent operators and pressure to reconceptualize traditional business models. • Rise of the platform economy, on-demand business. • New value-creation opportunities. • Emergence of global value chains.
New destination configurations	• Digitalization enables greater customization of visitor experiences. • New customized destinations emerge.
New business models, value chains, and ecosystems	• New participants, such as online platforms, act as information brokers and intermediaries (e.g., Expedia, TripAdvisor, etc.) and offer many services traditionally offered by tourism organizations. • Digital platforms (e.g., Airbnb, and Uber) are expanding beyond accommodation products to curate, coordinate, and facilitate visitor experiences in a destination.
Changing roles of consumers & producers	• Visitors have become prosumers actively producing and consuming their own experiences. They take on different roles, including booking, (self)guiding, reviewing, sharing, and marketing the destination.
New roles for tourism organizations	• Destination marketing and product development (the traditional roles of tourism organizations) are transformed, and these organizations find themselves in facilitation and capacity-building roles with less and less direct influence over destination development, innovation, and marketing.

Source: Dredge et al. (2018).

2 Industry overview

The activity of tourism is the offering of services to tourists. It includes services such as accommodation, food, entertainment, recreation and leisure services. The key activities in the field of tourism are catering and accommodation, travel agencies, and tourist and mountain guiding (Ministry of Economic Development and Technology, 2022). In this chapter, the focus is on sectors I55 (accommodation), I56 (restaurants and cafes), and N79 (travel agencies) as per the definition of the tourism sector as HoReCa/Ta[1] (I55, I56, and N79) (World tourism organization, n. d.).

In 2019 (last available information), there were 12,834 enterprises in the tourism sector in Slovenia and 23,168,929 in the whole European Union. In the same year, the tourism sector employed 42,101 employees. Employment decreased to 39,655 in 2020 (Eurostat, 2022). In 2019, the highest percentage of workers were employed in the Restaurants and cafes sector (63 percent), and the lowest percentage was in the Travel agencies sector (six percent). The

1 HoReCa/Ta is not synonymous with tourism because catering establishments, travel agencies and tour operators offer their services to residents and not only to tourists. Therefore, all hospitality is not included in the field of tourism (Mihalič, 2008).

remaining 31 percent of employees worked in the Accommodation sector (Statistical office of Republic of Slovenia, n. d. -b). Altogether, four percent of the working population worked in the tourism sector in Slovenia in 2019. In 2020, the percentage of the working population in tourism remained the same. The percentage of people working in the Accommodation sector remained the same. However, the percentage of people working in the Restaurants and cafes sector increased by one percentage point and the percentage of people working in the Travel agencies sector decreased by the same amount (Statistical office of Republic of Slovenia, n. d. -b). In the European Union, almost 11 million people worked in the tourism sector in 2019 (Eurostat, 2022). In 2021, approximately 34.87 million jobs (9.3 percent of all employment in Europe) were supported by this sector. In the same year, the overall number of individuals engaged in the analysed sector in Slovenia accounted for 94,100 jobs (10.6 percent of all employment in Slovenia) (World Travel & Tourism Council, n.d. -a).

In 2019, labour productivity in Slovenia by NACE (gross value added per person employed) was 22,400 EUR for accommodation and food service activities. This is 600 EUR less than the average labour productivity in the EU. The average number of employees per enterprise in Slovenia accounted for 3.3 employees on average, whereas in the whole EU the number was higher and it accounted for 5.8 employees on average. Real labour productivity per hour worked in 2021 increased by approximately 12 percent compared to the year 2015. The annual average personnel cost is for Slovenia the same as for the European Union and it accounts for 18,700 EUR (Eurostat, 2022).

After a significant decline in 2020 due to Covid-19, the total contribution of travel and tourism to global gross domestic product (GDP) increased by 21.7 percent (in the relative figure) in 2021 compared to the previous year. Travel and tourism contributed 5.81 trillion US dollars to the global GDP in 2021, a rise of almost one trillion US dollars from 2020, but staying below pre-pandemic figures (World tourism organization, n. d.). The entire contribution of tourism to Europe's GDP in 2020 accounted for 4.9 percent of the continent's overall GDP. Tourism's overall contribution to Slovenia's GDP in 2020 amounted to 6.5 percent. Currently, it amounts to 7.7 percent (World Travel & Tourism Council, n.d. -a).

3 Empirical analysis

3.1 Methodology

To investigate the degree of digital transformation in the Slovenian tourism sector, a purposeful sample was selected that consisted of 13 companies from different subsectors (agencies, hotels, restaurants), of different sizes and regions, and catering to different segments of tourists. Interviews were conducted with general managers, owners, and sales managers of hotels, restaurants and tourist agencies. Table 2 contains the main characteristics of the interviewed companies. All sampled companies were domestically owned, except for Company 10, which has foreign ownership.

Table 2. Sample characteristics

Company	Industry subsector	Size	Ownership	Interviewee's position(s)	Interviewee's gender
Company 1	Boutique agency	Small	Domestic	General manager (1)	Male
Company 2	Travel agency	Small	Domestic	General manager (2)	Male
				Owner (3)	Male
Company 3	Travel agency	Large	Domestic	General manager (4)	Male
Company 4	Travel agency	Large	Domestic	Executive director for tourism and mobility service (5)	Male
Company 5	Hotels	Large	Domestic	Chairman of the board (6)	Male
Company 6	Hotel and resorts	Large	Domestic	General manager (7)	Male
Company 7	Hotel	Medium	Domestic	Sales manager (8)	Female
Company 8	Hotel	Large	Domestic	Holder of procuration (9)	Male
Company 9	Boutique hotel	Small	Domestic	Owner and general manager (10)	Female
Company 10	Chain hotel	Large	Foreign	General manager (11)	Male
Company 11	Boutique restaurant	Small	Domestic	Owner and general manager (12)	Female
Company 12	Restaurants and catering	Large	Domestic	Co-owner and general manager (13)	Male
Company 13	Restaurant	Medium	Domestic	General manager (14)	Male
				Owner (15)	Male

Source: Own work (2022).

4 Results

4.1 Hotels

All the interviewed companies have been introducing digitalization gradually due to the gradual increase in available solutions, availability of funds and changing needs of the businesses. Companies were adapting their use of digital tools because they needed to adapt to market changes as well. Due to the rising costs, digitalization is a key factor in optimization and automation. By switching from analogue to digital ways of doing business, companies can save many resources and reduce costs in the long run. *"The goal of everything is to automate all jobs that do not add value. It is necessary also to reduce the possibility of errors as much as possible."* (Company 6) Digitalization has the highest impact on consumers and demand. *"It can increase demand and significantly increase out-of-season sales."* (Company 8) Luxury hotels around the world set the standards for digitalization in the tourism sector. They are a benchmark and other hotels look up to them. *"Five-star hotels represent a benchmark for digitalization. Over time, guests start to expect digital innovations also in other lower-rated hotels."* (Company 10)

Managers highlighted the importance of having a solid base for the information system, where everything is very well connected. The backbone of digital transformation is the information system connecting and integrating guest-facing systems, hospitality services, and in-room IoT sensors. The key factor while digitalizing is also the support of the management, which needs to have a clear vision of the goal and all stages of development of digital transformation.

Hotels use channel managers to coordinate different reservation platforms. The same data about the availability of rooms must be available on all reservation platforms. Some hotels use automated customer data entry. *"We just scan their document, and they are entered into the program."* (Company 6) However, they need to follow strict policies on the use of information security.

Larger hotels use the Opera system for property management purposes. Opera is the most used digital system in the industry, and chain hotels are sometimes required to use it, even though there are also many other providers they would prefer to use instead. With the help of property management systems, all reservations go into the same system, where the guest's status (check-in, check-out), housekeeping processes, and hotel maintenance are reported. Some larger

hotels communicate with their customers through the system or program with automated customer service. Such systems can automatically send offers and instructions, answer e-mails, etc. The manager of one of the largest Slovenian hotels stated a few ways how they use automated customer service in their hotel. *"We have achieved greater optimization by introducing a digital concierge and a telephonist who does not need to be physically present since he can work from home. We have also introduced online check-in and check-out."* (Company 10)

Boutique hotels use different strategies than larger hotels, especially compared to the ones catering to many different customer segments. In contrast, boutique hotels usually prefer to have a more personal approach toward customers and use digitalization to optimize and personalize processes and also to leverage personal interaction with their customers.

Since sales channels (Booking, Expedia, etc.) are largely digitalized, hotels are forced to digitalize sales. When implementing digitalization, it is, therefore, essential to start with sales automation (e.g., guest profiling) and later automate other departments as well. The purchasing process needs to be digitalized because correlations between purchasing contracts and delivery notes should be managed electronically. *"All of the business functions should be individually digitalized, but then hotels need a system which is centralized and can connect all of the functions together."* (Company 4)

Digitalization also led to hotels making their own apps that serve several different purposes: ordering room service, opening the doors of the room, checking what guests can do in the city, etc. *"Guests can download the hotel's app, which is available on smartphones and every room has it on the TV. Through the app, guests can order food, drinks, room service, but also open the door, give feedback, communicate with the reception, and so on."* (Company 9)

Digitalization is necessary and it represents a competitive advantage for hotels. *"The sooner a hotel starts with digital transformation, the more competitive advantage it has over the others."* (Company 6) One manager mentioned that the quality of work is noticeably higher since digitalization. *"Since we can optimize processes to such a high extent that employees have more time to focus on the quality of service, the overall service quality increases."* (Company 5) Interviewees unanimously agreed that digitalization is necessary to achieve higher added value and business growth. The most common motives for accelerating the digitalization of the business were increasing costs, shortage of

workers, pressure from the competition, competitive advantage, lowering costs, and aim to increase productivity.

Hotels see the digitalization of business processes as the only way to cope with unstable market conditions. *"If we wanted to continue with growth and with the increase of added value per employee, we had to speed up our digitalization process. If you want to have control over costs and working hours, you need such a system."* (Company 6) Digitalization is not only needed to increase revenue but also to mitigate the costs and obstacles that are arising due to unstable market conditions. There is currently a severe shortage of staff on the market. The problem can be diminished and partly compensated by digitalizing processes, which can replace manual work. *"The biggest costs for hotels are labour and property-related costs. By digitalizing operations, costs can be contained and reduced."* (Company 10)

Managers perceive digitalization as a great chance to manage the increasing price of energy sources, such as gas, electricity, oil, etc. One hotel manager mentioned they are planning on introducing a few energy-saving solutions such as central management of air conditioners. Digitalization with the help of real-time data is also used to manage the heating in the rooms. *"Due to the increase in the price of energy products, we will introduce central management of air conditioners."* (Company 6)

Unpredictable market fluctuations and global crises make the focus on digital development in the tourism sector much more difficult. *"Market situations are unpredictable (Covid-19, war, energy crisis, inflation, financial-economic crisis). In such times, it is more difficult to focus on digital transformation and develop it."* (Company 5) Interviewees 14 and 15 even assessed the current level of development of digital transformation in the Slovenian tourism sector to be approximately at level three out of ten.

A common perception among managers is that financial resources are the biggest problem when dealing with digital transformation. Currently, many solutions are available on the market which would enable the optimization of business processes; however, hotels cannot afford them due to their costly implementation. The problem is also a massive shortage of IT staff that would be able to adapt programs to hotels' specific needs. Hotel owners and managers are faced with the challenge of adapting a platform acquired on the market to the needs of their hotel. Most of the time the software is bought on the market and then adapted with the help of the internal IT team. The problem also occurs

when they want to introduce a new program that is usually not compatible with the existing one. Many times, programs have different levels of sophistication and they do not work well together. *"The biggest problem is how to integrate systems because they do not communicate very well together."* (Company 9)

Currently, the problem related to human resource management in tourism is the ageing workforce structure. *"Digitalization may be progressing more slowly due to the age of the workforce because the older population is not so willing to accept many new digital solutions at once."* (Company 8)

Most employees are unsettled by change, which gives rise to conflict and disagreement. When dealing with this, open communication is essential. Employees should be informed and kept updated on the circumstances causing changes and which measures are being considered in response. In a period of transformation and change, it is crucial that employees feel safe. They should not feel like they will be punished for making mistakes. Managers need to create an environment where employees like to try out new things and become more efficient because of it. *"Make employees feel safe when using new technologies. Be willing to help them anytime if they have any doubts."* (Company 5) In every department, it is advised to have one person responsible for sharing their knowledge with others, for constant support, motivation, and encouragement if needed. *"In each department, we identified someone with a little more knowledge about the new product. Such employees can spread their knowledge among the others, encouraging, motivating, and teaching them step by step."* (Company 7)

It is easier to teach people how to use the digital platforms or software used in tourism than teach them how to communicate. Therefore, managers prefer to hire people with better communication skills. *"We found out that it is better to hire someone with top communication skills and teach them how to use the property management system in three weeks than to hire someone who already knows the software and try to teach them how to communicate. It pays off more."* (Company 9)

Managers need to work a lot on high-quality, short and regular training sessions. The learning process should be repeated regularly, preferably every three months, since human long-term focus and memory are limited. It is also crucial to differentiate among different digital users in different age groups with different levels of digital knowledge. *"We have organized courses for the most basic users, but we also have outsourced courses for those with advanced knowledge. At the same time, we provide constant refresher courses."* (Company 7)

4.2 Restaurants

Digitalization is a tool that helps restaurants improve their quality of service. It enables them to better coordinate and control their business. *"I think that digitalization is necessary today. Without it, doing business externally – working with clients, would be impossible for us. Therefore, it is important that the processes are digitalized."* (Company 12) Unlike in the hotel and agency sector, the digital transformation of a prestigious Slovenian restaurant in Ljubljana (Company 13) was driven by its own self-initiative and not by the pressure from competition. They strive to maximize staff efficiency and reduce the time spent on routine tasks. *"Our own desire led to the digitalization of the company and not so much the pressure of competition. We want human procedures to be as short and efficient as possible."* (Owner 15) All restaurants pointed out the importance of different benefits that digitalization enables, e.g., online reservations of tables, their own website and online store. With digitalization, companies can expand their business and also have better control over it. *"The online store we have is doing great and the system of online table reservation as well. There are currently fewer booking cancellations, and customers are more satisfied with the service."* (Company 11)

If restaurants are large enough, they usually decide to build their own ERP (Enterprise resource planning), which is a system that helps organizations automate and control their key business processes. This often occurs if they cannot find an appropriate solution on the market which would satisfy their specific needs. *"We have been building our ERP system for ten to 15 years since we did not find any good solutions on the market. That is how special we are and we want our service to be at the highest possible level. We have created and built the ERP by ourselves and adapted it to our needs."* (Company 15) Some restaurants also use CRM, which serves as an analytic tool. It offers a comprehensive analysis of clients and provides their segmentation, which makes it easier to target potential customers.

Interviewees agreed that despite the high financial investment needed to digitalize the business, this is still a cheaper option in the long run, as digitalization reduces costs and increases the efficiency of personnel. It also provides higher work flexibility due to its rapid information flow. Regardless of its positive aspects, restaurants are still facing some challenges in the process of implementing new digital solutions. As in the hotel sector, restaurant employees sometimes have a hard time adapting to newly introduced programs. According to Company 12, employees are generally in favour of digital transformation,

but they need to be appropriately educated and taught about it. There are still some older workers without a smartphone or e-mail, so they need to be taught from scratch how to use electronic devices. *"Two colleagues did not even have e-mail at the time. They both had to start using the computer and we taught them about it."* (Company 12)

As in the hotel sector, restaurant managers pointed out the challenge of IT staff shortage, which means that any new development of digital products or even an adaptation requires a great deal of time to implement. Restaurant owners also emphasized the problem of IT specialists lacking an understanding of how the restaurant business works and which needs are essential and need to be satisfied. Therefore, IT programmers sometimes do not deliver the expected results. *"IT people do not understand our core business and it sometimes takes a lot of time to get on the same page."* (Company 12)

4.3 Tourist agencies

Agencies also use various information systems and software, ranging from CRM systems monitoring the offer, where all services for their customers are recorded, systems that passengers can use on the trip (travel apps), to additional software for data collection (satisfaction surveys, collection of requests, etc.).

Smaller agencies as well as boutique hotels are striving to create an offer for their customers that is as personalized as possible. They all pointed out that digitalization was the key to making changes in their business operations that lead to more personalized and efficient communication with their customers. Similar to hotels, all agencies emphasized the importance of data gathering. With the data on their past customers, they can predict the demand in the next year and prepare more personalized offers for customers.

All agencies pointed out that digitalization is the future of the tourism sector. The manager of one of the biggest Slovenian agencies pointed out that in their opinion digitalization will increasingly progress with time to the point where metaverse will be a standard in the tourism business. *"I see the future in the metaverse, virtual reality, and augmented reality. We want to make it possible that the guests can look where they are going with VR glasses - that they can imagine where they are going in advance."* (Company 3) In larger agencies, this goal is more achievable due to the higher availability of funds. Smaller agencies did not even mention AI as part of their future plans.

Agencies are also facing obstacles regarding the digital transformation of their business. The main obstacle agencies emphasized was connected to employees' adaptation to new technologies. As in hotels, agencies are also facing the problem of employees sometimes finding it difficult to keep up with digitalization. One interviewee pointed out that this lack of general understanding and willingness to learn among employees almost led to the collapse of the company. *"Transitioning to a more digital business model has forced us to replace one of our managers, as there has been a lot of tension due to a lack of knowledge and understanding of it."* (Company 3) Agencies also pointed out that during the transformation, the older population had reservations regarding digitalization. This age group needed the manager's additional attention.

Most of the agencies as well as hotels pointed out that systems that are currently on the market do not cover all of their needs. Some use several different systems but these systems are not well connected. *"Unfortunately, we have separate systems because we have not found one that suits us perfectly yet."* (Interviewee 3, Company 2) There is no appropriate solution regarding digital platforms (software, information systems, etc.) on the market for agencies to use. Either they develop it on their own, take the solution from the market and adapt it to their own needs or they use software and information systems that are not well integrated. Incompatibility between different systems makes it hard to automate certain departments and work tasks. *"Initially, we looked for platforms from the competition and on the market and since none were suitable, we developed our own. We consider it a key advantage over the others that we developed the digital platform we use on our own."* (Company 4)

Despite the obstacles tourist agencies are facing, they continue to integrate digital transformation into their core business processes. One of the reasons for this is without a doubt the fact that digitalization enables higher automatization of daily activities, which enables employees to focus more on guests' experience, which consequently reflects in higher customer satisfaction. Similar to hotels and restaurants, agencies also pointed out that digitalization enables them to finish their tasks faster, more efficiently, and with fewer mistakes made in the process. They all also perceive digitalization as a tool that helps them increase value-added per employee, reduce costs, increase revenues and help provide a better understanding of the cost structure of the company. Because of the digitalization and availability of data, companies can now operate with real-time data, which leads to less waste, and much more optimized business processes.

Due to automated customer service, some agencies also noticed that by investing in the digitalization of the company and with more and more processes being digitalized, they had less need for the same number of employees as before digitalization. *"We need less staff due to digitalization. We want to keep it small and therefore flexible. We do not want to have too many employees."* (Company 1) The key findings are presented in Table 3.

5 Suggestions for policymakers

Several companies emphasized that Slovenia needs a Ministry of Tourism because tourism has a large weight in Slovenia's GDP. This would have a significantly positive effect on the whole state of the country and not just on GDP. In addition, the Chamber of tourism and hospitality should write structured guidelines so that everyone can understand what needs to be done and all companies in the tourism sector can follow the set goals.

Larger companies also stressed that tenders should not be available only to small and medium-sized companies, but also to large ones. This was emphasized as a huge obstacle for larger companies. *"Since we are considered a large company, we often do not meet the predetermined criteria for tenders. The restrictions should be changed. Even large companies need co-financing for further growth and development."* (Company 6) Tourism in some regions develops differently than in others. It is necessary to consider the needs and preferences of all individual companies in different regions. Due to regional differences, smaller tenders should be adjusted regionally.

The government needs to consider different target audiences when developing nationally organized training and courses. They need to organize courses for differently educated audiences. *"The problem with tourism is that it has a very wide range of educated people – from primary school graduates to doctorates. This must be considered when training is organized. Flexibility is required depending on the target audience."* (Company 6) The problem of low digital literacy among employees and its importance for the future work of companies was emphasized several times. *"The biggest problem in the adaptation of digitalization is the employees. In Slovenia, no one deals with the digitalization of employees but rather only with digital literacy. The main goal on the national level would therefore be to put more emphasis on educating people about actual digitalization."* (Company 4)

Various interviewees emphasized that the government should co-finance the digitalization of the companies either in the form of digital vouchers or subsidies. They pointed out that digitalization is extremely important for the sustainability aspect as well. *"We all absolutely need more subsidies. Maybe also some set of companies that deal with this in Slovenia. We need Slovenian companies dealing with software at this rank."* (Company 2)

Conclusion

Digitalization is an evolving trend in the tourism sector. Through digitalization efforts, companies can focus more on raising the quality of the central service and thus increase consumer satisfaction, increase revenues, and use resources more efficiently, which is very important due to a severe lack of human resources and rising energy prices.

Barriers to digitalization are inside and outside companies. Externally, the problem is a lack of appropriate and available solutions on the market that companies can use to satisfy their specific needs and integrate the processes. According to the interviewed companies, the problem is that IT specialists often do not understand their requirements well because they significantly differ from companies in other sectors. Since tourism is a very capital-intensive sector with two devastating Covid years behind them, companies usually do not have enough resources to develop customized solutions with IT providers or to have an IT department in-house to develop digital systems on their own. Internally, the problem is the resistance to change and the lack of a systemic approach, which is partly the result of the fact that, unlike in many other sectors, there are no comprehensive system solutions on the market that would act as a push for faster digitalization in the sector.

Many also mentioned they wish to focus on the quality of service more than on digitalization itself due to the sector's people-oriented nature. Even though digitalization has limited possibilities to develop in the analysed sector, it is still developing well because managers understand its importance and they strive to use it as much as possible.

Table 3. A summary of key findings

Digitalization aspect	Key highlights	Distinctions
The characteristics of DX in the industry/ company	• Various technologies – usually not very complex. • Common highlights: ERP, CRM, personalized apps, software for data collection, and website.	• Hotels: channel managers, property management systems (Opera), sales channels (Booking, Expedia), apps used for communication with the reception and ordering food. • Restaurants: online reservations of tables, online store. • Agencies: travel apps, VR technology.
Motives, drivers of digital transformation	• Higher customer satisfaction, reduced time for routine tasks, • Complex bookings in one program, better work efficiency, higher sales, higher value-added per employee, and increased profits. • Staff shortages can be compensated. • Cost reduction, personalized offers to customers.	• No distinctions were indicated.
Obstacles in digital transformation	• Financial constraints and lack of digital literacy among employees. • Boutique companies are based on a personal relationship with clients – business can never be fully digitalized. • Programs are not equally developed or compatible. Shortage of IT staff.	• No distinctions were indicated.
Impact on business performance due to digital transformation	• Better flow of information, faster and simpler processes within the company, cost reduction and revenue increase. • A better understanding of the company's cost structure.	• Hotels and Agencies: ability to gather data and perform analytics, ability to offer a more personalized experience.
Other impacts of digital transformation	• Less need for employees, higher quality of employee work due to automatization. • Less communication among the employees.	• Restaurants: less possibility for having fewer employees as in the other two sectors (chefs and waiters are still needed).
HRM challenges	• Reluctance to change among employees, aging workforce structure, employee deficits (chefs, waiters, receptionists). • Short and regular training sessions are advised.	• Hotels and agencies: advanced training is required due to more complex software.
Policy perspective	• Ministry of Tourism; Chamber of tourism and hospitality: structured guidelines, more digital vouchers or subsidies, and different levels of courses for different audiences.	• Hotels: large hotels require higher tenders, and smaller tenders should be adjusted regionally.

Source: Own work (2022).

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DIGITAL TRANSFORMATION IN THE RETAIL INDUSTRY

Introduction

Retail companies focus on selling products and services that include (but are not limited to) food, clothing, medicines, electronics, cars, furniture and more, directly to customers (Johnston, 2022). They represent a direct link between suppliers and consumers, which is why they are particularly sensitive to their needs and demands. Technological developments of the 21st century are rapidly changing those demands and putting pressure on retailers to keep up with them. Technology also represents a big opportunity to increase productivity and improve performance if a company successfully implements the technology through the process of digital transformation. However, despite the rapid plunge into the unknown, it is not technology that poses the biggest digital transformation challenge for retail companies, but something quite the opposite and far more familiar – the people (Almeida et al., 2020; Deloitte, 2017).

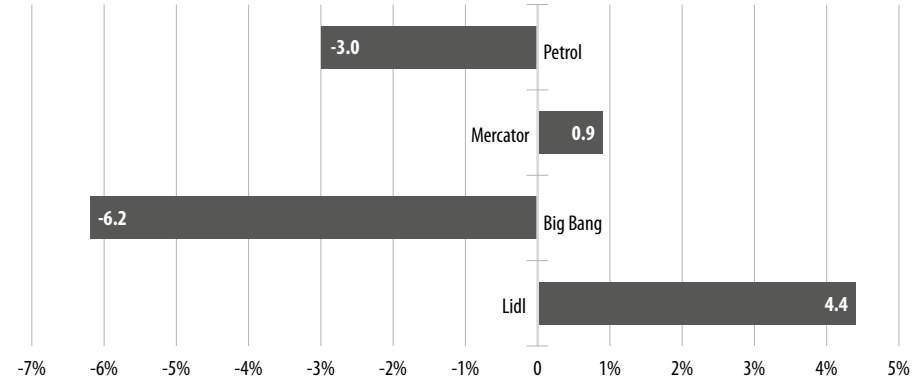
The goal of this chapter is to determine the level of digital transformation in Slovenian retail companies and understand the motives and challenges the companies face in this process. Firstly, there is a brief overview of the retail industry in general, focusing primarily on trends and specifics of retail companies in Slovenia. Then, a literature review of digital transformation and its impact on the retail industry discusses technologies that have been and will be crucial in the process of digital transformation. Further, the research and its results are presented, portraying the real state of affairs regarding digital transformation in Slovenian retail companies. The findings and conclusions of the research are stated at the end.

1 Industry overview

In Slovenia, 7,821 companies were operating in the retail industry in 2020, without motor vehicle retailers. These companies employed 60,194 people and generated over 12 billion EUR of revenue. The value added per employee in 2020 was 76,818.30 EUR, and the aggregate added value of the sector was 4,624 million EUR, which is 3.5 percent less than in 2019. However, before making any conclusions based on a comparison between different years, the effects of the crisis caused by the Covid-19 pandemic would have to be taken into consideration as well (Statistical Office of the Republic of Slovenia, 2022a).

Looking into the financial statements of the major Slovenian retailers, an analysis can be conducted on how well they fared during the pandemic. Just like in Europe in general, almost all larger retail companies in Slovenia are supermarket chains. This could explain why the retail industry in 2020 was not as heavily impacted by the pandemic as, for example, the service industry, despite suffering a ten percent loss of revenue compared to 2019 (Statistical Office of the Republic of Slovenia, 2022a). People had to temporarily stop enjoying many services in favour of social distancing but continued to purchase necessary products for personal consumption offered by retailers. This is also supported by the data about the compound annual growth rate (CAGR) of Slovenian retail companies. From 2018 to 2021, some of the largest retailers such as Petrol and Big Bang had a CAGR of negative three percent and negative 6.2 percent respectively, but in contrast, Mercator had a CAGR of 0.9 percent and Lidl's was 4.4 percent (Figure 1) (AJPES, 2022).

Figure 1. Compound annual growth rate of selected Slovenian retail companies (percentage) 2018-2021



Source: AJPES (2022).

Now that the Covid-19 crisis is ending, new crises are emerging and causing problems for retailers around the globe. The rise in prices, especially of food commodities, is directly caused by the war in Ukraine since more than 25 percent of cereal and vegetable oil and 50 percent of maize in the European Union comes from this country. The supply of these commodities is already low around the world and the situation is not likely to improve next year. This forces retailers to manage the problem of rising prices and supply shortages by finding another source of grain supply. They will turn to countries such as the United States, India and Argentina as some of the bigger exporters, but the response will not be as fast as the market would need it to be to control the price levels in the short term (EIU, 2022). The pressure they feel to mitigate this issue is enormous since the rising prices are the primary concern of 53 percent of European consumers. In the second place, there is the invasion of Ukraine, with 15 percent of consumers citing it as their top concern. The third and fourth place are taken by unemployment and extreme weather events, each being brought up as the primary concern by eight percent of people, while the Covid-19 pandemic is only fifth on the list, with only five percent of people primarily worried about the virus (Bazzoni et al., 2022).

2 Digital transformation and new technologies in the retail industry

2.1 The main drivers of digital transformation

The World Wide Web was the main trigger of digital transformation. For retailers, the introduction of the World Wide Web changed something vital, the core and the definition of the retail industry: the point of contact with the customers. It led to the development of digital technologies, e.g., smartphones, search engine optimization (SEO), cloud computing, online payment methods and others that made e-commerce possible. This, in turn, led to digital competition – sales channels are no longer limited to brick-and-mortar stores, but now include online stores that allow customers to shop more conveniently and retailers to reach a bigger portion of the market. As a result, retailers are now more fiercely competitive, as they are no longer competing only with other companies on a relatively small, local market – the competition is now global and includes the biggest players in the world, such as Amazon and Alibaba (Verhoef et al., 2021).

Digital technologies also led to a change in customer behaviour, which is another crucial driver for retailers to implement these technologies in their businesses. Customers use the technologies before making a purchase – they search online or use apps to help them decide. If retailers do not have a strong presence in the digital world and customers are not able to interact with them in this way, they lose the appeal, and customers will likely turn to the competition (Verhoef et al., 2021).

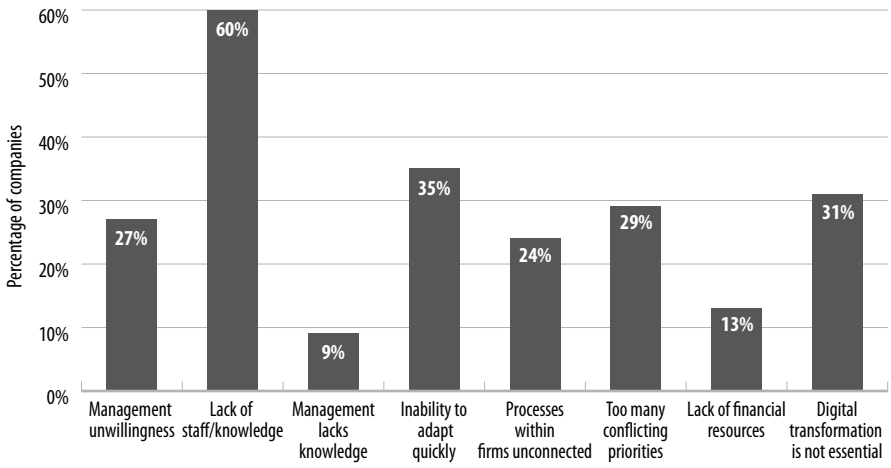
Another major driver of digital transformation in the retail industry has been the Covid-19 pandemic. This global health crisis forced the majority of businesses to close the doors of their stores due to strict social distancing measures that were implemented in an attempt to slow down the spreading of the virus. Consumer behaviour changed drastically, and the success of retail businesses depended on how fast they could respond. A comparative study in Canada, China and France, which was done in 2020, found that Covid-19 has been a powerful accelerator of digital transformation in the retail industry around the world, despite the differences in cultural and socio-economic settings of observed countries. They all rapidly started using digital innovations in the three stages of the customer journey during the pandemic. In the pre-purchase stage, China popularized live streaming as a way of promoting products, French retailers used online marketplaces to gain more visibility, and Canadian companies used artificial intelligence to get real-time data about waiting times in front of stores to minimize crowding. In the purchase stage, retailers in all three countries focused on contactless payment solutions, which allowed them to not only slow the spread of the virus but also easily transfer their businesses online. In the post-purchase stage, contactless delivery became a priority in all countries. The Click and Collect system of purchasing products online and collecting them in stores was popular in France and Canada, and innovations in China went as far as using autonomous vehicles and testing drone deliveries for driverless solutions (Nicolaï & Grange, 2021).

Finally, staying competitive also means embracing other benefits of digital transformation, such as cost optimization. The process does carry its own costs which might appear high in the short term but may benefit the retailer in the long run. For example, self-service checkout systems would present a high initial cost as they could be expensive to implement, but they would reduce the number of employees required and the labour cost over time. This cost reduction incentive is another big driver of digital transformation (Grewal et al., 2017).

2.2 Technologies used in the digital transformation of the Slovenian retail sector

In 2021, only 27 percent of Slovenian retail companies had a digital transformation strategy in place, while 60 percent of retailers said that they were experiencing problems that were limiting the transformation in their companies. For 35 percent of them, the biggest problem was a lack of appropriate staff or knowledge. Other significant issues were the inability to adjust to the change quickly, too many conflicting priorities in the companies, and a lack of financial resources. 39 percent of retailers said that they did not invest in digital transformation because it was not necessary for their business (Figure 2) (Statistical Office of the Republic of Slovenia, 2022b).

Figure 2. Problems limiting digital transformation in the retail industry in Slovenia in 2021

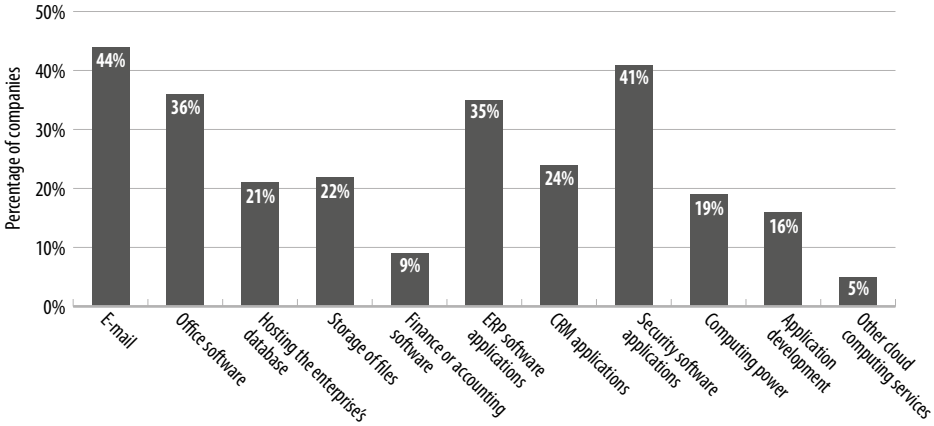


Source: Statistical Office of the Republic of Slovenia (2022b).

However, overcoming these problems and speeding up the transformation is important for them, especially because of the rise of e-commerce. Out of 332 retail companies in Slovenia with ten or more employees, 91 percent had their own website in 2021 (Statistical Office of the Republic of Slovenia, 2022c). 62 percent sold their products via websites or electronic data interchange (EDI). A fifth of them generated at least 50 percent of their turnover with e-commerce. Most of the online sales, 62 percent, were made to customers in Slovenia, while 21 percent of retailers received orders from customers in other European Union countries (Statistical Office of the Republic of Slovenia, 2022d).

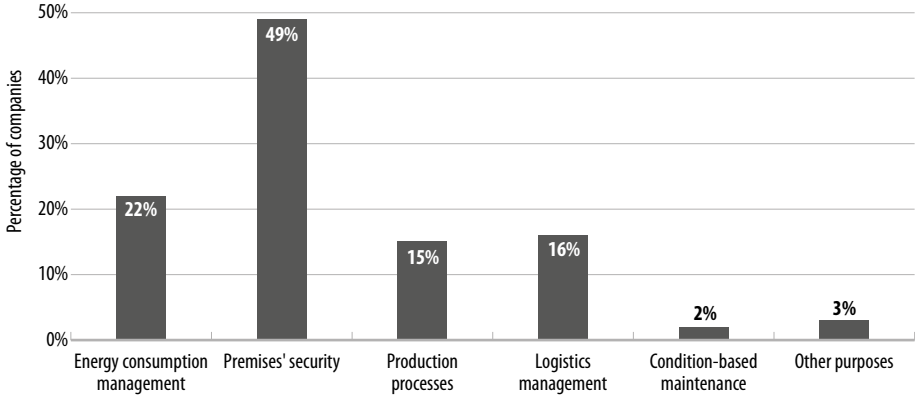
Some of the most popular new technologies among Slovenian retailers are cloud computing and the Internet of Things. In 2021, 55 percent of them were purchasing cloud computing services. The scope of purchased technology varied. 44 percent of companies used cloud-based e-mail services, and 36 percent used the cloud version of the Office software. As cybersecurity is regarded as the main risk with cloud computing, 41 percent of retailers invested in security software applications such as antivirus programs or virtual private networks (VPN) (Figure 3) (Statistical Office of the Republic of Slovenia, 2022e).

Figure 3. Usage of cloud computing by purpose in retail companies of ten or more employees and self-employed in Slovenia in 2021



Source: Statistical Office of the Republic of Slovenia (2022e).

Figure 4. Usage of the Internet of Things by purpose in retail companies of ten or more employees and self-employed in Slovenia in 2021



Source: Statistical Office of the Republic of Slovenia (2022e).

3 Empirical analysis

3.1 Methodology

Primary data collection was based on in-depth interviews with representatives from different fields of expertise (CEOs, human resources managers, chief information officers, branch managers, etc.) representing 12 retail companies based in Slovenia. Companies included in the analysis differed both in size (small, medium and large), and in the type of products that they sell to the customers.

Interviews consisted of questions that covered four different areas of digital transformation in the retail industry: (A) digital transformation in the retail industry, (B) digital transformation in the interviewed company, (C) human resources and digital transformation, and (D) policy perspective on digital transformation. The interview guideline was followed as much as possible, but the questions were adapted based on the flow of the interview as well as the specific characteristics of the companies. Additional information on the interviewed companies can be seen in Table 1.

Table 1. Sample characteristics

Company	Industry	Size	Ownership	Interviewee's position(s)	Interviewee's gender
Company 1	Food and fashion clothes	Large	Domestic	CEO	Female
Company 2	Materials for classical and digital print	Medium	Domestic	CEO	Male
Company 3	Technological equipment	Large	Domestic	CIO	Male
Company 4	Oil derivatives and gas	Large	MNE	CEO	Male
Company 5	Oriental goods/food	Small	Domestic	Owner and CEO	Male
Company 6	Everyday consumer goods	Large	Foreign	Director of Digital and E-commerce department	Female
Company 7	Everyday consumer goods	Large	Domestic	CSO	Male
Company 8	Everyday consumer goods	Large	Foreign	CIO	Male
Company 9	Spare parts for the automotive industry and tires	Large	Foreign	CIO	Male
				HR manager,	Female
				Sales manager	Male
Company 10	Cars and spare parts for the automotive industry	Large	Foreign	CEO	Male
Company 11	Bookkeeping and stationery	Large	Domestic	Authorized Officer of Management Board	Female
Company 12	Unspecialized goods	Large	Foreign	CEO	Female

Source: Own work (2022).

3.2 Results

3.2.1 Digital transformation in the retail industry

"Digital transformation is actually a very hot topic in the retail business right now." (Company 8) Advanced technologies and employees who are equipped with the adequate skills to operate these technological tools (big data, cloud computing, industrial automation, cyber security, etc.) are of vital importance for new product development, process improvements and the development of new business models in the retail industry. *"The digitalization on one end is about the 4.0 digital initiative, so bringing technologies to the stores, to the customers where you can offer them the digitalized product. So that means you have to first put a strong infrastructure in place and that is the foundation for everything. And then you start building blocks on top of this and these are already the solutions that impact how we do the business, how we interact with the customers and how our employees follow their processes or how we change the processes."* (Company 8)

Many companies' representatives pointed out the importance of digital technologies in business model innovation in the retail industry. *"Definitely digital transformation took place, I would say, already 15-20 years ago, and it was mostly focused on the supply chain. So, the digital transformation started in the supply chain, but now the focus is not that much on the supply side, it is much more important on the sales part. Online sales for fashion are very important. Today, there is no retailer or no serious retailer without an online store."* (Company 1) Some companies mentioned that especially on the demand side, new digital technologies help them address different segments (generations) of their customers more personally. The easiest way for them to get personal information about their customers is via the mobile ecosystem (company's mobile applications), through which they can gather personal data and track purchasing habits. *"But of course, the world is changing, you now need to know your customers. By knowing your customers, you can offer better services. So, we also started our own in-house loyalty system, where you use our application on your mobile phone. We have to address all types of generations. Different generations have different approaches. So, what we are trying now, is to find ways that we can touch everyone's shopping experience at the same time. New technologies, new solutions, new ways of shopping are also coming."* (Company 8)

When it comes to adopting and implementing new technology, it is really important to measure the intended impact to determine the value of the new technology. *"You do not just develop different technologies just to have them*

and just to say in one presentation that we are using AI because this is just a buzzword. Everyone is talking about how they need to have something from artificial intelligence because they know it is important and trendy, but companies often do not know what value newly implemented technologies bring to them. That is why it is really important to measure the impact and value of newly adopted technologies." (Company 6)

The size of the company and the number of adopted technologies seem to be related. The larger the company, the higher the number of technological tools it has adopted in its business. This is due to the higher available budget for digital transformation in larger companies. *"And when talking about the technologies you were mentioning (AI, virtual reality, cloud computing, cybersecurity, etc.), the thing is that we have already had in the past a lot of these technologies, so most of them were somehow upgraded and were interconnected into a bigger system."* (Company 6)

The companies should start the digital transformation before the company gets really big (more than 1000 employees) because in big systems changes are happening slower than in smaller ones due to the rigidity of the system. *"And then the reality is that, especially if you are working in such a large company as Company 6, things are moving quite slow. We are a really big system, and it is really hard to change the culture of the people. It is difficult to change and move mountains in digitalization especially when the company is 70 years old, and especially when people are just not as open to changes."* (Company 6)

3.2.2 Motives, challenges and barriers to digital transformation

The main goal of digital efforts is increasing efficiency in the business processes, more specifically - increasing turnover, reducing operational costs, managing the inventory, just-in-time delivery, etc. Another commonly mentioned goal was increasing sales through digital platforms (online stores) and reaching out to the customers via mobile ecosystems, where their customers get personalized information, and personalized discounts for the company's products. *"During the lockdowns, there were only online sales. Then, we also saw the development last year (2021). For example, when the stores opened in May again, online sales dropped completely because everybody wanted to go out to see or meet people. But then online sales slowly came back, so today for us they represent about ten percent of the turnover or even 15 percent."* (Company 1)

Due to high competitiveness in the retail industry, the majority of the companies said that the motives of their digitalization endeavours were mostly reactive, which means that their competitors or customers pressured them into adopting new technologies. *"Our business is very competitive. So, we need to think about how to improve and how to be better, because we are not competing just locally, we are competing with Amazon, with the big guys. So the bigger players pressure us to constantly look for new ideas to improve."* (Company 3) Multiple interviewees have stated that the effort to compete with the biggest companies, which have largely set the standard in consumer expectations regarding the variety of the offer, affordability, and speed of delivery, is the main factor driving the process of digital transformation in their company. A few companies stated that they try to behave as "followers" in the majority of their business developing aspects, but they still try to innovate in certain situations, so they can keep up with "the best value for money" principle. *"Our goal is to be sometimes a leader and sometimes a smart follower because our company in general wants to provide products of the best quality for the best price. And if we want to maintain this, we cannot be the leader all the time, because that means our customers will need to pay for this. We do not want to jump and make some irrational decisions or maybe pilot some activities. We are closely following the market, not only Slovenia but the global market and see what would work for us and what would work for our customers."* (Company 8) One company, which is offering luxurious, high-end products, mentioned that motives for their digitalization are mostly proactive. They have to invest more in innovative digital approaches for their customers as they have to compete with the offer from the whole world. *"We started with the online store and with all the technology years ago because we saw the potential. We have the advantage that we work with many companies around the globe and we see what is happening. For example, the companies in the United States were always a bit ahead of us, today online sales for fashion products are on average of 30% of all sales. Taking into account the development there we knew where is our future."* (Company 1)

When it comes to differences in factors which enabled (or prevented) the digitalization of larger and smaller companies, very big companies (some of them are also part of a global chain) usually have their own R&D department, which is constantly looking for new technological (digital) solutions. Smaller companies often face difficulties, because they lack resources; either financial or human resources to implement advanced digital solutions. The majority of the company representatives stated that the most important factor, which is preventing faster digitalization of their business, is employees who are not skillful with using computer-based technologies.

The retailers that were the most successful at coping with Covid-19 were the ones who had already started digital transformation before the pandemic and only accelerated it due to these new circumstances. *"When I started to work in an insurance company, we started with the migration of the core systems from the legacy systems in 2006, but Company 4 started in 2019. So, we are late and we did the first part, but now we have to do the second part. Then, we will have to do the biggest part which is the digital network. We would be much faster in the digitalization if we had already migrated our corporate core from legacy systems, but now we are in the process of migrating the core part, which will take another five years."* (Company 4) Many of them also mentioned that they have implemented as many digital solutions in their systems during the Covid-19 pandemic as they would have in ten years in normal times. *"I think it was a great challenge for the industry because I think in a year, we implemented several digital solutions that would otherwise be implemented in ten years. Let's say if we work from home, how will we motivate the team? How will we keep the morale? So, these are the challenges that are now basically a thing of the past."* (Company 6)

When it comes to a company's capabilities for digital transformation, there is once again a discrepancy between the smaller and the larger companies. Smaller companies outsource most of their services to external partners, which are developing their digital technologies because it is cost ineffective for smaller companies to have these services in-house. The interviewee from Company 5, which is a small company said: *"The application that connects the store with the warehouse was created by one of my friends, who is an IT developer. He designed the application based on my needs."* Larger companies use a "hybrid approach": the majority of them keep the core IT services in-house due to cybersecurity issues, but they outsource the development of the new innovative technologies to external partners. *"We can use the external partners, but we would like to keep the architecture in-house, so the control over the application architecture is in our hands, but the actual workforce can be hired from external partners. And by doing this, we can really scale up our capabilities and we have the flexibility if we change direction at some point. Then we do not have to fire the people from our company – we can just find new partners or replace the technology in one area."* (Company 4) One of the companies differs from others, because all of their systems, core and new innovative ones, are developed by external partners. However, the partners enable the company's IT department to make changes within the systems to adapt them as much as possible to their needs. *"We have an ERP system and a lot of other systems. The ERP system is not in our area of expertise, and we also outsource the development of the other systems to third parties. But what we do, we automate the processes within those systems and we also interconnect them into one big system."* (Interviewee 1, Company 9)

3.2.3 Impact of digital transformation on business and strategy

All of the respondents said that digital transformation has affected all parts of their business and that there is not a single part which has not been affected by it. *"So, it definitely affected the way we communicate with our customers, the way our communication is designed and where we get the data for the communication. It affected how our stores look, the layouts of our stores, and where they are positioned. I mean, I cannot imagine what it has not affected. It has probably affected everything since day one since we started implementing barcodes 30 years ago."* (Company 8) The greatest impact is observed in managing the inventory, expansion of sales channels (online stores and mobile applications) and implementation of autonomous technological solutions (self-service cashiers). *"I think we see a lot of added value in terms of products, cost management, quality of the processes, internal controls, managing inventory, autonomous cashiers because we are implementing core systems – with doing this, you standardize the processes and you reduce the potential for failures."* (Company 4)

When asked about the impact evaluation of adopted technologies, the interviewees emphasized that it is really important to measure the value of the newly adopted technology, and said they all measure the impacts with many different KPIs in different parts of their business. One common KPI that all of them use is the measurement of customer satisfaction. *"KPIs are different in different areas – from savings, actual energy savings, financial indicators like EBITDA, profit margins, margin increases to the carbon footprint. So different areas, different KPIs. Some are connected to energy efficiency stellar, also environmental indicators, then we have financial indicators for others and so on. But one that is probably common for every retailer is customer satisfaction."* (Company 4)

Many companies' representatives said digitalization is one of the most important strategic pillars in their corporate strategy. They emphasized the importance of digitalizing as many aspects of business operations as possible. *"Digitalization is our highest focus. Everything that can be digitalized will be digitalized. This is our motto. And it is my role and the role of my team to support the business with it."* (Company 8)

3.2.4 Human resources (HR)

Constant learning for employees about how to use technological tools (reskilling and upskilling) is of vital importance for company growth and keeping their competitive advantage. *"We already climbed the mountain, so now it is*

easy. The challenge was to get to the mountain, where people understood why we are digitalizing. How this will make their life easier and that it will actually make their lives easier. So, you need to invest some effort so that in the long run it will be easier for you. And this was basically the challenge to find that extra time with the really busy people." (Company 8)

Considering current historically low unemployment rates, the majority of the companies' representatives mentioned that they face huge problems when it comes to attracting new talents to work on digital transformation in their companies. This is mainly because they are not competitive in terms of offering working conditions comparable to IT companies. *"It is really, really hard to attract really good employees in the area of digitalization. Because we are not competing in digital work. Also, we are not competing only with Slovenian companies, or Balkan companies, we are competing with the whole world. Companies are now basically taking our employees that are still living in Ljubljana, but working remotely for companies in places like Switzerland, England, etc. So, it is really hard."* (Company 6)

Older workers, who are not well equipped with the skills to use information technology, represent another challenge in the process of digital transformation. *"One of the problems of digital transformation is also people, who are not open to changes, it is really difficult to teach older employees to use some advanced IT solutions when they are not even used to dealing with basic information technology."* (Company 6)

Representatives of large companies said they are offering e-learning seminars or e-learning platforms to improve the digital skills of their employees. A representative of Company 4 in Slovenia said: *"All of the training for employees in Serbia, especially during the Covid-19 crisis, were carried out via Microsoft Teams and also for training of employees working at our sites, we used e-learning courses which they had to attend. We also employ trainers at the training centres, who are educating employees to work with our systems and so on. Because we have digital services and a lot of security issues, our employees need to be skilled in these fields."* All of the companies also use video conferencing platforms (the most commonly mentioned platform was Microsoft Teams) for individual or team training of their employees.

3.2.5 Policy perspective

The majority of companies' representatives support the state's efforts to increase the level of digitalization in companies. *"I would say that government initiatives supporting digitalization are always welcome. And we would encour-*

age the government to keep on doing these initiatives. For example, subsidies to digitalized solutions would make our business case easier to accept, so that the government would also push the companies to think greener, but by not forcing us to raise the product prices." (Company 8) One of the commonly mentioned suggestions among the representatives of retail companies is also the importance of developing a national strategic policy on educating the general population to use (advanced) technologies and increase digital literacy. They think the development of technologies is much faster than the development of skills to efficiently use or understand this technology. *"I really think the most important element is to prepare people for this digital age because technology is already there and beyond the level of what people are capable to digest and comprehend. I think politicians' responsibility is to design policies and measures to prepare people to handle and deal with advanced technologies. Policymakers should also create different strategies to address different age groups and different levels of digital literacy."* (Company 12)

Only two companies in our sample have applied for state/EU-sponsored tenders for the digitalization of large companies. Financing digitalization from EU funds was beneficial for the digital transformation of their company. In contrast, a few large companies fund their digitalization transformation strictly from their own budget.

When it comes to suggestions by companies' representatives for state policymakers in the field of digitalization, they all agreed on one aspect: the application process for state or EU funds is too complicated and too bureaucratic. *"We would like to see more communication between industry and the government. So, when they are preparing the strategies, there have to be some platforms where we can interact, where we can present what kind of ideas/projects we have, and then they can embed that into the schemes. So once the scheme is set up, it is more or less clarified which projects should be prioritized and which project should be funded by the government."* (Company 4) They suggested that the application process should be simplified and more flexible. According to a few of the interviewees, another important factor is also longer periods for preparation of the projects for which they are applying. Now, they are very limited with time and this affects the quality of the projects and also decreases the quality of the relationships they have with external partners, who are working on joint state-funded projects. *"The government set a condition that a large company needs to have small companies in the project and they gave us one month to come up with a ten million EUR project and this is almost impossible to align between all parties in this process. One thing I think that is also missing is government strategic policy in this field of digital or even energy transition."* (Company 4)

The owner of a small-sized company described a specific problem when it comes to cooperation with the government bodies because he is a foreigner and does not speak Slovenian: *"My Slovenian language proficiency is not good enough to communicate. So, this prevents me from getting more information from the state."* (Company 5) When asked about what his suggestion for the government policy perspective would be, he said that he would just like to have an opportunity to sit at the desk with them and speak to them. *"When you communicate, you can open another vision, another horizon."* (Company 5) The key findings of the research are presented in Table 2.

Table 2. A summary of key findings

Digitalization aspect	Key highlights
The characteristics of DX in the industry/company	• A number of different technologies are applied. • ERP, CRM, EDI, robots, cloud computing, automated warehouse, automated self-cashiers, mobile ecosystems, etc.
Motives, drivers of digital transformation	• Need for efficiency, quality and process control. • Motives are mostly reactive. • Company's vision.
Obstacles in digital transformation	• Employees - lack of skills, knowledge, lack of understanding of the need for change, especially with older employees. • Different levels of digitalization – depend mostly on the size of the company. • Problems with implementing legacy systems into modern core information systems. • Different systems are used in companies due to a lack of comprehensive planning and problems with integration.
Impact on business performance	• Increase in productivity, efficiency and quality. • Impact on firm competitiveness, sales, and profitability; it is important to choose the right approach. • Impact on satisfying customers' individual needs with the use of mobile or loyalty systems.
HRM challenges	• Lack of skilled workforce (existing and additional). • Structural change - shift to more educated/trained workers. • Internal training to support education on modern information technologies. • Employees' desire for change is needed. • Non-competitive position for hiring skilled workforce in IT department compared to (foreign) IT companies.
Policy perspective	• Companies support government endeavours in terms of increasing digital literacy among the Slovenian population. • More flexible conditions for state-sponsored tenders in the field of digital transformation. • Changes in the educational system to make students more digitally literate. • Decrease in bureaucracy and administration. • Longer application deadlines.

Abbreviations: DX = Digital Transformation; ERP = Enterprise Resource Planning; CRM = Customer Relationship Management; EDI = Electronic Data Interchange, HRM = Human Resource Management.

Source: Own work (2022).

Conclusion

For retailers, digital transformation is an essential requirement with no alternatives. In times of unprecedented challenges such as the Covid-19 pandemic and the crisis caused by the war in Ukraine, digital transformation is a prerequisite to not only improve a business but to have one at all. These extreme cases, crises that we are faced with, have been the most powerful accelerator of digital transformation in recent years, but certainly not the only ones. Another one of the main drivers of the transformation is digital competition, which is becoming stronger and stronger as businesses all around the globe move to online sales channels. Finally, retailers are also driven to implement new technologies into their businesses because of the changes in consumer behaviour. Consumers use these technologies before deciding on which retailer to purchase a product from, so a retailer that does not have an online presence and an established interaction with customers is at a serious disadvantage.

Retailers have recognized this and are investing in different technologies that are helping their companies' operations, such as artificial intelligence, robotics and automation, edge computing, the Internet of Things and many more. These technologies are not here to replace human labour, but rather to work alongside people and help them manage difficult tasks.

With only 27 percent of Slovenian retailers having a digital transformation strategy in 2021, the country still has a long way to go. It is up to both retail companies and policymakers to find ways to cooperate in bringing innovative solutions to the industry and helping the retail industry thrive in these challenging times.

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TRANSFORMING BUSINESS MODELS AND VALUE CREATION IN THE ICT SECTOR

Introduction

One thing is clear in the Information and Communication Technology (ICT) sector: those who are not quick, responsive and adaptive get left behind. New ICT solutions are developing faster than human capital can keep up. Today, this high-speed train only runs on the tracks of digitalisation. ICT companies are laying the track, and managers are controlling the train's speed. As a result, they are continually on the lookout for new trends that will influence how businesses will evolve digitally (Morakanyane et al., 2017).

Cybersecurity, artificial intelligence, machine learning, cloud connectivity, advanced analytics and big data will be at the forefront of digital transformation. The transition to cloud services will become more pronounced as more innovation will be available, as well as smart technologies that can meet the needs of the growing population working from home. Due to its agile and adaptive nature, Slovenia seems to be a great environment to adopt these technologies (GOV.SI, 2022).

The purpose of this chapter is to examine how business models and value chains in the ICT industry are changing, and gain insights on how policymakers could potentially speed up the process of digitalisation based on empirical and theoretical data originating from the ICT sector in Slovenia.

This chapter comprises three sections. First, it provides an overview of the ICT industry, where the specifics of the industry are described in the EU and Slovenian context. Then, it is explained how ICT companies are transforming and what kind of services and products they are offering to their clients. In the empirical part,

the emphasis is on the role of digital transformation in business model innovation (BMI), and the role of digitalisation for human resources, while also reporting common industry findings and policy design suggestions. The last section of the chapter provides the key findings and present conlcuding remarks.

1 Industry overview

The ICT industry contributes to increased productivity, output and technological progress. Its impact can be assessed directly, e.g., through its contribution to output, employment, or productivity growth, or indirectly, e.g., through its role as a catalyst for technological progress that affects other sectors of the economy (OECD iLibrary, 2021).

The ICT sector in Slovenia increased to 9,580 active enterprises in 2021, which is six percent more than in 2020. The number of active businesses in the ICT manufacturing sector continued to fall by four percent in 2021, while it rose by six percent in the ICT service sector. The number of employees and self-employed in the ICT sector increased by ten percent to 33,810 people. Their number increased by five percent in 2020. With an annual turnover of EUR 5.396 billion in 2021, the industry contributes 4.2 percent to Slovenia's GDP. This is slightly above the EU average, within which the ICT sector accounts for 3.8 percent of GDP. In Slovenia, the value added per person employed in the ICT sector was EUR 59,866 in 2020, which is a ten percent increase compared to 2019, when it was EUR 54,200 (Zupan, 2021).

Export statistics for ICT have notably increased over recent years in Slovenia. The contribution of ICT to Slovenia's service export was nine percent in 2021, compared to 6.6 percent in 2018 (Zupan, 2021). The fastest-growing section of the general ICT industry is cloud computing, which is now growing by 40 percent annually (Export.gov, 2019).

2 Digitalization and new technologies

2.1 General purpose technologies

General purpose technologies have a broad variety of capabilities, significant room for growth and improvement, and the potential to significantly impact the whole economy.

Artificial intelligence (AI), the field of computer science, develops systems that can carry out human-like functions like speech and text recognition, content learning, and problem-solving. It can analyse massive amounts of information and use models to predict the future (Kasparov, 2021). Transparency Market Research (TMR) conducted a study that predicted the global artificial intelligence market would grow from $126.14 billion in 2015 to $3,061.35 billion by the end of 2024, an astonishing 36.1 percent compounded annual growth rate (Transparency Market Research, 2021). Machine learning can be used in the ICT sector to analyse massive amounts of information to find patterns and trends and to create models that forecast the future (Kasparov, 2021).

Big data is a term used to define datasets that are too large to be stored, managed, and analysed by conventional database software tools (Misra et al., 2016). While some data is static, like a router's position or a subscriber's basic characteristics, other data is dynamic and connected, like user-generated content in social media. Many ICT sectors, like the software publishing sector and the wholesale information and communication sector, have successfully used big data technology, tools, and approaches to generate insights and support the data analytics required for decision-making (Misra et al., 2016).

Cloud computing/storage is the distribution of computer services via the internet, including servers, storage, databases, networking, and software analytics. Users only have to pay for the services they actually use. The objective is to increase efficiency while maximising computing speed. This can be done by the emergence of platform-as-a-service (PaaS) for data science, which enables small businesses to deploy and manage their clusters with reduced costs and low effort. This way, individual users and smaller companies can rent large-scale units for better computation and storage as and when required (Deloitte, 2018).

The Internet of Things (IoT) is the process of gathering, analysing, and acting on data generated by network equipment and objects. With the introduction of IoT in an IT infrastructure, ICT companies can now respond more quickly to rapidly changing local conditions while avoiding communication bottlenecks by analysing and acting on IoT sensor data near the source (Deloitte, 2018).

2.2 Complementary technologies

During the empirical analysis, the focus was mainly on ERP as a complementary technology, as this concept is the most widespread in the ICT sector.

ERP brings together all essential business operations on a single platform. In addition, a modern ERP supported by AI technology can handle, process, analyse and learn from big data (Vaska et al., 2021).

2.3 The role of digital transformation in business model innovation (BMI)

Business model innovation arises when existing models are modified, or new models are formed. New business models, such as "everything-as-a-service" (XaaS) are being quickly adopted to support the strategic goals and eventual success of the company. In the ICT sector, there is a growing trend towards implementing everything-as-a-service and subscription business models, a popular type or form of XaaS (Vaska et al., 2021).

Traditionally, ICT providers would offer distinct products and services. They would offer one or a range of products and the service part as a separate offering. From there, companies would offer the customer configurable, customized and adaptable solutions as bundles. Currently, most ICT providers have transitioned to subscription, where they provide a range of after-sales and value-adding subscriptions for service and software-based solutions, with recurring and usage-based billing. The early adopters in the ICT industry are now moving towards "everything-as-a-service" (XaaS) (Critical Case, 2021). Subscription models are more common because (1) offering a service is more lucrative in most cases, (2) a subscription-based business model offers businesses a reliable and steady stream of income, which is essential in difficult times like the pandemic, and (3) from the viewpoint of the consumer, it is beneficial for anyone hesitant to invest in significant capital expenditures. With a service-based business model, corporations no longer need to make substantial expenditures during uncertain economic times, and previously unaffordable new products and services are now more available. This can significantly improve the situation for small and mid-sized firms by giving them access to new tools to grow and compete in the market (Vaska et al., 2021).

3 Empirical analysis

3.1 Methodology

Out of a population of 313 Slovene ICT firms that have at least ten employees, 22 firms were chosen based on size, location and type of business (software developer, integrator or both). Executives of 15 companies were willing to be interviewed, ranging from small businesses to large corporations. The main objective of the research was to gain insight into how digital transformation has impacted the ICT sector as a whole. The central topics within these interviews were to what extent IT companies had to transform/adjust their business models because of digital transformation, and the impact of digital transformation on human resources and policy. The companies were also asked how the services that they provide help their customers achieve faster digital transformation. First, companies were classified based on the type of business of each company – either software developers, integrators or both. The primary goal of system integrator companies is the creation and implementation of applications, integrating them with new or existing hardware and software. Software companies on the other hand only create and build frameworks and specialized software applications. Interviews took place from 23rd August to 6th September 2022. All the relevant information about the interviewed companies is presented in Table 1.

3.2 Digitalization and new technologies

In the interviews, ICT companies reported how they transformed internally and how they support their customers on the path of digital transformation.

When asked how they are implementing the digital transformation internally, interviewees spoke primarily about R&D and sales. Their R&D departments have a very high level of digitalization, with most of them using DevOps and CI/CD. DevOps is a set of cultural ideas, practices, and technologies that improves an organisation's capacity to provide applications and services at high velocity. CI/CD is a means of delivering apps to clients regularly by incorporating automation into the phases of app development (AWS, 2021). *"Our R&D uses the DevOps approach. In this approach, the development pipeline comes first, followed by the code repository, testing, and finally deployment, using continuous development and deployment."* (Company 14) As for the degree of digital transformation in sales departments, more discrepancies were found.

Table 1. Sample characteristics

Code	Type (SW developer/ integrator)	Size	Ownership	Interviewee's position(s)	Interviewee's gender	Location
Company 1	Both	Small	A partnership of private companies	Managing director	Male	Outside of Ljubljana
Company 2	Both	Medium	Domestic corporation	CEO and President	Male	Ljubljana
Company 3	Both	Small	Family-owned	Marketing Manager	Female	Outside of Ljubljana
Company 4	Software developer	Large	A partnership of private companies	CEO	Male	Ljubljana
Company 5	Software developer	Small	Partnership	CBDO	Male	HQ outside of Ljubljana + offices in Ljubljana
Company 6	Integrator	Medium	A partnership of private companies	Sales and Operations Director	Male	Ljubljana
Company 7	Software developer	Medium	Owned by a private company	Chief Technology Officer	Male	Ljubljana
Company 8	Software developer	Medium	Owned by a private company	CEO	Male	Ljubljana
Company 9	Both	Small	Partnership	CEO	Male	Outside of Ljubljana
Company 10	Software developer	Medium	Owned by a private company	CEO	Male Male	Outside of Ljubljana
Company 11	Both	Large	Domestic corporation	President of the Management Board	Male	Outside of Ljubljana
Company 12	Integrator	Small	Partnership	Project Manager	Male	Outside of Ljubljana
Company 13	Integrator	Large	Domestic corporation	Business Development Manager	Male	HQ outside of Ljubljana + offices in Ljubljana
Company 14	Software developer	Small	Domestic corporation	Managing Director	Male	Ljubljana
Company 15	Integrator	Medium	MNE subsidiary	Managing Director	Male	Ljubljana

Source: Own work (2022).

The reasons were mostly related to the number of new customers they onboard, due to the nature of their business. *"We do not use CRM because we only onboard two to three customers per year and do not deal with several thousand leads." (Company 10) "We are a B2B company, so we do not have a cluster large enough to make meaningful use of advanced technologies like advanced analytics or AI.*

Most of our business with our customers is done on a personal basis, which means it is not very technologically advanced." (Company 2) On the other hand, a company that deals with a larger number of customers stated that sales are one of their most digitally advanced areas. *"We have a CRM system to support sales which is also integrated with other systems and areas of the business, so the flow of information is continuous, meaning there are no interruptions or manual input."* (Company 6)

In terms of the digital transformation of products and services that they offer to their customers, big corporations see digital transformation as a cultural and technological shift that requires companies to make significant changes in the way they operate and deliver experiences and benefits to their customers. *"You need to understand the digital transformation from my perspective, it is not only the thing about technology, it is mostly about the shift in culture. The technology part will be there. That is not the question, it will work. The thing is, how is it adopted by the employees? And what is the end goal of digital transformation? This is a mindset shift, not only a technology shift."* (Company 15) In addition, larger companies are better vertically integrated, which means that they can offer a complete package of services as a single provider. *"Digital transformation is increasing demand for comprehensive services from a single provider. And why? Because customers do not want to buy the best server from one vendor and then look for another vendor for security and so on. They want a one-stop shop because they want to know who is responsible for the entire service."* (Company 13)

Smaller companies, on the other hand, tend to view digital transformation from a technological perspective. They tend to specialize in offering niche solutions for a particular business area or process within a company and do not focus as much on the solutions for the company as a whole or the general mindset and cultural change. *"Digital transformation for us means the transition from physical to digital processes. If there is a business process and part of it is not digitized, for example, the use of physical paper, we offer solutions to fix this."* (Company 1) Smaller local companies are better at adapting their solutions to the local market than big corporations because large corporations must adhere to global standards that are later adapted to local needs, and this process can consume a lot of resources. Also, the prices of smaller companies are generally more affordable if only implementation and usage costs are considered.

In terms of the products and services they offer, all companies agreed that the newest digital technologies for general purposes - artificial intelligence (AI), machine learning, the Internet of Things (IoT), advanced analytics, and cloud connectivity - play an important role in digital transformation. AI and machine

learning have evolved along with big data. Large corporations differ from smaller providers in terms of their solutions being able to cover all business areas and they are therefore able to embed big data throughout the whole enterprise. *"When you look at the holistic picture of the entire operation and everything that generates data at different touch points, you need a central point to collect that data and make sense of it and the logic behind it. The goal is to combine the operational data with experience data and understand why certain things happened at certain points. Then you can improve those decisions and the potential offerings for the touchpoints with your customers."* (Company 15) To analyse and make sense of big data, the power of AI and machine learning is needed. Both AI and machine learning require sufficiently large data sets to enable robust learning and analytics that deliver accurate and relevant results (SAP, 2021). The collaboration of big data, AI and advanced analytics is at the heart of the business and digital transformation, enabling predictive planning and responsive automation. *"Our perspective of artificial intelligence is something that we built already in the final solution. Artificial intelligence is just the enabler of the final goal of where we want to be. It is a building block of some of the solutions. We are not just focusing on implementing artificial intelligence, but we are looking at the full process. How, and at which point in the process, we could use this building block, to speed up the process or automate it or make it even better for the customer. We are looking a little bit more holistically from the process perspective, not so much from the, let's say, building block perspective."* (Company 15)

Smaller companies, on the other hand, focus more on the specific niche solution they offer their customers and how they incorporate big data and AI into that solution. In most cases, they mentioned chatbots. *"We use big data, AI and machine learning for chatbots and nothing else."* (Company 12) In some cases, they also pointed out that their solutions can integrate with other larger systems that support big data and AI on a larger scale.

All companies agreed that moving to the cloud is a critical component for effective digital transformation and also an important factor for business model innovation. Interviewees pointed out the following positive aspects of transitioning their business to the cloud:

1. It shortens the time it takes for the new technology to reach the market. This is very important because of the nature of the IT industry. *"In the IT industry, you can assess what are the best technologies or services today, and you develop something, and next year there will always be something better."* (Company 2)

2. It provides scalability. Companies can cope with sudden increases in demand by being able to deploy more technological resources when needed. *"In the cloud, there is enough capacity to provide the service at the same scale as now that we have half of our technical staff working as technical support."* (Company 10)
3. It reduces capital investment. Cloud expenses are incurred on an ongoing basis so organisations can focus their time, effort and resources on leveraging IT services rather than spending resources on infrastructure. *"So, in the cloud, you get a system that is controlled by a list of highly-skilled people, so your employees do not have to worry about the infrastructure anymore. Therefore, your staff can focus on software services, and I think that is a much more important reason for moving to the cloud than pure cost."* (Company 10)

On the other hand, there were also negative aspects associated with cloud adoption pointed out by the interviewees:

1. Not achieving promised cost savings**,** even though cost reduction is usually one of the mentioned benefits of moving to the cloud. Large cloud service providers such as Azure, AWS, and Google Cloud are often able to offer services at a lower cost than in-house IT, as they can leverage economies of scale and offer much more competitive pricing. Although companies expect cost savings, many find that not only are there no cost savings but often cost increases of up to 20 percent (Deloitte, 2021). *"For us, it is still more convenient to have an Oracle on-premise than to buy an Oracle service in the cloud because the scale and the amount of data we process are really big."* (Company 10)
2. Difficulties with compliance and regulation. It is important to follow the regulations associated with moving business data to the cloud. *"I will tell you a very good example of why some companies, that do not have located data centres in the country where there customer is located, cannot go to the cloud. Due to legislation, Swiss banks can only use the public clouds which are physically based in Switzerland, so Swiss banking data and customer data are not allowed to leave Switzerland."* (Company 10)

Advances in cloud computing have not pushed enterprises to move their IT infrastructure entirely to the cloud, but rather to seek the best of both worlds, i.e., to take advantage of the flexibility, scalability, and performance of cloud services while maintaining on-premise solutions, especially for data storage. Many companies share the opinion that they will keep hybrid solutions in the future. *"Clouds like Azure and AWS are very good, but we do not have direct control over them. That is why we use a hybrid cloud solution. (...) I think we will continue to be hybrid in the future because we have the critical infrastructure, which means we have to provide services 24/7, so we also have to control*

our infrastructure, which means we need knowledge from both worlds - cloud and on-premise." (Company 10)

3.3 Digital transformation and business model innovation (BMI)

Digital transformation creates a connected technical framework that underlies and supports business model innovation. *"One of the most important things we see in our company and our customers' companies is that one of the big necessities for digitization and subsequent digital transformation is the implementation of a new business model."* (Company 5)

The goal of business model transformation is to change the fundamental building blocks of value creation in a given industry. *"In our company, we were only able to implement the current business model because we digitised our processes. Otherwise, we would not be able to be on the market with this business model. It is the same with our customers, some want to build additional business models, and others want to change them completely. It depends on what they need or what their vision is. But the basis is digitalization."* (Company 5)

Changing customer preferences, such as declining interest in owning tangible items, are accelerating the transition from licences to subscription-based offerings. Transitioning to subscription-based offerings means that businesses will need to shift from a one-time (typically CapEx) financial model to a recurring (generally OpEx) financial model (SAP, 2021). This has implications for compensation, profitability, and reporting – a significant transition, especially for sales. *"The old business model makes money immediately because you sell software, whereas in the new business model you do not sell software, you just charge for the use of the software, so SaaS, software-as-a-service. It is a service or an investment and you have an investment or a long-term investment. There is CapEx, capital expenditure for the customer, and OpEx with the subscription model. Customers pay monthly and sometimes annually, and you do not get that amount of money immediately."* (Company 14)

3.4 Human resources

Almost all interviewees stated that there is a shortage of talent in the ICT sector and it is slowing down the growth of the sector. Due to rapid change, the ICT sector is an extremely flexible environment. Technology is constantly

changing and managers struggle to find the right people to keep up with the changes. Many managers state that technological developments are outpacing human capabilities. Because of globalization, remote work was introduced and now qualified workers receive offers from foreign competitors, which are mostly based in the United States. These professionals can then work remotely for American companies while living in Slovenia. The Covid-19 crisis has seemingly accelerated this process. The pandemic combined with tax incentives is the reason more and more skilled Slovenian engineers transition into working as sole proprietors (Arko, 2020). The remuneration abroad is so high that Slovenian companies are, in general, unable to offer competitive wages. According to interviewees, it is not uncommon for a qualified engineer to receive offers of over $6,000 net, sometimes including a signing bonus of $10,000 net. However, this can cause problems for low-income countries. *"We have lost several people to German and American companies, for example. Just now one of our good developers was acquired by a US company. He will work for them from home, and will have a $9,000 monthly salary and get a $10,000 signing bonus."* (Company 2)

To tackle this problem, many managers try to establish a positive workplace culture, so that employees enjoy coming to the office, and work collaboratively towards an objective. Most managers state that they prefer their employees to work in the office, rather than working from home. They believe healthy workplace culture builds a sense of pride and ownership among employees. However, several managers failed to specify the exact characteristics and measures they put in place to establish this specific culture. *"The problem in Slovenia is that you can work for anybody now. For a US company, for double the money. That is why, I insisted that not only do we make the office look nice but we also have a big office, and room for all of them if they want to come back. It has been a struggle. They do not want to come back. But we knew that we could not force them. So, we have to make the office attractive. And we are trying to do all kinds of things to make sure they want to come in. Usually, for the older ones, the more experienced ones, it is not really a problem working from home. But for the younger ones, especially in the beginning, with their onboarding and things like that, it does not work."* (Company 8)

Regardless of the size of the company, managers specify and stress the importance of healthy workplace culture in their company. This was perfectly summarized by the CEO of one the bigger Slovenian ICT companies: *"Young students or younger employees are looking for the project, not for anything else, for the project. It is not about money. It is not even about the boss, it*

is about the co-workers, it is about the team, and the environment. If you can collaborate, if you can learn from them. If you are a part of the team, if the project is exciting and complex enough, I think this is the main trigger. Also, a key factor in maintaining the talents or the employees is the working environment. They have to feel good, they have to feel that they contribute, they have to have clear targets and they have to somehow decide on these targets together. And these are the factors I would say are more important than money." (Company 11)

Aside from creating a healthy work environment, various managers stated that they are actively recruiting at universities, and in some cases, even hiring people without university degrees. However, in addition to healthy workplace culture and recruiting at universities, older, more traditional IT companies are facing another challenge. It is difficult for the HR department of these companies to attract younger employees because their work environment and software are not as exciting compared to start-ups where the population is younger and the technology is more sophisticated. Technology is changing rapidly, and the younger generation would rather work with the latest cutting-edge technologies than work for an older IT company where they cannot use the latest exciting technologies. *"Younger people do not want to use 20-year-old technologies to type in their project status. We also have to keep in mind how presentable we are."* (Company 2)

In terms of the recruitment of foreign talent, there were conflicting perceptions. To hire foreign workers and grant them visas, companies must state why they want to hire foreign workers rather than domestic ones. Some managers consider this a long, bureaucratic process. *"It is a real catastrophe. The procedure itself is a catastrophe because you have to prove that you need certain knowledge because otherwise Slovenians somehow have an advantage of getting such a job."* (Company 11) However, some managers considered this procedure to be smooth. *"Three years back when the legislation changed, the IT sector was considered as one of the deficit sectors, so moving, getting a visa or whatever you need is not difficult. We have a lot of foreign workers. It is also true that maybe half of them still have student status. It is a process but we never had a case where we could not hire somebody because of the bureaucratic process."* (Company 10) Based on the interviews, the success of hiring a foreign worker depends on job requirements. If a company is looking for very specific job requirements, it is easier to find foreign talent, whereas if the job requirements are more general, this is a much more complex procedure.

3.5 Level of digitalization in Slovenia

Appropriate legislation and environment are needed to encourage the development of digitization and digital entrepreneurship (Zejnić, 2020). Slovenia is quite digitalized, not only compared to the region but also on the larger European stage. *"Slovenia is more digitalized than all Balkan countries and even more than Germany. I think we have an advantage because we are super small, and Germany is very dispersed. So there, they do not have many national projects but rather projects on the city level. You can use something in their city, but they cannot use it elsewhere. So, in that sense, I think we are more advanced."* (Company 2) In the context of the Balkan region, there are different stages of digital maturity. The main problem in Serbia is the lack of capital. Bosnia, on the other hand, is lagging in terms of legislation and development. *"Slovenia is probably the most advanced but our legislation is very rigid. So, we could have developed faster."* (Company 2)

On the one hand, large traditional Slovenian companies do not necessarily need digital transformation. Their business models are more structured, slow and established; hence, they do not need innovation. Their main concern is more or less just repetitive actions. In this regard, digital transformation could contribute a lot to action efficiency. On the other hand, small companies are way more motivated in terms of digitalization since they want to offer something new. *"Let's say we have a great (small) company in the metal industry. (...) They get an inquiry on the offer from abroad because the company is fast in doing things. But when this inquiry comes, the metal company needs two to three days to build the offer. We have now built them, and this is a total digital transformation, a feature on their web page, where customers or potential customers can upload discrete files, the 3D designs they want the company to build for them. (...) In the next half a minute, the company gets an offer. (...) This is a competitive advantage."* (Company 5)

3.5.1 Common findings on the digitalization level of industries

In this section, the common findings are addressed on the use and degree of digitization of the industries of the customers of the interviewed companies.

Healthcare. The public healthcare sector cannot use all public funds because they do not have enough people to manage the scale of the projects and therefore they are not able to fully utilize the available resources. When it comes to moving to the cloud, healthcare institutions are still not in favour of moving their

data to the cloud, but the situation is slowly improving and they are becoming more accepting of the move in the future.

Banking. Data cannot be leveraged in a way that would benefit banks and financial institutions, because of the General Data Protection Regulation (GDPR). When it comes to moving to the cloud, banking and financial institutions are becoming more and more accepting to transition their key infrastructure to the cloud. The thing holding them back is regulation.

Online gambling and gaming. The newest technologies are primarily used to detect fraud and identify addictive behaviour. Most of the companies in this industry have already transitioned to the cloud.

Manufacturing. High downtime costs are incurred when a digital solution fails, so manufacturers prefer companies and solutions with a proven track record and do not take risks when digitizing, so the transformation process takes more time. Cloud adoption is high, because of the amount of data generated by industrial IoT.

3.6 Policy

Improvement of the policies. In terms of legislation, most managers think there is still a lot of room for improvement, especially in terms of who has control over the data. In Slovenia, there are national healthcare databases, which can be accessed and controlled by three different entities. These entities include the National Insurance Company, the National Institute of Public Health and the Ministry of Health. None of these can fully control those databases because of bureaucratic reasons (all three entities have to agree on certain actions). Hence, innovation and usability are limited. The progression and usability of these databases depend on the politics and relationships between these entities. This results in delays in projects; some of them have been stuck for five years, seven years or even 15 years. *"Simplifying public relationships between public administration entities would do wonders. And also, having the legislation on personal data processing more transparent, and more up to date."* (Company 2)

Taxation. The majority of tax laws were created long before the digital economy existed. MEPs are advocating for a global minimum tax rate and new taxation rights that would enable more taxes to be paid where value is created

rather than where tax rates are lowest. This would help stop tax avoidance and make taxes fairer (European Parliament, 2022).

Taxation could affect several important factors. One of them is the attraction of foreign talent. Tax incentives for foreigners that would want to work in Slovenia could boost areas with a shortage of workers (e.g., engineering). Many managers agree taxation should be modified to make Slovenia more appealing to the foreign workforce. *"I agree that we should maybe raise the tax on assets or let's say re-organize all these taxation systems, but when we are talking about the talents and engineers and so on, the personal income tax is too high."* (Company 11)

Furthermore, as already mentioned in the previous section, a lot of domestic engineers work for foreign companies through sole proprietorship due to tax reasons. Modification of the tax brackets would not be sufficient because this phenomenon is only common for ICT businesses. To make this system fairer in the context of ICT, the changes themselves would be too big. *"(...) Taxation needs to be simpler, yes, but there must not be a big difference because I do not think that system was created for ICT companies to pay their people without taxes."* (Company 4) On the other hand, employing through sole proprietorship (hiring services) has a lot of benefits for employers and also employees. Both parties can in a way play the system. Employers do not need to pay social security costs since they technically only pay the "invoice" for services provided by the sole proprietor employee. If the employee works just for one company full-time, the tax authorities will quickly notice this and tax him the same, as he would be taxed if he would be employed full-time in the company. This is why, a lot of companies try to employ sole proprietors for only 80 percent of the working time, and the rest of the work they do for some other company. *"We have had more of this second type (sole proprietorship) before, but as you probably know, the tax authorities have said that if they work exclusively for you, then that is the same as a full-term employee contract, and they will be taxed exactly the same as if they are employed. (...) But having full-time employees employed via this sole proprietorship contract, we are not doing this anymore, because it is not allowed. (...)"* (Company 2)

European and government tenders and grants. When assessing the development strategy of Slovenia (The Government of the Republic of Slovenia, 2016), construction projects for broadband infrastructure and R&D activities in the ICT sector are demanding investment projects. Additional training is needed for personnel who prepare public tenders and contract administrators since a lot

of them are not prepared properly (The Government of the Republic of Slovenia, 2016). Grants and tenders on either the national or European level are used to stimulate companies in the process of digitalization, to be competitive in the long run. This helps companies who do not have an investment potential or pre-required funds to further develop business operations. Smaller or less developed companies usually do not know how to approach digitalization. These kinds of schemes or tenders force them to go through a certain process of defining a strategy, outlining and tackling different challenges, setting goals and providing solutions. There are two perspectives on grants. One is purely financial, while the other covers the improvement of the quality of digital transformation, *"(...) These kinds of tenders, they usually have certain scoreboards and certain criteria which you need to meet to be eligible for this funding."* (Company 6)

The empirical findings also describe the process of acquiring a publicly-funded tender. Most interviewees mentioned a lot of complexity when trying to get public funds. Some of the managers stated that for some tenders, it was completely unclear what these tenders would actually bring. Furthermore, they struggled because they were not able to identify what information they should put in to get funds. *"(...) We did not have a good experience, the problem was, more or less, that we did not have guidance on how to apply for these grants. But this was some time ago, it was very difficult to identify what are the key points in the application process (...)."* (Company 11) To be more prepared, companies hire external companies which specialise in filling out the application and guiding the company through the application process. Some of the managers and even CEOs were very vocal in expressing their disagreement with the process of acquiring these tenders. *"(...) (external companies) would not be needed if the process itself was clear, and transparent enough. (...) I would do it differently. First, with pragmatic, faster decisions, I would not insist on some details, which can be checked afterwards. Because you know, to prepare such an application, I state that everything is true. And then afterwards, come and see, check out the books..."* (Company 11) On the other hand, there were also some positive practices in that regard. A good internal organization and well-informed and trained staff could provide quick and easy solutions without outside help. *"I have had mostly positive experiences because this money is coming from the sky and you must be smart to be the first to catch it. We first set up a special part of the administration in accounting which knows these administrative processes. We have developed this administrative part, so when we enter any such project, the whole process is much easier."* (Company 14)

Conclusion

Based on the empirical results, several conclusions can be drawn, with the key findings presented in Table 2. First, only a small part of companies in Slovenia are fully digitally transformed. There is a huge potential in the market, as about ten percent of companies have started digital transformation, and of those, only about 20 percent have completed it. (Company 5) For the remaining companies to continue to drive digital transformation, they need to integrate big data into all of their business functions and leverage the newest technologies such as AI, machine learning and IoT.

Internally, Slovenian ICT companies have digitally transformed most aspects of their businesses. Almost all companies have fully digitally transformed R&D using DevOps practices, but greater discrepancies can be seen concerning sales. In terms of digitally transforming the products and services they offer, large companies see digital transformation as a cultural and technological shift that requires companies to make significant changes in the way they operate and deliver experiences and benefits to their customers, while smaller local providers view digital transformation more from a technological perspective, offering niche solutions for a specific business unit or process and not focusing as much on the company as a whole. Smaller local companies are better than larger corporations in terms of adapting their solutions to the local market because large corporations have to adhere to global standards that are later adapted to local needs. On the topic of cloud computing, all companies agreed that moving to the cloud is a critical component of effective digital transformation, but mainly due to industry-specific regulations, companies have not yet fully moved to the cloud and are using hybrid solutions.

Digital transformation is creating an interconnected, technical framework that underpins and supports business model innovation. Changing customer preferences are accelerating the transition from license-based to subscription-based offerings, and if companies want to sell their products as a service, they must be digitally transformed.

In terms of human resources, there is a shortage of skilled labour in most companies. Competition for qualified workers is increasing, as globalisation has created the possibility of remote work, which leads many Slovenian professionals to work as sole proprietors for foreign companies (with higher remuneration) instead of being employed in Slovenia. In addition, many ICT companies face the challenge of keeping their employees up to date with the constantly evolving technologies.

Finally, there will be a lot of funds available for Slovenia coming from the EU to accelerate digital transformation. However, many companies speculate that the process of receiving these funds will be complicated. It needs to be simplified to be effective. In addition, many companies mentioned that public relationships between public administration entities have to be simplified. Regarding taxes, respondents agree that taxation must be changed to make Slovenia more attractive to international workers (the personal income tax is too high). However, the phenomenon of working for foreign companies as a sole proprietor is only common in the ICT sector, therefore it is highly unlikely that there will be modifications concerning the structure of tax brackets.

Table 2. A summary of key findings

Digitalization aspect	Key highlights
The characteristics of DX as users	• R&D part is fully digitalised (DevOps and CI/CD), sales depend on the number of customers (CRM).
The characteristics of DX as suppliers	• Big corporations: mostly the culture shift, solutions that cover all areas of the business; vertical integration. • Smaller providers: mostly technological shift, niche solutions.
Motives, drivers of digital transformation as users	• Transition to the cloud: (1) Higher scalability: companies can cope with sudden increases in demand by being able to deploy more technological resources when needed. (2) Faster product release and faster time to market: turnkey computing solutions shorten the time it takes from conception to deployment. (3) Reduced capital investment: cloud expenses are incurred on an ongoing basis so organisations can focus on leveraging IT's services rather than spending resources on their infrastructure. • Business model innovation: from licences to subscription-based. • Process efficiency leads to higher productivity and quality.
Motives, drivers of digital transformation as suppliers	• Improve decision-making, efficiency and productivity, better customer experience, business model innovation, better profitability, agility and resistance to disruption.
Obstacles in digital transformation	• Employees - lack of qualified workforce and knowledge. • Different levels of digitalization within the customer base. • Lack of communication between business owners and government in terms of supporting digital transformation. • Reluctance in shifting the internal culture.
Impact on business performance	• Shift in the business model: from products & services to everything as a service through a subscription. • An improvement in efficiency, forecasting, quality, planning and competitiveness. • More predictable and steady income streams.
Other impacts	• Change/shift in the business model. • Employees working remotely. • Business model required closer contact with the customer. • More skilled employees are needed.
HRM challenges	• Shortage of skilled labour (existing and additional). • Keeping the employees up to date with the continuous change in technology. • Foreign competition for employees (sole proprietorships). • Internal training to support digitization. • Employee flexibility (remote work).
Policy perspective	• More clear and easy step-by-step process to acquire subsidies. • Simplifying relationships between public administration entities. • Personal income tax should be lower to maintain the workforce.

Source: Own work (2022).

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III.

TALENTS, SKILLS AND HUMAN RESOURCE MANAGEMENT IN THE METAVERSE

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MANAGING THE GEN Ys AND Zs: FINDING A BALANCE BETWEEN EXPECTATIONS AND BUSINESS NEEDS

Introduction

In a constantly changing world, companies must face different challenges that involve every aspect of their organizations, and one of them is managing the new workforce, namely Gen Ys (also referred to as Millennials, born between 1980 and 1994) and Gen Zs (born between 1995 and 2010).

Compared to senior-level employees, the new workforce is bringing opportunities, such as creativity and digital skills, along with many talent management challenges that companies must tackle, such as high expectations towards the work-employment relationship, sense of entitlement, lower work centrality, and lower loyalty to an employer (Twenge et al., 2010; Kuron et al., 2015). Deloitte's (2022) report stated 40 percent of Gen Zs and 24 percent of Gen Ys (coming from 46 different countries) would like to leave their jobs within two years. Besides good working conditions such as salary, flexibility and work-life balance, the new generations value interesting work, achievements, and advancement (Ng et al., 2018).

This chapter aims to describe the perception Slovenian companies have about Gen Ys and Gen Zs on the workplace, with the purpose of helping Slovenian companies understand and address this challenge to shape a working environment that can put young employees in the best position to contribute to organizational goals. The chapter starts by analysing the relevant literature regarding expectations, values, and behaviours of Gen Ys and Gen Zs on the workplace

and continues with an analysis of the best practices for managing them from abroad. Next, the chapter provides the results of the interviews conducted with human resource managers from some of the best Slovenian companies and discusses the main findings by including some managerial implications.

1 Gen Y and Gen Z at a workplace

In recent times, generational changes in values, expectations and work attitudes have pushed business leaders to adapt their talent management approach. Young talents have been behaving more like consumers in a workplace by continuously looking for opportunities to self-develop by enabling the best performance opportunities (McCrindle & Fell, 2019). Now more than ever, human resource (HR) managers must adapt and understand what young talents expect from the job, managers, and companies to secure the best candidate at their workplace (Khoreva et al., 2017). In Table 1, expectations in commonalities and differences are highlighted in the workplace between Gen Ys and Gen Zs based on global research. A more detailed analysis of characteristics of Slovenian Gen Ys and Gen Zs related to work and employment can be found in Pavasović et al. (2022) in this book. The three key attributes have been investigated in more detail to understand the current expectations of the young further. It specifically relates to rapid career development and advancement, prominence on work/life balance and impactful work experience (Ng et al., 2010). Given the current career-related expectations in Table 1, challenges are raised, which led to HR managers facing the "want it all" and "want it now" mentality from the young. As seen in Table 1, both generations are driven to achieve their highest potential, leading companies to search for best practices to successfully match the values and needs of young during the job search phase. Transparency is the first factor - young are driven and will bring fresh ideas to exceed the current work goals if they are aware of the restraints and challenges that the organization is facing.

Young enjoy being motivated by challenges that keep them engaged - they do not like to be kept in the dark. Secondly, trust is vital to making young feel safe while feeling comfortable enough to share information or ideas to support one another. Freedom of speech and expression is essential; the young want to have the same right at the office despite the level of the organization – they want to be heard and respected without feeling resented or disrespected. The young want to feel socially connected with their needs and ensure they are met at the workplace (Kuron et al., 2015).

Table 1. Expectations commonalities and differences in a workplace: Gen Ys & Gen Zs

Common expectations	Differences in Gen Ys compared to Gen Zs	Differences in Gen Zs compared to Gen Ys
• Transparency, environmental safety, inclusion, and diversity • Opportunities for advancement, people skills training, continuous and real-time feedback, and coaching/mentoring • Flexibility (including remote/hybrid opportunities), health and well-being support	• Idealistic (driven by purpose), inclusivity and diversity are more valued • Pursuer multiple job roles, collaborative working, and training rely on digital and communication • Team-oriented, in-person surrounding, and salary is not a priority	• Pragmatic (valued more security and paycheck) and competitive • Continuous skill improvement, Pursuer different career paths, entrepreneurial mindset, and face-to-face communication • Independence of working in own space and willingness to work hard

Source: Kuron et al. (2015), Gallup Inc (2016). McCrindle & Fell (2019),Patel (2017).

Opportunities to learn and grow have been significant when applying for a job among young job seekers. The demand for equipping the young with transferable skills is rising due to the need for personal self-development, especially people skills since it opens doors to career advancement opportunities (Mihelič et al., 2021). Coaching and mentoring are often requested due to real-time feedback and communication (Kuron et al., 2015). Young are ready to adapt to necessary changes to aid their personal growth and development and address workplace challenges (McCrindle & Fell, 2019; Gallup Inc, 2016).

Young want flexibility and well-being in the workplace. During post-pandemic times, remote work opportunities allowed Gen Z and Gen Ys to be more demanding in changing the standard working conditions. Prioritizing work and diminishing life expectations is not a consideration for the younger generations (Business Insider, 2021). Deloitte's (2022) report observed that the pandemic has sped up the work process when associating digital transformation and the demand amongst the young; flexibility at work has been a topic of discussion amongst the talents.

Table 2. Gen Ys and Gen Z comparison to work/life and well-being expectations

	Importance of work/life balance & well-being (%)	Preference in remote work (%)	Working remotely part of the week (%)
Gen Ys	39	76	49
Gen Zs	32	75	45

Source: Deloitte (2022).

Health and well-being have gained more attention in the past two years but being more critical for at least a decade, especially during the post-pandemic times for the young. Deloitte's (2022) global survey reported that 39 percent of Gen Ys believe great work-life balance, accompanied by personal well-being is important

when choosing to work for an organization compared to Gen Zs at 32 percent, as presented in Table 2. The pandemic has sped up the remote work process; when associating digital transformation and the demand amongst the young, flexibility at work has been a topic of discussion amongst the young. Furthermore, Deloitte's (2022) survey reported that 75 percent of Gen Zs and 76 percent of Gen Ys would prefer to be between working remotely and on-site or working entirely remotely. Only 49 percent of Gen Zs and 45 percent of Gen Ys shared that they could only work remotely during the week. The survey also shared the benefits of working remotely for the young - including financial savings, spending more time with loved ones, the convenience of getting to work and more time for oneself.

In contrast, some of the drawbacks of remote work include difficulty forming relationships with colleagues and difficulty searching for mentorship or sponsorship opportunities. The report highlights that the young generations experience regular stress and anxiety due to various drivers like long-term financial futures and day-to-day finances. Due to unsettling times, burnout remains prevalent amongst both generations. Further, the survey stated that many Gen Zs and Gen Ys are more likely to experience burnout due to the demands of their working environments leading to higher turnover rates amongst organizations. Again, work-life balance is a priority, and young talents are not prepared to risk their well-being. To avoid these setbacks, they are looking for an organization that supports and commit to its employee's values and genuinely care about the people in the working culture (Deloitte, 2022).

With constant external changing that influence the change in the expectations of the young, managers are faced with filling the gap between the young's expectations and how to successfully manage them in a workplace (Deloitte, 2022). For HR managers to better understand the expectations of young talents in a workplace when recruiting and retaining them successfully, a psychological contract (PC) should be reviewed (Zupan et al., 2018). PC is implicit, meaning it is a concept that refers to an individual's belief system, obligation and expectations related to an employment relationship (Baruch & Rousseau, 2018). Relational PCs signify long-term security, transparency, and relationship-building past workplace conditions, while transactional PCs signify short-term expectations and minimal task completion or responsibility (Rousseau, 2000). Despite often reported lower work centrality for the Gen Ys and Zs, which would make them lean towards more transactional PC, recent research does not confirm this, and relational PC seems to be of greater importance. It is essential to establish a good relationship with Gen Ys and Gen Zs and genuinely get to know them on an individual professional level (Zupan et al., 2017).

Young talents want to feel connected to the organization, which allows them to stay engaged, motivated and loyal at the workplace. Further, young talents are very passionate and enthusiastic - this can create a challenge due to the fear of bringing it to a workplace and possible rejection amongst the work community (Patel, 2017). Managers should work towards providing continuous feedback based on performance as well as suggesting improvements.

Gen Zs and Gen Ys like to adapt to the workplace culture to ensure overall success for themselves and the organization. Furthermore, understanding the organization's mission statement, culture and values should be established on a high level. Next, the young generations pride themselves on continuous learning and self-development, hence managers must meet their learning expectations (Patel, 2017). Managers should assist in supporting them through mentoring, coaching, or establishing a path to combat the learning goal at the workplace. Lastly, freedom/flexibility is an important factor - especially in post-covid times for Gen Zs and Gen Ys (Business Insider, 2021). Companies should allow young talents to be self-directed when dealing with projects, flexible work schedules and opportunities in remote work. The predispositions mentioned allows the young talents to maximize their productivity and create loyalty between them and the company (Zupan et al., 2022). To establish a successfully managing style for Gen Zs and Gen Ys, four criteria are important to consider: fostering connections, being purposeful, career development and lastly, flexibility and freedom (Pires, 2017).

2 Best practices to manage Gen Ys and Zs

This new cohort of workers is creative, adaptable, values-driven, and intentional in their career choices (Madison, 2022). This section of the chapter provides examples of practices and recommendations that companies use when attracting and retaining young talents.

Design work that is interesting and challenging. Young talents prefer interesting and challenging work (PWC, 2021). Therefore, supervisors in companies need to listen and support the young talents to move into the field they are keen on pursuing. *"The frameworks and structure of the apprenticeships give us and the young person real direction and support to move into the field of work they are interested in."* (The Guardian Jobs, 2022)

In addition, they are willing to take responsibility to progress and build their careers quickly. *"Let younger hires know they'll be trusted to lead projects from*

day one. Many graduates are eager to start working and build their careers quickly; they want to know you'll help them progress." (Forbes, 2022) Gen Ys have specific expectations such as recognition for their efforts, having young co-workers, a clear career path, and the support to increase their personal growth (PWC, 2021). Gen Zs, on the other side, value work-life balance and flexible work much more than having a clear career path (Jindal, & Shaikh, 2017).

Educate and further develop them. *"In order to attract diverse talent, recruiters and businesses should visit schools, implement inclusive graduate programs and educate key decision makers on the importance of hiring young and diverse staff."* (The Guardian Jobs, 2022).

Besides cooperation itself, companies are also offering scholarships or some other type of financial support: *"Offering to pay for professional development is a great way to attract young talent who are looking to grow and expand their skill set. I consider the scholarships that we offer to be an investment in our team's future," or "build an internship program with local universities. You will not only attract the talent of college students who need the experience, but you will also help them nurture their skills and prepare them for full-time positions."* (Forbes, 2022)

Companies focus on developing skills and knowledge internally and not relying only on academic education, so they proactively invest in training. *"We took a proactive decision to invest in a £1 million in-house training academy and engineering workshop."* (The Guardian Jobs, 2022)

Offer them flexible work schedules and work time. The new generation of workers is setting new expectations for the work environment, and they are keen on flexibility when relating to work schedules and remote working. *"The best way to attract young talent to your company is to introduce a positive and flexible work environment, like what Google does. The Google work culture is so attractive because it focuses on keeping its employees happy while maintaining their productivity. Their culture is founded upon trust, and employees have the liberty to work whenever they want and however, they want."* (Forbes, 2022)

"Generation Y workers clearly prefer jobs defined by task, not by time. They want to be compensated for what they produce." (Jindal & Shaikh, 2017). Another example is Best Buy - they introduced a program called "Results Oriented Work Environment" (ROWE), where more than 60 percent of its 4,000

employees are now judged solely on tasks or results. This model is a *"powerful way to draw in the newest crop of workers"* (Jindal & Shaikh, 2017).

Building trust among all employees and the company. Building trust amongst employees encourages them to have the company's best interest in mind rather than their reasons. According to the CEO of Zappos, building trust amongst all employees is essential in creating a desirable work environment: *"Trust is a fundamental part of a business" and "a brand succeeds or fails based on whether or not people trust the company with which they're about to do business."* There are many ways to build trust amongst employees; for example - Zappos encourages employees to spend time together outside the workplace. They are fostering open and honest communication and implementing training programs to find the best fit for both employer and employee. Zappos even gives new hires $3,000 if they decide not to take the job after they complete training; this ensures that the employee and company are a good fit for each other (Kilber et al., 2014).

Social media presence and corporate brand name. Young generations have a high media presence; therefore, companies need to be present and create a well-recognized brand name. According to Forbes (2022), *"One piece of advice for attracting young talent to a company is to have a strong social media game. If you can provide content of value on the platforms they frequent and communicate that you are a strong and cool brand, you will most likely have a lot of candidates who will apply to your company's open positions. Being active on social media, especially on platforms that have a large Gen Z base, is important to appeal to new talent."* Companies should adapt and use current social media platforms to stay up to date with trends. For example, video content creates the most engagement and is likely to help you reach more youthful groups (Forbes, 2022).

Social media is not only used to build a firm brand name, yet it can also be used during the recruitment process like; LinkedIn, which is a widely used platform. *"You'd be surprised how many young people use LinkedIn to find new job opportunities and work with new companies. By tapping into this platform, you can easily find top talent that boosts your business."* (Forbes, 2022)

Corporate social and environmental responsibility. As mentioned before, young generations consider relational aspects (e.g., care, communication, trust etc.) necessary. Companies should be socially and environmentally responsible. Working for an employer who cares about the environment and has a sense of

social responsibility are important factors for the young (Jindal & Shaikh, 2017). *"The younger generation is vocal and insistent that businesses also take part in important social causes. One way to appeal to younger job seekers is to highlight the values and causes your brand supports, whether it's greater inclusivity or a commitment to environmental causes. Such matters play a big role in attracting young talent."* (Forbes, 2022)

Prepare your supervisors for a new generation of workers. Finally, all employees, especially supervisors and HR managers, should be aware of the expectations of young talents because they value open and honest leadership communication (PWC, 2021). According to the UK country manager at LinkedIn: *"Employers must look past traditional criteria when assessing up-and-coming candidates and adopt a skills-based approach to hiring – one that assesses candidates on their transferable skills and future potential, not just their formal qualifications or previous experience."*

3 Research on Slovenian companies' challenges and approaches to managing Ys and Zs

3.1 Methodology

The qualitative study is based on semi-structured interviews with HR managers or those responsible for HR strategy execution. Since we aimed to identify good Slovenian practices for managing young talents, we purposefully targeted companies that are industry leaders and recipients of awards by professional associations, such as best employers or best HR managers (i.e., Zlata Nit award, Most respected employer, HR manager of the year, best HR project of the year).

Interviews were conducted with companies of different sizes from various industries and regions. Out of the 28 interviews, 19 were from large companies, and nine were small and medium enterprises (SMEs). Looking at the industry, ten companies are part of the manufacturing industry, nine work in IT & telecommunications, and nine work in the service industry. Regarding location, 19 companies have facilities in Ljubljana and nine outside Ljubljana. Companies' names are coded (Table 3).

Table 3. Sample characteristics

Code	Industry	Size	Location	Ownership	Interviewee's Position(s)	Interviewee's Gender
Company 1	Manufacturing	Large	Ljubljana	MNE subsidiary	HR Head of Development	Male
Company 2	Services	Large	Ljubljana	Domestic	Potential Management Director (HR, MKT)	Male
Company 3	Manufacturing	Large	Outside Ljubljana	MNE subsidiary	Regional HR Manager	Female
Company 4	Manufacturing	Large	Outside Ljubljana	MNE subsidiary	HR Director	Female
Company 5	IT & telecommunications	Large	Ljubljana	MNE subsidiary	Vice President, HRM	Female
Company 6	IT & telecommunications	SME	Ljubljana	Foreign owned	People & Culture & Communication Officer	Female
Company 7	Services	SME	Ljubljana	Domestic family owned	HR Development Manager	Female
Company 8	Services	Large	Outside Ljubljana	Domestic	Workers' Director	Male
Company 9	IT & telecommunications	SME	Ljubljana	Domestic family owned	Head of People Development	Female
Company 10	Services	Large	Ljubljana	Domestic	Head of Training and Personal Development	Female
Company 11	Services	Large	Ljubljana	Foreign owned	Board Member for Strategic HR Development	Female
Company 12	Services	Large	Ljubljana	Domestic	HR Manager	Female
Company 13	Manufacturing	Large	Outside Ljubljana	Domestic family owned	HR Manager	Female
Company 14	Services	Large	Outside Ljubljana	Domestic	Head of HR	Female
Company 15	Manufacturing	SME	Outside Ljubljana	Domestic family owned	Assistant to General Manager	Female
Company 16	Manufacturing	SME	Outside Ljubljana	MNE subsidiary	HR and Project Manager	Female
Company 17	IT & telecommunications	SME	Ljubljana	Domestic	Chief People Officer	Female
Company 18	Manufacturing	Large	Outside Ljubljana	Domestic	Director of HR	Female
Company 19	Manufacturing	Large	Outside Ljubljana	Domestic	Executive HR Director	Female
Company 20	Manufacturing	Large	Ljubljana	MNE subsidiary	Regional HR Director	Female
Company 21	IT & telecommunications	Large	Ljubljana	MNE subsidiary	Senior Director, People, Culture & Communication	Female
Company 22	IT & telecommunications	SME	Ljubljana	Foreign owned		Female
Company 23	IT & telecommunications	Large	Ljubljana	Domestic	HR & General Affair's Manager	Female

Table 3. Sample characteristics

Code	Industry	Size	Location	Ownership	Interviewee's Position(s)	Interviewee's Gender
Company 24	Services	Large	Ljubljana	MNE subsidiary	People & Culture Manager	Female
Company 25	IT & telecommunications	SME	Ljubljana	Domestic	Chief People and Performance Manager	Female
Company 26	Manufacturing	Large	Ljubljana	MNE subsidiary	Regional Head of HR	Female
Company 27	IT & telecommunications	SME	Ljubljana	Foreign owned	HR Specialist	Female
Company 28	Services	Large	Ljubljana	Domestic	HR Manager	Female

Source: Own work (2022).

The interviews were conducted between August 24rd and September 6th and, on average, lasted between 60 and 75 minutes. After some introductory questions regarding HR challenges and strategy, we then focused on difficulties in attracting and managing talent, differences in expectations of young talents compared to the previous generations regarding work and employment relationship, companies' recruiting and onboarding strategies, how they develop young talents, and their issues related to well-being and mental health. HR managers were also asked to share examples of the most effective managerial practices for young talents in the company.

3.2 empirical analysis and results

As highlighted by the theory, Gen Ys and Gen Zs have different values, behaviours and expectations compared to the previous generations, which was confirmed by the interviews (Table 4). *"Our main challenge will be adopting this generation because the opposite will not happen."* (Company 19) is a quote representative of the overall situation. In general, an SME's working environment better adapts to the needs and expectations of young talents while, in a large organization, the young must adapt more to the working system. The most frequently mentioned expectation of the new workforce regarding their relationship with the workplace is flexibility: the ability to work from home (fully or partially) with flexible schedules, sometimes even by relocating.

As Company 10 pointed out, *"They do not like meetings in person, because it might be a waste of time."* while Company 8 stated that *"We are facing a lack of interest from the young since they do not like the fixed working schedules."* Companies from the manufacturing offer flexibility to a lower degree compared

to services and IT & telecommunication. Freedom was another value highlighted by companies, not only in the sense of flexibility but in the sense of *"being able to try new things, both on the job and learning side"* (Company 21) and *"giving responsibility through autonomy and empowerment."* (Company 22)

Table 4. Expectations of Gen Ys and Gen Z from their employers

Expectations	Illustrative quotes
Flexibility	*"Four/five years ago the most important thing was the salary, now is: how can I work? Can I work from home? Can I have a work-life balance?"* (Company 27)
Freedom	*"They really appreciate this feeling of freedom so that they can work when ready, when in a good mood. It's midnight. It's afternoon. It's morning, it's evening, it's night. They are working whenever and wherever they want."* (Company 10)
Purpose	*"Young employees want to know more about why they are doing something, what they are doing and understand the vision."* (Company 17)
Diversity & Inclusion	*"Young employees are aware about the importance of diversity and inclusion."* (Company 24) *"It's very important to have diversity and diverse environments, where others develop yourself, and you feel better if you are with people who are not like you, even though it's very hard to build that mentality."* (Company 5)
Self-development	*"We put a lot of emphasis on feedback in our everyday life because it's really important that you get information from others: how they see you, how they perceive you, what they appreciate about you and your work. So of course, it's always good to hear what do others appreciate about you and on the other hand to understand what are they missing."* (Company 22)
Visibility	*"Young people would like to see two levels higher than you and be exposed."* (Company 1)

Source: Own work (2022).

Purpose, the ability to see the bigger picture and align personal goals to the company goals, is another key expectation of the young, since *"For them is even more important to understand why for whatever aspect."* (Company 21) and *"The purpose is one of their main drivers."* (Company 19) Self-development, as the process by which young gain additional skills and knowledge, is an important expectation highlighted in the interviews - since already in the recruiting process, companies report young asking, *"What kind of development activities will I have?"* (Company 20) or *"What personal development plans are there?"* (Company 23). *"The new generations would like the company they work for to be aware of diversity and inclusion."* (Company 24); diversity is intended as *"Employees coming from different countries and different functions, so everybody learns from each other."* (Company 18) Visibility, as the possibility to be seen and get in contact with professionals ranked higher in the hierarchy, is a key expectation of the young.

Given the young's expectations regarding the working environment, it is essential to understand what makes a company attractive to them, as reported in Table 5. The first aspect is the brand itself: *"Young people apply because we are*

a highly recognizable brand." (Company 12) or because *"We have an excellent reputation as a good employer."* (Company 19). This is also associated with the possibilities to grow since *"It is important to offer a lot of opportunities to grow, develop, and be promoted."* (Company 16) also because *"It is important to have a high internal mobility to retain them."* (Company 21) Large companies stressed that the possibility to work abroad and growth opportunities are their main strengths in attracting talent. Next, culture is fundamental, as the young can find their sweet spot where they can perform best. Companies are aware since *"They give priority to the cultural fit over technical skills when recruiting."* (Company 6) and *"Not every culture is for every person."* (Company 22)

Table 5. The attractiveness of employers

Characteristic of an attractive employer for young talents	Illustrative quotes
Culture	*"Being open and authentic at work and being able to challenge each other, even if you are a bit different or have different viewpoints, you're not shunned."* (Company 17); *"The culture is what keeps young people motivated to work and proud of what they are doing."* (Company 21)
Brand	*"We have a lot of candidates that are saying: "Yeah, I know X, it's a good company. I heard a lot good about it". The people who are applying really want to work for X."* (Company 9)
Growth opportunities	*"This is a really important part for us, as well as making sure that their skills up are upgrading and that they're learning new things and expanding their toolbox."* (Company 27)

Source: Own work (2022).

As Gen Ys and Gen Zs have different expectations, some specific talent management challenges seem to arise (Table 6). Some companies mention *"not being sexy"* (Company 10) as one of the reasons why they do not attract young talents. In contrast, other companies like Company 14 blame it on *"the location of the facility"* since they are not based in Ljubljana. The low attractiveness to young talents was mostly mentioned by manufacturing companies not located in Ljubljana. In these cases, it was also stated that talents were mainly recruited locally because of companies' role in the local communities. Some other challenges employers face when managing young are their unrealistic workplace expectations and lack of patience when building their careers. Company 1 mentioned, *"A pair of romantic glasses that young people wear before coming to the workplace,"* which leads to a mismatch of expectations and the breach of the psychological contract between employee and employer. At the same time, *"They are sometimes impatient: if they do not see the opportunity to grow, they leave."* (Company 3), which constitutes a serious threat to retaining talent. A challenge that many Slovenian companies are facing *"arises if the company does*

not create an environment where they can develop." (Company 5) Companies located outside Ljubljana shared that local talents have expectations which are different from talents coming from Ljubljana, especially regarding their work ethic: Company 13 stated that *"When you get to know a boy or a girl from a farm, they are already used to working."*

Table 6. Talent management challenges related to Gen Ys and Gen Zs

TM challenge	Illustrative quotes
Attracting young talent	*"We are not fancy in their eyes, we are not sexy, we are not attractive."* (Company 10)
Unrealistic expectations	*"To tackle unrealistic expectations, we are brutally honest since the first interview."* (Company 5)
Lack of patience	*"Young employees want to climb the ladder up too fast. (Company 2); Young employees don't have the patience to wait for promotions."* (Company 19)
Retaining Talent	*"A big challenge is retaining young talents, that is why we are working on the engagement of our associates."* (Company 1)

Source: Own work (2022).

Opportunities for development (Table 7) are a key success factor when retaining employees, and Slovenian companies utilize different approaches. Mentoring is a common one; they deal with the *"transfer of professional knowledge"* (Company 3) and the *"employee assessment"* (Company 19) so that the young employee is constantly learning.

Table 7. Development methods applied by companies to develop young talents

Development method	Illustrative quotes
Mentoring	*"Everybody gets his mentor, and he's all the time with him. (Company 4); Mentorship is the most effective training method because it's one-on-one. It's directly giving knowledge with a personal touch."* (Company 13)
Hands-on training	*"Juniors develop by growing on the job and getting more and more responsibilities."* (Company 22)
Training	*"We are switching the responsibility from the employer to the employee, especially in training, to achieve a growth mindset."* (Company 20)

Source: Own work (2022).

Learn-by-doing is also part of the development; as Company 21 pointed out, *"we have mentorship, but the young talent has to spend time on his current job to learn."* In other circumstances, training is used extensively, and they can be "online" (Company 3), *"led by expert employees"* (Company 8), and *"external related to soft skills."* (Company 16) All companies pointed out the importance of learning by doing without differences in size and location.

Regarding talent management practices explicitly aimed at young employees (Table 8), cooperation with educational institutions such as *"High Schools and Universities"* (Company 19) is a significant part of the recruiting process since *"it is imperative to find talents even before they enter the market"* (Company 27) and use it as *"an opportunity to show them how the culture looks like."* (Company 20)

Table 8. Employers' talent management practices aimed at young employees

TM practice	Illustrative quotes
Recruiting through social media (e.g., LinkedIn, Facebook, Instagram, Twitter)	*"We need to define the channels through which recruitment makes sense, so LinkedIn is definitely one of the channels."* (Company 21)
Cooperation with educational institutions	*"We work with a lot of universities and we try to help on different projects which is a big opportunity to attract young talents."* (Company 22)
Recruiting through referrals	*"Employees connect the company with their friends if they find out they could be a good fit."* (Company 20)
Scholarships	*"We want to engage young talents with scholarships, through the practical work in our processes."* (Company 19)

Source: Own work (2022).

Manufacturing companies start collaborating with educational institutions already in high school, while services, IT, and communication focus more on university students. A more and more popular channel is social media, in particular LinkedIn, which is used to *"publish job ads"* (Company 25) and *"spread the culture."* (Company 20) Employee referrals are widely used to find people with *"a cultural fit"* (Company 20), and in some cases, *"If the referred gets through the trial period, the employee is compensated."* (Company 2) Scholarships are more common in manufacturing industries but are proven effective in *"engaging them early"* (Company 19) and *"equipping them with the necessary knowledge."* (Company 16) Some companies offer to recruit employees to *"upgrade their skills."* (Company 13)

Table 9. Well-being practices

Expectations	Illustrative quotes
Internal support	*"(Initiative name) was all about: who am I as a person? How can I express my full potential?"* (Company 5)
Lifestyle training	*"We organize free lectures on stress relief, or we invite healthy-lifestyle professionals."* (Company 19) *"In this remote setting, we are educating people on how to set boundaries."* (Company 22);
External mental health support	*"Therapists would decide whether it's necessary to have more psychological sessions, and we actually had two cases for now."* (Company 16)
Sports activities	*"There is a sports section in the company where we somehow contribute to or organize sports activities."* (Company 21)

Source: Own work (2022).

Mental health is nowadays a widely discussed topic, and all the interviewed companies were aware of the importance of this issue (Table 9). The most common ways that these issues manifest in the interviewed companies are absenteeism and burnout. Absenteeism was mentioned as a common problem in manufacturing companies and services.

To tackle it, companies reported having some preventive practices (Lifestyle training and Sports activities) and curative (Internal and External support). Lifestyle training focuses on *"stress-relief"* (Company 19), *"setting boundaries in a hybrid environment"* (Company 22), *"conducting a healthy lifestyle"* (Company 18) and *"well-being in production sites."* (Company 20) Sports activities are also popular, ranging from *"financial contributions to memberships"* (Company 21) to *"sports communities"* (Company 2) and the construction of *"fitness areas nearby."* (Company 8) Companies are as well ready to intervene when the issue arises through Internal support and practices: they range from *"possibilities to take an unpaid leave"* (Company 27) to the establishment of *"special teams dedicated to helping employees facing difficulties"* (Company 1), *"training managers to deal with these issues"* (Company 16) and *"anonymous phone lines where employees can call."* (Company 23) Companies also provide external support in the most serious cases through *"health and mental advisory companies"* (Company 28) and *"psychologists and therapists"* (Company 16), as well as *"specialized experts."* (Company 1)

Companies mentioned some of their unique practices throughout the interviews, and some stood out as unique and innovative. Company 18 elaborated an Assessment Centre for Young Talents already within the onboarding time where they *"try to detect key factors earlier and invite such individuals, but at the same time, check these qualities with tasks. It shows how much a person is team-oriented, or if he works worse in a team or doesn't know how to organize others. After such an assessment workshop, excellent information can be extracted."* A Young Advisory Board (developed by Company 1) helps recruit and engage young talents. As the company says: *"Some special talents have been selected across the company and are in charge of organizing events and assessing other young talents through referral programs."* Company 24 is the only company that mentioned gamification in its processes. Specifically, gamification in online learning: *"We are testing the implementation of gamification in online video-learning materials, but still trying to find a balance between the content needed by the employee and making it fun and interesting."*

4 Discussion

Resolving current challenges pertaining to young talent demands concerning employee aspirations for overall work performance – the psychological contract (PC) must be highlighted to understand the full effects on employment expectations. Zupan et al. (2017) report stated relational PC is more prevailed, which is validated after conducting 28 in-depth interviews across various industries in Slovenia; it has been shown that young talents have a more relational PC based on key expectations that employers mentioned in the results section. There is no distinct difference between industries and their size when analyzing the perceptions of the young; however, the IT/Telecommunication industries are most agile in managing the gap between organizations and future young talents, probably due to the lack of skilled technical talents in the job market. Companies seem to understand expectations and importance regarding well-being as most have mentioned and applied well-being practices within their workplace culture. Some reported that they are working toward finalizing such programs, while few deal with budgetary constraints. Companies recognize the true importance of work/life balance while others are transitioning towards introducing it within their workplace, including offering more remote work opportunities.

Slovenian companies continuously face challenges in talent management (TM) related to Gen Ys and Gen Zs. The significant TM challenges from a company's perspective are unrealistic expectations, followed by a lack of patience and talent retention. While recruiting through social media *(LinkedIn leading in overall social media platform usage)* is excellent, it does not resolve the unrealistic expectations and retaining TM challenges among the young. On a positive note, cooperation with educational institutions has shown a positive count and can be leveraged to its full potential in resolving the two challenges mentioned previously. Various methods of leveraging educational institutions to attract young talents can be applied, like graduate programs, internships, or course project opportunities. However, to retain young talents, companies should leverage the current expectation of the young at the workplace and introduce them in practice while cooperating with educational institutions to build a proper foundation in bringing them into the workplace long-term. Overall, there is no distinct difference between the perception of Slovenian companies compared to global best practices. Yet what stands out is the positive attitude of Slovenian companies in comparison to what is stated in the literature.

Conclusion

To attract high-performing junior employees you need to offer coaching culture and learning and development that challenges new hires. Many practices listed above can help other companies learn from, adjust, or create practices that fit their needs best (depending on the industry, size, location, and company culture).

Young value the relational type of employment relationship much more than transactional. Therefore, companies should put more and more effort into relational aspects such as communication, caring about employees, culture, recognition, respect, and inclusion. Those relational factors are more important for attracting and retaining young employees than transactional factors (e.g., salary). These factors require less direct financial investment but rather personal engagement (time and energy) by mentors, managers, and HR management. In developing relational employment relationships, company culture is an important catalyst, so fostering this kind of culture would benefit the companies.

During the recruitment process, giving them a realistic job preview for a better match of expectations is essential to avoid disappointment later. By having an individualized selective recruitment process, companies can evaluate how well they match company culture and values, leading to better fit. Most companies still believe in developing HR practices for all employees, not focusing exclusively on the young. They also recognize that not all young are the same; therefore, an individualized approach to balance expectations and demands works the best. This confirms the importance of getting to know young individuals, not as members of a particular generation, for managing them successfully.

Finally, a positive attitude should be emphasized by companies towards the young. While in popular press and also in some academic literature there is a considerable amount of negative stereotyping of the young, we were surprised that the attitude of the best Slovenian companies is more overwhelmingly positive. This makes an important difference, because with that kind of attitude they can easier and better manage young talents.

Table 10. Summary of key findings

Youngs' aspect	Key highlights
Common Expectations	• Flexibility regarding a hybrid working-environment. • Freedom of working whenever they feel like it. • Understanding the purpose of each task. • Working in a diverse and inclusive environment. • Having constant chances to develop. • Being visible to higher levels.
Attractiveness of Employers	• Having an open and understanding culture. • Being a well-known brand. • Providing a lot of growth opportunities.
Talent Management Challenges	• Attracting and retaining young talents. • Young talents have unrealistic expectations about the workplace. • Young talents not having the patience to be promoted.
Development Methods	• Mentorship programs. • Hands-on training. • Additional training and coaching.
Talent Management Practices	• Recruiting through social media (e.g. LinkedIn, Facebook, Instagram, Twitter). • Cooperation with educational institutions to attract young. • Recruiting through referrals to find the right fit. • Offering scholarships to engage young.
Well-Being Practices	• Providing external psychological support. • Offering lifestyle training. • Offering external mental health support. • Organizing sports activities.

Source: Own work (2022).

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RESKILLING AND UPSKILLING IN SUPPORT OF COMPANY COMPETITIVENESS

Introduction

Digital transformation may be the biggest challenge of technological advancement for companies. As the skills and competencies are constantly changing, which is something that will only accelerate in the future, companies need to reskill and upskill the existing workforce (Kasriel, 2017). The main reason for that is the lack of the workforce in the labour market, especially the workforce with specific skills (Reymen et al., 2015). Hence, without reskilling and upskilling companies are either forced to hire a competent labour force, which is usually a complex and expensive procedure, or risk having a technologically obsolete labour force and therefore outdated working practices, which thus results in a clear disadvantage when competing with other companies. There are two main reactions to the new trends emerging in the markets – one of them being upskilling (willingness to adopt new skills and prepare employees for advancement in their current role) and the other one being reskilling (willingness to prepare for a completely new job and career change) (Kovács-Ondrejkovic et al., 2019).

The goal of the chapter is to assess how well the analysed Slovenian companies are tackling the challenges of digital transformation in terms of upskilling and reskilling employees. The research focuses on five research questions: which strategic skills do Slovenian companies consider to be most important, how do Slovenian companies prepare their employees to tackle the digital transformation, to what extent do Slovenian companies incorporate reskilling and upskilling methods in their corporate strategies, which are the most effective training methods for reskilling and upskilling of employees and what are the main chal-

lenges of upskilling and reskilling. To answer these questions, 28 semi-structured interviews were conducted with human resource (HR) managers in Slovenian companies which are industry leaders and/or known for good HR practices.

The chapter is structured in three parts. The first part contains a literature review and global trends in the field of reskilling and upskilling. The second part provides examples of the best upskilling and reskilling practices from global companies. The third part includes the empirical analysis of data collected during qualitative research.

1 The importance of upskilling and reskilling in the modern business world

In times when the world is changing at such a fast pace, the demands of the workplace are changing as well. Nowadays, more than ever before, digital transformation, the ability to adapt to changes and trends in a timely manner, is important for organisations to gain a competitive edge. They also have to be focused on future-proofing employees' potential, creating the next generation of skills and closing the gap between talent supply and demand (Chamorro-Premuzic & Frankiewicz, 2020).

Almost two-thirds of the executives (62 percent) believe that they will either need to retrain or replace more than a quarter of their workforce until 2023 due to advances in automation and digitalization (Illanes et al., 2018). Furthermore, in Europe, 76 percent of respondents (private sector organisations with more than $100 million in annual revenue) perceive addressing the potential skill gap that arises within the workforce due to digitalization and/or automation as at least a top ten priority (Illanes et al., 2018).

1.1 Global trends changing the business environment and strategic skill sets

Besides technological advances, other megatrends have been affecting the demand for skills as well: globalisation (increased integration of the global markets), environmental sustainability (the emergence of the new 'green jobs'), urbanisation (attraction of high-value, knowledge-intensive industries, more varied employment), geopolitical uncertainties in some areas, increasing wealth and income inequality, as well as the demographic changes (ageing and

shrinking of the population) (Hogarth, 2019). Moreover, among 366,000 survey respondents from 197 different countries, 61 percent believe that some of these global megatrends already affect their jobs to a great extent and will persist to do so in the future as well (Kovács-Ondrejkovic et al., 2019).

Recently, the emerging Covid-19 pandemic added yet another layer of complexity. The 2019 health crisis has been driving the change and accelerating the rate of digitalization and automation even further and faster by scaling remote work (Bennett & McWhorter, 2021; WEF, 2020). Organisations had to adapt their operational practices overnight, rethink their business priorities, accommodate remote work and place new demands on the employees. All of this has been made possible through the technologies available, as well as it required the reimagination of the workplace and the creation of new norms and skills (Billing et al., 2021); both, hard and soft skills.

Hard skills are most often referred to as technical skills and are the ones that can be taught (e.g., strategic planning, economic analysis, design) (Beheshti, 2018) – they are *"about a person's skill set and ability to perform a certain type of task or activity"* (Hendarman & Tjakraatmadja, 2012, p. 37). During the period of rapid digital transformation and thus shifting to remote work, hard skills needed include digital literacy, customer service and project management (Bennett & McWhorter, 2021). Soft skills, on the other hand, pertain to relationships (e.g., listening, team-building, leadership development). They are more cultivated than learned and can be nurtured over time with persistence, self-awareness and empathy (Beheshti, 2018). Soft skills are interpersonal and generally applicable, as they are *"personal attributes that enhance an individual's interactions and his/her job performance"* (Hendarman & Tjakraatmadja, 2012, p. 37). However, both soft and hard skills are needed and are complementary to each other (Beheshti, 2018). Kovács-Ondrejkovic and others (2019) suggest that the education system should be future-proofed in a way that the public-sector educators should continuously make efforts to refresh the curriculum to reflect the hard (e.g., coding and artificial intelligence) and soft skills (e.g., communication, critical thinking, collaboration, creativity, problem-solving) needed in the future, as well as promote the development of approaches for lifelong learning.

In the next five years, 40 percent of the current workers' key skills are expected to change. WEF's (2020) Future of Jobs report presents the top four types of skills – problem-solving related skills, self-management related skills, people skills and the ones connected to technology use and development (i.e., analytical thinking and innovation, active learning and learning strategies, criti-

cal thinking and analysis, creativity, originality and initiative, leadership and social influence, technology use, resilience, stress tolerance, etc.). The importance of the development of leadership, critical thinking, decision-making and project management skills has also been recognized by the respondents from different functional specialities, tenures, regions and industries in the survey on reskilling by McKinsey & Company (2021).

1.2 Reskilling and upskilling as means to develop strategic skills

Upskilling and reskilling are used to describe a process of preparing the new generation of workers for positions that not only require technical skills but also creativity, adaptability, interpersonal skills and willingness to continue learning (Weber, 2019), as well as develop their knowledge, skills, values and competencies to be able to solve the potential problems during crises (Kotsiou et al., 2022) and to better equip them to adjust to change in this uncertain future (Chamorro-Premuzic & Frankiewicz, 2020).

In the US, 42 percent of the companies stepped up their upskilling and reskilling efforts after the Covid-19 outbreak and the same percentage of employees pursued training additionally to what their employer had provided for them (Apostolopoulos, 2020). Furthermore, lifelong learning is recognized as a necessary attribute for workers to be able to adapt to the changing demands of their work and it is, apart from the employees' proactiveness, the companies' responsibility to create learning opportunities and root and embed the life learning mindset throughout the organisation (Bennett & Layzell, 2021).

By 2025, 50 percent of employees will need reskilling (WEF, 2020) and by 2030, 14 percent of the global workforce (about 375 million workers) will have to transition to other occupational categories due to the disruptions impacting the work (e.g., digitalization, automation, advances in artificial intelligence, etc., further elaborated in this chapter) (Illanes et al., 2018).

Between 71 and 90 percent of the respondents say that the organisations that have invested in the development of the workforce experience positive contributions to the realisation of the company's strategy, employee performance, productivity and job satisfaction, better employee morale, as well as the improved reputation of the employer (Billing et al., 2021). Companies that extend leadership training to all employees are more than four times more likely to outperform those organisations that do not provide such development oppor-

tunities to their employees in terms of operating margin, return on equity and revenue growth (Udemy Business, 2022).

Managers see the added value in upskilling or reskilling the employees as a part of the training and development culture, to handle the changes within the organisation and to train them on new technologies. Upskilling and reskilling help with improving the employee retention rate, addressing new regulations affecting the company and act as a means of reward/benefit/employer branding. Some managers reported that the need to upskill or reskill comes either from avoiding hiring costs or due to the lack of talent in the market (Apostolopoulos, 2020).

On the other hand, employees' main motive for wanting to acquire new or additional skills is the advancement within the company or the possibility of achieving greater compensation. Even though productivity and performance are increasing in line with these practices, employee advancement rarely happens. Nevertheless, the majority of the upskilling and reskilling programs are being done on an ad hoc or individual basis, as only 35 percent of employers in the US report having an official upskilling and reskilling program in place (Apostolopoulos, 2020).

For managing performance and measuring skills, companies use various methods: performance reviews with employees, role profiles (key result areas, accountabilities and competencies are defined for each role), skill analysis methods and competency modelling. When skill gaps are established, employees need to be encouraged to learn and fill the gaps. Methods for learning in a corporate environment include workplace learning (coaching, mentoring), collaborative working (projects, knowledge sharing, learning communities) and digital learning (e-learning platforms, virtual learning environment) (Armstrong & Taylor, 2020).

Challenges that the organisations face are data obstacles (firms usually lack a comprehensive understanding of the skills of their own personnel), time constraints (upskilling takes time and although more expensive, it is usually quicker to find somebody outside the company), worker engagement (employees should be more involved in decision-making regarding the technologies being implemented) and financial constraints (some employers have shown certain reluctance to invest in the retraining of the fleet) (Weber, 2019). Along with that, some companies also account for the lack of time to develop the upskilling and reskilling initiatives, finding the right sources to fit their needs, consider development too costly and some even face resistance from employees and upper management (Apostolopoulos, 2020).

2 Global best practices of upskilling and reskilling

Related to developing upskilling and reskilling methods and initiatives, some best practices were analysed that have already been implemented in global leading companies.

2.1 Introducing educational programs

The largest private company in the United States, Walmart, declared in 2021 that it will spend almost $1 billion over the following five years to give its employees free access to higher education and skill development. Through its Live Better U (LBU) programme, college tuition and book costs are fully covered. While it used to cost $1 per day in 2018, it is now available for 1.6 million U.S employees for free. Additionally, the business revealed four new academic alliances, which will work with the company's current partners to offer courses specifically designed for working adults (GOi, 2022).

The goal of McDonald's Archways to Opportunity, a broad education campaign encompassing several programs, is to improve employees' access to higher education and employment prospects. The program offers participants the chance to develop their English language, obtain a free high school diploma, pursue a college education with tuition aid, and make use of free educational and career counselling services. Since the program's launch in April 2015, it has helped more than 75,000 people and paid more than $165 million in high school and college tuition (GOi, 2022).

2.2 Developing soft and technical skills training

At JPMorgan Chase, new investment banking and asset management analysts must attend Python programming courses because the company wants their employees to understand the technology in a much better way so they can work with IT specialists more effectively which results in better solutions. The head of JPMorgan Asset Management told the Financial Times: "*Coding is not for just tech people, it is for anyone who wants to run a competitive company in the 21st century*" (Parkershi, 2020).

To teach low-income adults and prepare the next generation for IT employment, Google has partnered with Jobs of the Future (JFF). JFF has integrated

the certificate program into top community colleges in the Appalachian region and 20 states with the help of Google. Google is also assisting charities Social Finance, Merit America, and Year Up in upskilling more than 20,000 American workers to promote a more equal and inclusive labour market through its $100 million Google Career Certificates Fund. Both initiatives are a component of the company's Grow with Google project, which provides people with the tools, resources and training they need to develop the skills necessary to obtain employment. For those who have served time behind bars, another Grow with Google program was created in collaboration with numerous charities that offer digital skills and employment training (GOi, 2022).

2.3 Leadership development

Marriott International offers two staff development programs and is consistently rated as the best employer in the Asia Pacific area. Recent university graduates are trained to become future leaders within the organisation through the Global Voyage Leadership Development program. The 12 to 18-month internationally recognized curriculum offers practical and online instruction in fields like accounting and finance, culinary arts, engineering, human resources, and hotel management. The Marriott Development Academy provides a self-paced, blended learning option for aspiring managers that enables participants to take control of their career development. These programs have aided in filling more than 55 percent of leadership posts with internal candidates in the Australian market alone (GOi, 2022).

2.4 Internal and external apprenticeships

As part of its commitment to preparing workers for a more digitized workplace in the future, Amazon introduced its Upskilling 2025 effort. The initiative's Mechatronics and Robotics Apprenticeship Program is just one of the numerous opportunities it provides. Employees in the two-phase curriculum attend lectures and receive on-the-job instruction to become mechatronics and robotics technicians. While internal mentorship or apprenticeship programs might be cost-effective ways to upskill staff, external apprenticeships may not be financially feasible for all firms. Employees apply the new abilities through on-the-job training (Eightfold.ai, 2021).

2.5 Enhancing personalised learning

Only roughly half of AT&T's personnel possessed the skills in science, technology, engineering and mathematics (also known as STEM skills) that the company would need in the future, according to analysis. To remain competitive in the future, the business had to find a speedy solution and had two options, hire multiple personnel or reskill and upskill the existing workforce. The company decided to take the latter route with a multi-year $1 billion initiative that incorporates components that practically any business can create. The project focuses on partnering with online education providers to provide employees with options for online learning. It features tailored learning opportunities on a career site that aids staff in making future plans and determining the skills they need to acquire (Eightfold.ai, 2021).

2.6 Providing an engaging learning experience through gamification

PwC made a $3 billion investment in job training for all employees in 2019. The Digital Lab and the Digital Fitness app stand out among the initiative's many other components. PwC staff members can evaluate their level of digital literacy and design specialized learning plans using the Digital Fitness app. to *"help our people think differently and unlock their innovative creativity at scale,"* writes the chief products and technology officer at PwC. Using the app, they are given instructional resources. The Digital Lab promotes teamwork and the exchange of creative solutions among staff. According to the digital talent leader at PwC US, *"Digital Lab is a democratized platform, which uses social and gamification features to incentivize building and sharing of assets with wide applicability."* Through the platform, employees not only learn from one another but also put their new skills to use (Eightfold.ai, 2021).

2.7 Giving employees the opportunity to learn and self-develop with suitable technology

The CEO of Accenture claims that the business spent close to $1 billion in 2021 on millions of hours of training to reskill its workers. The company's Connected Learning Platform, a combination of in-person and online learning opportunities with material from internal and external subject matter experts, is at the heart of the project. The chief leadership and human resources officer

for Accenture states that *"our people learn best by connecting, collaborating, and rehearsing for the scenarios they will encounter in their work with our clients." Additionally, "Learning is available to all of our employees at any time, anywhere, and oftentimes without any sort of selection or permission process, from fundamental skills to content unique to their business. Just tap the app to get started with learning."* Employees are in charge of their own professional growth and learning in this way (Eightfold.ai, 2021).

2.8 Empowering employees to develop an agile mindset

Learning is promoted at Pfizer, not forced. *"We are attempting to create an environment where learning is something that everyone wants to do"*, according to the Head of Learning and Development at Pfizer. The multinational pharmaceutical company has created a special learning & development program with the goal of motivating and involving staff. There are three different kinds of learning: necessary, desirable and required. Pfizer strives to strike a balance between necessary learning (essential skills and training) and desired learning because they work in a highly regulated and complex industry. To grow in their professions, the organisation encourages its professionals to push the envelope and acquire new abilities. Peer evaluations, competency maps, learner profiles, and other tools aid Pfizer in designing their learning journeys (HRForecast, 2022).

3 Research on strategic skills, reskilling and upskilling in Slovenian companies

3.1 Strategic skills and the importance of continuous learning

From 24th August to 7th September 2022, 28 semi-structured interviews were conducted with human resource (HR) managers of Slovenian companies. The methodology employed is the same as in Zupan et al. (2022, in this book) where the methodology is explained in more detail and where the list of companies can also be found. The questions first focused on human resource management in general, the connection to managing people throughout the digital transformation and the skills and competencies employees need to execute the business strategy. Questions then became more specific and focused on key strategic skills, preparedness of employees for working in a highly digitalized environment, training the companies offered, their upskilling and reskilling methods

and the challenges and obstacles for upskilling and reskilling that HR managers identified in the company. HR managers were also asked to share examples of the company's most effective upskilling and reskilling methods in the company.

A large majority of companies mentioned the lack of workforce in the market as one of the main HRM challenges, many companies mentioned a lack of IT specialists specifically. *"There is a huge gap in the requirements of the businesses and available talent in the market."* (Company 6) *"Digital transformation involves technology and people. Upgrading the technology but at the same time also upgrading people. We have problems filling positions in technical professions, such as IT and electrical engineering, because there are no people in the market. And these are the most important jobs in the future of automation."* (Company 8) When asked if companies rely more on developing existing talents or recruiting new employees, the majority of companies said it depends on the position they are trying to fill and how much time they have to fill it. Because of the labour shortage, companies are prepared to go the extra mile if they see the right attitude. *"Due to the lack of people in the labour market, we are in a situation that if we feel the right energy, drive and the right attitude in the employee, the company is prepared to pay for additional education, training and exams if needed."* (Company 12) If at all possible, many companies have it in common that they would rather develop existing employees than recruit new ones because existing employees already know the company, the processes and the corporate culture. Some companies say they develop existing employees as a retention strategy to offset the labour shortage.

In terms of digitalization, a large majority of companies state that their employees are prepared to work in a digitalized environment. Some of them motivated their employees by digitalizing the HR system. *"When the company's HR system was digitalized, employees could ask for vacation time and see their pay slips digitally. Because this benefited them, employees were motivated to learn how to use it and learned very fast."* (Company 1) The companies offer digital training to employees that need it. Although some of the analysed production companies differentiated between white-collar and blue-collar workers and mentioned that the latter are less prepared in terms of digital processes, Company 26 described the process of implementing a paperless production process. Blue-collar workers use exclusively phones and tablets for their work. When asked how they implemented this significant change and digitally upskilled their workers, the company mentioned transparency and excellent preparation and execution of the new practice. The project was very well prepared by the technology department before implementing it in manufacturing. When the

process was prepared, production workers were informed transparently what this meant for them and which things they will need to learn. The employees were not thrilled but they were well prepared for the transition. *"We focus on the result, handle the task but with change management in mind as well."* (Company 26) In their opinion, this ensures that employees accept changes better, which is crucial because changes are coming all the time. Therefore, it is not surprising that change management is the most important key strategic skill according to the interviewees. Other frequently mentioned key strategic skills include technical skills – IT skills, leadership skills, willingness to learn, agility, communication and teamwork and collaboration.

There seems to be an implicit understanding of the importance of technical skills in the future, however, soft skills were mentioned more often explicitly as key strategic skills. As Company 7 says: *"Soft skills are strongly connected with development of other technical knowledge. Improving soft skills is also important because they help our employees to perform better in their professional development."* Company 13 also emphasizes soft skills: *"Technical skills are important but you really cannot do anything without the soft skills."*

When it comes to identifying the skill gaps, the companies focus more on identifying skill gaps for current job positions rather than skills that will be needed in the future. The companies mentioned using job profiles, performance reviews and skill mapping methods, such as competency models and skill matrices. There are no significant differences among industries. However, Company 5 moves away from this and tries to think ahead and fill the gaps strategically: *"First, we establish what kind of skill set is needed, not just needed right now but also for the future strategic and business challenges. We specifically are focused on those competencies we do not have in the company, so that we can combine something we are really strong in and then acquire, through talent acquisition, some skill sets we do not have. Combination of both is important."*

Regarding skill mapping, Company 18 implemented a High Potential Assessment for employees entering the company. During the assessment, they determine strengths and weaknesses and measure strategic skills and competencies through tailor-made individual or group tasks. High potentials they identify with the assessment almost always show up in the company's talent pool within a year. If they have an open position, they first look at the talent pool and if there is no appropriate candidate, they hire from the outside. Early development of employees serves as a map for upskilling and reskilling practices and is a foundation for strategic skill planning.

Hard skills not being considered key strategic skills can be directly connected to proactive or reactive approaches of companies in terms of reskilling and upskilling employees. While reskilling and upskilling are a part of the corporate strategy in the large majority of the analysed companies, the approach of the majority is still reactive rather than proactive. Companies lack strategic skill planning and do not ask themselves which skills they will need in ten years and how they can start preparing for this right now. One possible reason for less future-oriented strategic skills activities is the tight labour market which makes it challenging to fulfil the current needs for skilled employees. *"We are tired. We are under stress and we are so focused on the situation now – what we will do tomorrow when we have a shortage of 300 to 400 employees. Maybe we forget to think more strategically but we tried many things and nothing really helps."* (Company 11) Among the proactive companies, a large majority are IT & telecommunications companies. *"We are in a fast-paced industry, we need to think differently, we cannot wait for others and just copy what they are doing. We need to be faster than our competitors. To do that, you need to have smart people, people who are thinking two steps ahead. If you want to be ahead of others, you do not have a clear list of skills you need. That is why we also let people explore where they want to go and where they want to develop. Because maybe something that we do not think is important will become important. And if we have someone who knows these skills and is passionate about them, we will be able to use them when we need them."* (Company 22) But reskilling and upskilling could also be temporary solutions for companies struggling with the labour shortage. *"Upskilling and reskilling will be very important in the future because the world and the business are changing. Companies need to motivate employees because there is a lack of candidates in the labour market so it is very important to keep existing employees in the company and develop them. /.../ Reskilling and upskilling opportunities provide new challenges to employees which can be part of the strategy for retaining employees."* (Company 28) Additional obstacles for upskilling and reskilling that were mentioned are time, employee pushback due to fear of change or losing their jobs and some employees not being motivated to learn. Also, the challenges are recognizing high potential employees to upskill or reskill, choosing the right training program or trainer and money. There are no significant differences among industries with regard to obstacles except for already highly digitalized companies that use advanced technologies having the advantage of their employees' greater affinity towards continuous learning.

Time is by far the most frequently mentioned obstacle. *"Every day, 30 minutes of working time are allocated to learning time. This accumulates throughout the week or month and employees can use this time for whichever topic or activity they*

want. The only rule is that it has to involve learning and be related to their job." (Company 17) By intentionally allocating time for upskilling, companies could avoid the issue of employees not taking time for learning and ensure that it does not significantly interfere with the business process because learning would be planned.

One of the obstacles companies mentioned is also employee pushback due to fear of change or losing their jobs. *"A cycle has been established. The company invests in automation, which brings in more projects because the company can do more with automatized processes. This means more work and consequently, the company needs more people. Because human resources are limited, the focus should not be on bringing in more people but rather on how to increase the possibility to do more with existing people – through automation, investing in production and technology and increasing efficiency."* (Company 26) *"Digitalization is a tool that can help you with working more efficiently, reducing administrative work so people can focus more on strategic tasks but you cannot replace people with technology and programs. Some positions will probably be replaced in the future but mostly what I think will happen is that people will need to learn new competencies - to be agile, think fast and have interdisciplinary skills. But people will stay, for sure."* (Company 19) In Company 7, they identify influencers within the teams and these people are not always team leaders. When they try to implement change, they first explain the change to the influencer and then this person helps bring other team members on board. *"I believe that there are influencers in different departments, people who are not defined as leaders but are natural leaders and people follow them. So, you have to find them to implement change."* (Company 7)

Methods of upskilling and reskilling differ across companies but one thing that most of the analysed companies have in common is that they offer a variety of options to their employees. A majority of the observed companies consider upskilling and reskilling a part of career development or personal development. A large majority of companies offer on-the-job training in the form of mentoring, coaching, knowledge sharing and internal projects. Other options include internal e-learning platforms, external e-learning platforms, such as Coursera, Udemy and LinkedIn, and workshops, seminars and conferences. Many companies also offer internal digital training and technical training for working with machines.

Companies report that on-the-job training is by far the most effective, followed by workshops and e-learning courses. *"There are people who are at the end of their career and they would like to give knowledge to somebody else and, on the other side, young people who are hungry like wolves for this knowledge. This is*

a perfect combination." (Company 1) Overall, the training is very well received. In some companies, employees even suggest topics for training and workshops themselves. *"We want to hear from them what they think they need and what they want to have to do their job and to reach KPIs. We listen to them and we try to provide it. We try to hear what they want, and what they need to be successful at their job. If they are successful, we are successful."* (Company 27) The positive attitude of employees can be attributed to the fact that a large majority of the interviewed companies state that their employees are aware of the importance of continuous learning and that this aspect is also an important value of the companies. *"Organisations need to understand that learning should be one of the key responsibilities of any job, learning is part of the job. We expect people to learn constantly."* (Company 21) *"Ten or 20 years ago, the company offered additional payment to employees who were teaching other employees, but nowadays it is part of the job, part of our culture."* (Company 23)

The learning culture is especially visible in IT companies which seem to be more advanced in terms of digital transformation – not just because of their field but also because of the mindset of people. *"We are a network of knowledge; this is in our DNA. All employees are eager to learn and are resourceful, and from that perspective, it is normal for us that we constantly learn. This is a base for everything we do, the network of knowledge is part of our vision, and it is a part of who we are. Lifelong learning is also our value."* (Company 6) Because IT companies and employees are so used to technology changing so quickly, they also adopt this way of thinking. The value of continuous learning is present and is also self-promoted. *"Everyone at the company knows that if you want to bring up a good idea, you need to elaborate and explain. If you want to bring something new, you need to go and research, do the work."* (Company 5) The companies appreciate this and offer various upskilling opportunities. In many cases, they are prepared to tailor training to the employees' needs. These companies also see great value in employees learning from each other so they also facilitate talks and joint discussions with employees. In Company 5, they read books about management, leadership or other topics related to the work. They organise weekly knowledge sharing, and debates about books and other interesting topics, encouraging employees to learn from their peers. In Company 17, they introduced Tuesday Talk. On Tuesdays, they organise a conversation on a specific topic that anyone can join. Employees share stories about how they developed in the company or talk about solutions on how to resolve a certain problem and so on. Along with external training and coaching, they also see the importance of employees hearing each other's experiences and sharing inside knowledge. The summary of key findings from research on strategic skills, reskilling and upskilling in Slovenian companies can be seen in Table 1.

Conclusion

After doing a thorough literature review, taking a look at best practices from abroad regarding upskilling and reskilling, and analysing 28 conducted interviews, certain concluding remarks can be made to this chapter. There is a visible acceleration of reskilling and upskilling globally and in Slovenia, with an additional push due to the Covid-19 pandemic which sped up digitalization. Based on qualitative research, significant differences between industries, company size and location could not be detected. The possible reason is that industry leaders were chosen to participate in the research and these companies have good practices and constantly strive for competitiveness.

Slovenian companies put greater importance on soft skills in comparison to hard skills. On the other hand, digital skills are often neither prominent nor defined as key strategic skills, especially when it comes to data analytics and coding which were found as best practices globally but not as much in Slovenia. Digital skills are most noticeable when speaking about internal knowledge transfer with the digitalization of processes. Additionally, companies have implemented an adequate learning culture and thus employees are often eager to learn new skills. Usually, learning is part of the career development plan, while a majority of companies also use on-the-job training as well as internal and external e-learning platforms. The majority of employers are, however, still trying to close the knowledge and skill gap needed for the current jobs and are not yet future-oriented when it comes to reskilling and upskilling for the jobs of the future. Regarding obstacles, lack of time due to the high pace of work has been mentioned most frequently. If a comparison of Slovenian companies with global companies is made, international giants seem to be more future-oriented and proactive, and spend much more time and resources on reskilling and upskilling, for example, learning programming languages and acquiring leadership skills. On the other hand, with a few exceptions, Slovenian companies remain reactive to current events.

When observing digitalization from a viewpoint of Slovenian industry managers, as highlighted in the experiences across different sectors (see previous chapters in this book), two rather interesting trends can be observed. On one hand, companies have older workers that are resistant to the digitalization trends and hence cannot easily be reskilled or upskilled. The second trend is that younger people are acquainted with digital knowledge, yet are not eager to work for Slovenian companies due to better offers from abroad. This creates an issue for Slovenian companies, as it is hard to acquire or retain labour with skills

for the future. This can also be confirmed with interviews with HR managers. They do not prioritise digital skills, which thus leads to the current situation.

Based on qualitative research, some recommendations for Slovenian companies can be pointed out. As seen from the conducted interviews, Slovenian companies have quite a lot of good HR practices and knowledge that should be shared among companies. Only with external knowledge transfer will these companies create a better society and better working conditions as well as prosperity. In addition, the learning culture should have the utmost importance in every company. Companies need to strive for a culture which leads to high motivation to learn and thus, reskill and upskill. Furthermore, companies should look up to the best practices and offer employees various methods of learning. As seen from the best practices, companies could cover tuition for certain study programmes, and partner up with academies or universities to offer courses specific to the company and its needs. Moreover, companies could create some sort of database with a full assessment of new employees' skills and competencies, as seen in one of the interviewed companies. This way, companies can create a large talent pool and when there is a position that needs to be filled, they could find an employee with such skills in the database. Last but not least, a clear strategy should be established, and soft and hard skills of the future should be estimated with strategic skill mapping. This way, companies could prepare all the necessary steps for upskilling and reskilling to secure a competitive advantage. Finally, defining strategic skills more based on the future needs of the business rather than filling current gaps should help Slovenian companies to further increase their competitiveness.

In conclusion: *"From the HR perspective, it is difficult to set a strategic path to support digitalisation. It is important that all functions are involved in defining what digital transformation will bring, what it means specifically for each company, which tools are required to support it and how the processes need to be redefined, realigned, and changed in that regard. From the employees' perspective, it needs to be established what they will need to learn related to the new tools and processes."* (Company 6)

Table 1. Summary of key findings

Reskilling/Upskilling	Key highlights
Key strategic skills	• Change management, openness to change, flexibility. • Technical skills – IT skills. • Leadership skills. • Willingness to learn. • Agility. • Communication. • Teamwork, collaboration.
Identifying skill gaps	• Skill mapping methods (competency models, skill matrices). • Performance reviews. • Job profiles.
Proactive/reactive approach	• A large majority of observed companies include reskilling and upskilling in corporate strategy. • Companies seem to take a reactive approach more than a proactive one. • Among the proactive companies, a large majority are IT & telecommunications companies.
Methods of reskilling and upskilling	• Part of career/personal development plan. • On-the-job learning (mentoring, coaching, knowledge sharing, projects). • Internal e-learning platforms. • External e-learning platforms (Coursera, Udemy, LinkedIn...). • Internal digital training. • Workshops, seminars, conferences. • Internal technical training for working with machines.
Obstacles to reskilling and upskilling	• Time. • Employee pushback due to fear of change or losing their jobs. • Some employees are unwilling to learn. • Recognizing high potential employees to upskill/reskill. • Difficult to choose the right training program/trainer. • Money.

Source: Own work (2022).

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EMPLOYEE TRAINING AND UPSKILLING IN VIEW OF DIGITALIZATION-RELATED NEEDS IN SLOVENIA

Introduction[1]

Human capital has long been recognized as one of the key determinants of firm performance, innovativeness, technological progress and competitiveness as well as a dominant source of long-term growth (Acemoglu & Dell, 2010; Baetjer Jr., 2000; Baier et al., 2006; Baker, 2015; Bartelsman & Doms, 2000; Becker, 1994; Romer, 1990; Sala-i-Martin, 2002; Vandenberghe, 2018). With the rise of the knowledge economy, the contribution of intangible, knowledge-based sources of growth have become even more important, contributing even up to a third to total productivity growth (Corrado et al., 2019; Nakamura, 1999; Piekkola, 2011; Piekkola et al., 2021).

Slovenian companies have been lagging behind the most developed countries in Europe in the intensity of intangible investment at large (Piekkola et al., 2021), but in particular, in terms of human capital investments. In 2020, Slovenian companies devoted 4.9 percent of all investment resources to training, while the average EU economy invested 9.6 percent. In France, training even represented 17 percent of all investment spending (European Investment Bank, 2021). Slovenia is significantly lagging not only in training but also in

1 The research is based on linked datasets, provided by the Statistical Office of the Republic of Slovenia. This analysis would not be possible without their expert support, in particular the User relations section of the Data publication and communication division. The research is partially funded by the following project: V5-2121 »Digitalna preobrazba, Industrija 4.0 in struktura slovenskega gospodarstva ter vpliv digitalizacije in uvajanja novih tehnologij na dolgoročno gospodarsko rast in vzdržnost javnih financ v Sloveniji« and research program P5-0128 »Izzivi vključujočega in trajnostnega razvoja v prevladujoči paradigmi ekonomskih in poslovnih znanosti«.

other aspects of intangible investment. Total intangible investments (they include R&D, ICT, organizational improvements and training) represented only 26.8 percent of all investments in Slovenia in 2020, significantly below the EU average, which was 37.9 percent (European Investment Bank, 2021).

Given the declining productivity growth in Europe, accompanied by the burden of the ageing population, the digital transformation and the globally increasing competitive pressures, training and human capital investment seem to be more important than ever, both in the EU and particularly in Slovenia, to successfully catch up.

This paper investigates the nature of training and the contribution of training to firm performance in Slovenia using a firm-level registry dataset. The nature of training investments is explored first, including skills needs, types of training, and obstacles, to provide a basis for the study of the contribution of human capital to firm performance. The chapter continues with a brief literature review on the importance of human capital investment and training, followed by a comparative analysis of training in Slovenia and the EU and a detailed analysis of the nature of training and its contribution to firm performance in Slovenia. The conclusion summarizes the main findings.

1 The importance of human capital investment and training

Knowledge-based capital (KBC) is becoming a prevalent force in determining the dynamics of growth. Knowledge-based capital or intangible capital includes resources such as research, data, software and design skills, *"which capture or express human ingenuity"* (Wyckoff, 2013). Knowledge is, according to the OECD (2013), especially important for companies to become and remain competitive in the global economy, to be able to increase their productivity and *"to create high-wage employment"* (Wyckoff, 2013). In addition, several studies have also confirmed a link between human capital and economic growth. The first modelling dates back to Romer (1990), however, the importance of human capital and intangible capital at large has been known for much longer (Veblen, 1908). Several empirical studies have confirmed the link between human capital accumulation and economic or productivity growth at an aggregate level (Abrigo et al., 2018; Acemoglu, 2009; Acemoglu & Dell, 2010; Acs et al., 2014; Aganbegyan, 2017; Álvarez-Ayuso et al., 2011; Ballot et al., 2001; Banerjee & Roy, 2014), proving that the link must also exist at the firm level.

This chapter focuses on human capital in the firm, particularly on the effect of education and training on total factor productivity. While there is vast literature estimating the impact of education and training on wages (wage premiums to education and/or training in different settings), only a few studies have also analyzed the impact of training on productivity (Konings & Vanormelingen, 2015; Black & Lynch, 2001; Zwick, 2006; Dearden et al., 2006). Empirical studies highlight that the economic mechanism behind training depends on the wage structure and the structure of the labor market. Firms will pay for general training when the internal wage structure is compressed due to imperfect competition in the labor market (monopsonistic structure based on collective agreements for setting base wages). In the case of general skills, the wage function increases less steeply than the marginal product, indicating that productivity gains from additional training outweigh the marginal costs of higher wages (Acemoglu and Pischke, 1998, 1999a, 1999b). Studies show that training is usually perceived as a potential enhancer of human capital increasing the mean labor productivity across firms, especially in non-manufacturing firms (Dearden et al., 2006).

The relationship between training and productivity has been investigated in the theory mainly using a "training-augmented" production function. A recent study on Belgian firms reports that the productivity increase as a consequence of general training is statistically significantly larger if compared to wage premiums. Productivity increases by 1.7 to 3.2 percent if the fraction of workers on training increases by ten percentage points, on average, while the corresponding wage increase is by one to 1.7 percent (Konings & Vanomerlingen, 2015).

According to Eurostat (2022), continuing vocational training (CVT) encompasses *"training measures or activities which have as their primary objectives the acquisition of new competencies or the development and improvement of existing ones and which must be financed at least partly by the enterprises."* The CVT activities can be either internal (organized within the firm) or external (provided by external providers). Eurostat (2022) distinguishes between several types of CVT courses: planned training through guided on-the-job training; planned training through job rotation, exchanges, secondments or study visits; planned training through participation (instruction received) in conferences, workshops, trade fairs and lectures; planned training through participation in learning or quality circles; and planned training through self-directed learning/e-learning.

Collier et al. (2011) study the survival of firms depending on the intensity of training. They find that companies which trained *"at least some experienced*

employees in the largest occupational group" are more likely to survive by 13 percentage points. They also find that the companies that on average employ more educated people are more likely to survive. Interestingly, the duration of training does not have a significant impact on survival. Training is also expected to have a positive impact on innovation, employee satisfaction and commitment and other intangible resources. For example, Shaw (2019) claims that training increases worker retention, lowers turnover, improves customer satisfaction and improves the generation of new ideas. It also improves problem-solving abilities and communication skills, often reducing the time needed to finish a task. In addition, training improves employee satisfaction, self-esteem, work morale and worker commitment. Consequently, it can lower costs due to improved satisfaction, higher productivity due to acquired skills and lower turnover costs. Yimam (2022) adds that not only the training itself but also training design, training needs assessment, training delivery style and training evaluation are important in achieving the best possible training outcomes. Training is also linked to innovation, although Demirkan et al. (2021) find that the relationship between employee training and innovation capabilities is not equal across sectors, and it has a lower impact in knowledge-intense sectors. The impact is also lower among larger firms (larger SMEs in their study). They also stress that continuous R&D contributes to a weaker link between training expenditure and innovation capabilities.

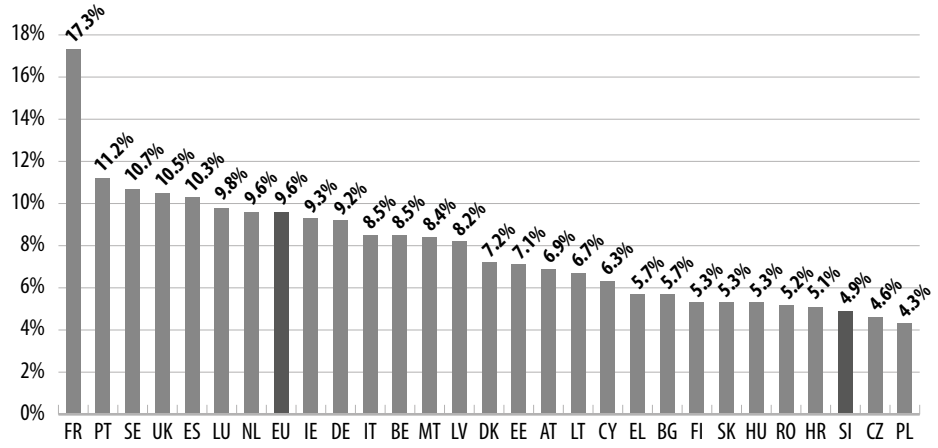
Liu and Prompanyo (2021) study the innovation and training in the automotive company Huawei and stress the importance of training, especially in terms of building a *"collaborative innovation culture and atmosphere, innovative service concept, innovation promotion"*, as well as increasing employees' enthusiasm, initiative and creativity. Hernández et al. (2020) also highlight the importance of employee educational structure and stress the role of highly-educated employees for firm survival, formation of strategic alliances and innovation. Several studies also confirm the link between employee training and productivity. For example, Bartel (1994) shows that it is important also to onboard properly, specifically, she showed that training programs for new employees resulted in significantly larger increases in labor productivity growth. Several other studies confirmed that employee training stimulates productivity growth (Dave & Sinha, 2016; Jones et al., 2009; Martins, 2021; Phusavat et al., 2011; Sal & Raja, 2016; Sala & Silva, 2013). Overall, training is expected to contribute positively to firm performance. Interestingly, studies usually do not find a significant impact on financial performance but confirm positive organizational outcomes, including productivity (Dave & Sinha, 2016).

The theories studying the impact of training on firm performance present the narrative of transmission mechanism on the following conclusions: (1) the skills and abilities generated by the general training, embodied in the individuals, are transferable from firm to firm, and this hampers firms to invest in general training; (2) training causes a widespread positive effect on firm productivity, independently from the firm-specific characteristics; (3) the financial source of training is not relevant. Dosi et al. (2021) questioned the above-explained transmission mechanism by indicating that higher firm productivity is not a consequence of better individual skills obtained through formal training but rather through informal training like coaching or peer mentorship programs. If the training occurs mainly tacitly, it is underreported in terms of training costs. The source of higher value-added is embodied in specific organizational arrangements and routines, slowly accumulated with a high degree of persistence, so-called collective properties of its routines (Dosi and Marengo, 2015). Not only are these organizational capabilities very hard to measure but measuring the contribution of training activities to the enhancement of these capabilities is even harder. Dosi et al. (2021) showed in the sample of Italian firms that formal training might be effective only when it comes together with an ensemble of idiosyncratic firm characteristics. If the locus of knowledge is in organizational capabilities, firms should devote much more attention to practices of internal on-the-job training, organizing continuous peer-to-peer mentorship for incumbent workers, and coaching and assistance as part of prolonged onboarding activities.

2 The characteristics of continuous education and training in Slovenia and the EU

Slovenia lags significantly behind the EU average in investment in education and training. In 2020, the average surveyed company in the EU invested 5,522 euros per employee, in both tangible and intangible assets, while an average Slovenian company invested 5,789 euros (European Investment Bank, 2021). However, the average EU company invested 9.6 percent of this amount into training, which is 530 euros, while the average Slovenian firm invested 283 euros, which is only a bit more than half of the EU amount (Figure 1). Although this only refers to paid external training, the amount is still very low. In addition, the share of total investment, which is devoted to training in Slovenia has significantly declined between 2017 and 2020, from 5.9 percent to 4.9 percent of all investments (and reaching as little as four percent in 2019). This is a significantly larger decline than in the EU on average, where the share declined from 10.4 percent to 9.6 percent of all investments.

Figure 1. Investment in the training of employees in Slovenia and the EU, as a percent of total investment, 2016-2020

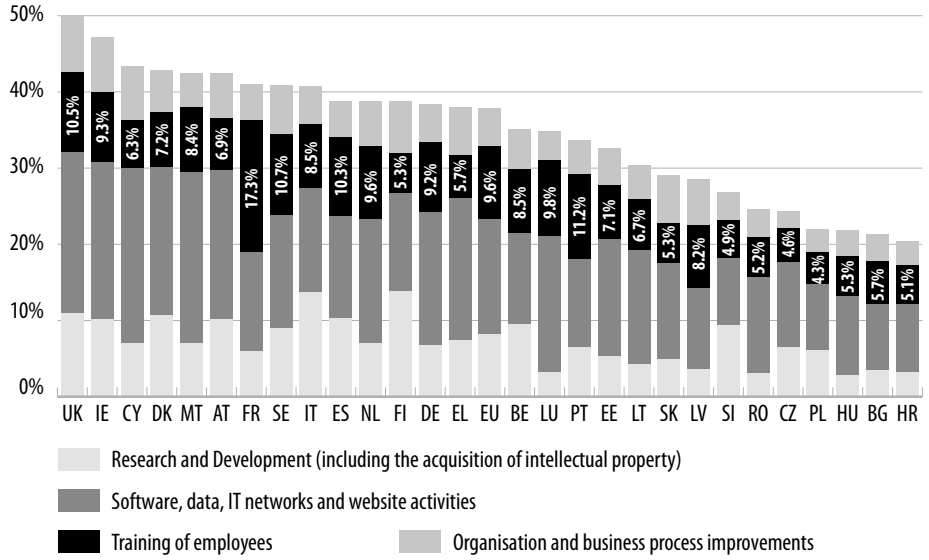


Source: European Investment Bank (2021).

In view of the increasingly knowledge-driven growth in developed economies, the fact that Slovenia invests such a low share of all investments into training and that this share has even declined is a cause for concern. Considering the total investment into knowledge capital, i.e., intangible capital, which according to European Investment Bank methodology comprises (1) research and development (including the acquisition of intellectual property), (2) software, data, IT networks and website activities, (3) training of employees and (4) organization and business process improvements, the lag is even bigger. In 2020, Slovenia invested less than 27 percent of all investments into these intangible components, while in the EU, companies on average devoted 37.9 percent of all investment resources to intangible components (Figure 2).

Corrado et al. (2009) first stressed the importance of human capital and other intangible components for productivity growth, while Piekkola et al. (2021) show that for developed EU economies (Finland, Denmark and Norway), also Slovenia, the contribution of intangible capital components is comparable to the contribution of tangible capital (e.g., machinery, buildings). Therefore, the skewed investment structure in Slovenia, largely in favor of tangible investment, should change, especially considering declining marginal productivity effects and the indirect impacts of intangible investments on long-run competitiveness, innovativeness and generation of "hard-to-copy" firm-specific knowledge, which can sustain firm competitiveness.

Figure 2. Investment in intangible capital components in EU countries, as a percent of total investment, 2020



Source: European Investment Bank (2021).

3 The characteristics of training and contribution of human capital in Slovenian companies

3.1 Methodology and sample description

The analysis relies on a combination of registry datasets and official surveys: (1) Continuing vocational training survey (CVTS[2]), which provides the details about the organization and characteristics of training and is conducted every five years (data from 2010, 2015 and 2020 is included in this chapter), (2) Statistical registry of the employed persons of Slovenia from the Statistical Office of the Republic of Slovenia to identify the employee structure in companies relying on the occupation (organizational, R&D and ICT occupation) (Piekkola et al., 2021)[3]. The data was used to create an employer-employee dataset by collapsing the employee data to the firm level and merging it with firm-level financial statement data (AJPES,

2 In Slovenian: Izobraževanje in usposabljanje zaposlenih v podjetjih.

3 Defined by ISCO codes: organizational work (ISCO 121, 131, 132, 134, 241, 242), R&D work (ISCO 211, 212, 213, 214, 215, 216, 221, 222, 226, 311, 314, 3211223, 2152), ICT work (ISCO 2, 25, 35, 133, 2153).

2021) for the entire population of Slovenian enterprises for the period between 2007 and 2020. The survey data on training in companies was also added to the dataset.

The final dataset comprised 4,661 observations spanning over 2010, 2015 and 2020, with around ten percent every year representing large companies, another ten percent of micro companies, around 50 percent of small companies and around a quarter were medium companies (Table 1). The majority of the companies (46.3 percent) were from medium-low and low-tech industries, followed by other services (28.4 percent). High and medium-high-tech manufacturing represented 10.8 percent of the sample and knowledge-intense services 14.4 percent of the sample. The median company had 32 employees, the average being 140 employees. The average value-added per employee was 37.4 thousand euros, with micro companies at 27.5 thousand euros and large companies at 43.9 thousand euros. The companies also significantly differed in technological intensity. Technologically most intense manufacturing companies were the largest with around 283 employees and 38.7 thousand euros of value-added per employee, while knowledge-intense services had on average 127 employees and a value-added of 47.2 thousand euros.

Table 1. Sample description

	Value-added per employee		Number of employees		Number of observations
	mean	p50	mean	p50	
			Year		
2010	35,585	27,789	151.2	37.7	1,464
2015	38,133	30,201	130.3	27.0	1,606
2020	38,271	30,969	139.7	34.4	1,590
			Size		
Micro	27,495	23,217	16.7	9.8	404
Small	37,120	29,413	22.4	17.8	2,157
Medium	39,474	30,510	108.6	91.9	1,119
Large	43,871	34,533	717.8	451.6	501
			Technology intensity		
High, medium-high-tech	38,635	33,607	283.9	72.9	474
Medium-low, low-tech	34,483	27,548	106.1	30.5	2,056
Knowledge-intense services	47,222	37,605	127.5	32.7	659
Other services	35,997	29,177	148.3	26.6	1,407
Total	**37,201**	**29,654**	**140.4**	**32.5**	**4,661**

Source: Statistical Office of the Republic of Slovenia (2021).

In 2020, around half of the companies had either a specific person or department in charge of training, and 30 percent of companies had a training plan and a budget devoted to training. Generally, the organization of education and training is dependent on size. Three-quarters of large companies had a specific training plan and over 80 percent had a training budget, in comparison to only ten percent among the small companies and around 45 percent with a training plan among the medium companies. Around half of the companies organized internal training and around 56 percent external training. Among large companies, the respective shares were over 90 percent. The most common form of training is on-the-job training, followed by continuous vocational training and conferences. Over 86 percent of companies were measuring the effects of training and around three-quarters of companies were also measuring the satisfaction of employees with the training, again being positively related to the size and knowledge and technology intensity of companies.

Table 2. Share of companies which selected specific skills as the top three most important for the company

	Size				Technology intensity				Total
	Micro	Small	Medium	Large	High, medium-high-tech	Medium-low, low-tech	Knowledge-intense services	Other services	
General IT skills	19.8	20.0	24.4	20.6	19.9	21.2	24.7	20.9	21.5
Specialist IT skills	13.2	13.2	15.1	17.8	18.0	10.0	37.2	8.7	14.1
Managerial skills	18.9	19.1	41.0	58.9	38.5	30.5	30.5	24.5	29.2
Teamwork skills	50.9	51.7	42.4	34.6	39.8	50.8	48.4	44.6	47.3
Working with clients	43.4	46.4	39.7	16.8	15.5	26.5	49.3	65.8	41.9
Problem-solving	25.5	32.5	29.9	35.5	42.9	31.2	28.7	29.8	31.4
Administrative skills	10.4	6.7	4.4	6.5	ZZZ	6.2	8.5	6.8	6.2
Foreign languages	7.5	14.4	17.0	11.2	17.4	12.6	11.2	17.8	14.6
Technical, practical, occupational skills	65.1	61.5	58.7	80.4	84.5	77.0	37.7	46.3	62.0
Communication skills	NA	7.7	6.6	NA	4.3	3.9	11.2	10.6	7.2
Computational, literacy skills	5.7	NA	1.8	NA	NA	NA	NA	2.3	2.4
Other skills	P	p	1.1	0.0	0.0	NA	NA	1.1	0.7
Number of observations	106	836	542	107	161	660	223	527	1,591

Note: NA – data not available in accordance with the data protection protocol at the Statistical Office of the Republic of Slovenia.

Source: Statistical Office of the Republic of Slovenia (2021).

Companies reported that the most important skills that will critically impact the performance of their company in the next few years were industry-specific professional/technological skills, the ability to work with clients, teamwork skills and problem-solving skills. Specific technical and occupational skills were among the most important for 62 percent of companies in 2020, teamwork skills for 47.3 percent and working with clients for 41.9 percent. These three skill sets remained the most important throughout the investigated period. Interestingly, among the 12 investigated skills, general IT skills were perceived as one of the top five skills only in 2010. Generally, IT skills (general and specific) were most important in knowledge-intense services. The importance of IT skills also grew with company size (Table 2).

Table 3. Share of companies which selected specific skills as the top three skills that the company invested most in

	Size				Technology intensity				Total
	Micro	Small	Medium	Large	High, medium-high-tech	Medium-low, low-tech	Knowledge-intense services	Other services	
General IT skills	14.6	15.3	21.3	20.4	19.2	18.7	18.3	16.6	17.9
Specialist IT skills	14.6	20.4	13.0	10.7	15.8	12.8	28.6	13.2	15.8
Managerial skills	17.1	13.6	20.1	36.9	21.7	20.5	20.0	16.3	19.1
Teamwork skills	14.6	25.4	24.7	19.4	26.7	21.0	26.9	20.6	22.6
Working with clients	24.4	27.4	17.6	13.6	7.5	16.1	29.1	41.7	25.7
Problem-solving	9.8	25.1	23.0	17.5	26.7	21.0	21.1	21.2	21.4
Administrative skills	12.2	9.4	5.4	7.8	6.7	8.7	4.0	7.4	7.2
Foreign languages	NA	5.6	13.0	22.3	20.0	7.9	5.7	12.3	10.4
Technical, practical, occupational skills	80.5	61.4	63.6	75.7	71.7	73.1	46.9	61.3	64.7
Communication skills	0.0	3.5	3.3	6.8	NA	3.1	5.7	4.6	3.9
Computational, literacy skills	NA	2.7	2.1	NA	NA	2.6	NA	2.1	2.2
Other skills	9.8	9.4	10.9	NA	8.3	8.4	10.3	8.6	8.9
Number of observations	93	653	309	107	161	660	223	527	1,591

Note: NA – data not available in accordance with the data protection protocol at the Statistical Office of the Republic of Slovenia.

Source: Statistical Office of the Republic of Slovenia (2021).

In 2020, companies devoted most resources to training for specific occupational/technical skills. Almost 65 percent of companies selected these skills

among the top three training programs if measured according to the use of paid work hours (Table 3). Occupational/technical skills were the most important regardless of size or technological intensity. They were followed by customer-related skills (25 percent), managerial, teamwork and problem-solving skills (19 to 23 percent). Only around 18 percent of companies mentioned that general IT skills were among the top three training programs if importance is measured by the use of paid work time. Looking at company size, in 2020, medium companies invested the most in general IT skills (21.3 percent ranked general IT skills among the top three), followed by large companies. Small companies invested the most in specific IT skills. With regards to the technological intensity of the sectors, high and medium-high manufacturing invested the most in general IT skills (around 19 percent mentioned them as one of the top three), while specific IT skills were most important for knowledge-intense services.

Table 4. Share of companies which organized specific training, 2020

	Size				Technology intensity				Total
	Micro	Small	Medium	Large	High, medium-high-tech	Medium-low, low-tech	Knowledge-intense services	Other services	
General IT skills	24.7	36.6	59.9	93.5	66.5	43.6	65.0	46.5	50.0
Specialist IT skills	35.5	43.2	70.9	90.7	68.3	52.4	69.5	52.6	56.6
Managerial skills	55.9	60.5	77.3	93.5	79.5	69.2	74.0	63.0	69.0
Teamwork skills	14.0	11.9	25.6	51.4	36.0	19.1	25.1	15.6	20.3
Working with clients	34.4	39.4	66.3	86.9	60.9	47.1	73.1	46.5	52.2
Problem-solving	11.8	14.7	32.0	51.4	40.4	22.4	29.6	17.6	23.6
Administrative skills		30.5	40.5		46.0	29.7	56.1	35.5	36.8
Foreign languages	38.2	50.7	75.2	95.3	73.4	58.1	75.6	58.7	62.5
Technical, practical, occupational skills	55.1	63.7	83.3	97.2	82.3	67.8	87.8	68.7	72.5
Communication skills	93	653	309	107	161	660	223	527	1,591
Computational, literacy skills	NA	2.7	2.1	NA	NA	2.6	NA	2.1	2.2
Other skills	9.8	9.4	10.9	NA	8.3	8.4	10.3	8.6	8.9
Number of observations	93	653	309	107	161	660	223	527	1,591

Note: NA – data not available in accordance with the data protection protocol at the Statistical Office of the Republic of Slovenia.

Source: Statistical Office of the Republic of Slovenia (2021).

Around 90 percent of large companies provided internal as well as external training (Table 4). In micro companies, only a quarter provided internal training and a third external training in 2020. Higher technological or knowledge intensity is also linked to a higher prevalence of training – 66.5 percent of high to medium-high-tech companies provided internal training and 68.3 percent also external training. Among knowledge-intense services, 65 percent and 69 percent provided internal and external training respectively, in comparison to 43.6 percent of medium-low to low-tech manufacturing and 46.5 percent of other services providing internal training. Only around half of them provided external training. The most important form of training is on-the-job training, used in 69 percent of companies, followed by continuous vocational training and conferences. Again, there are significant differences among firms depending on size and technological intensity.

Table 5. Share of companies which reported a specific factor being an obstacle to training

	Size				Technology intensity				Total
	Micro	Small	Medium	Large	High, medium-high-tech	Medium-low, low-tech	Knowledge-intense services	Other services	
The level of skills was suitable	15.6	12.4	6.1	4.7	6.4	9.9	11.1	9.3	9.5
Company employed instead	48.1	53.4	50.5	37.4	42.6	55.9	43.5	50.8	50.7
Identification of deficit	10.4	7.4	9.2		9.2	8.8	4.8	8.6	8.2
Training supply not available	11.7	14.3	10.0		12.1	15.6	11.1	9.0	12.3
Cost	31.2	27.4	18.9	21.5	24.1	25.7	15.5	25.7	23.9
The company used basic training (e.g., apprenticeship) instead of continuous training	24.7	16.5	11.6	7.5	12.8	16.0	10.6	14.3	14.4
The training goals were achieved in the near past	24.7	30.0	24.0	26.2	27.7	29.6	19.8	26.8	27.0
Lack of time	22.1	23.5	26.7	35.5	32.6	25.1	21.7	25.7	25.6
Other	22.1	11.7	13.6	18.7	11.3	13.6	13.0	14.5	13.6
Number of observations	106	836	542	107	161	660	223	527	1,591

Source: Statistical Office of the Republic of Slovenia (2021).

Companies also reported several obstacles to training (Table 5). Less than ten percent of companies were satisfied with their level of skills. However, the majority of companies (over 50 percent) tried to employ new employees instead, to cover their specific skills needs, increasingly so in smaller companies. The larger companies report the lack of time as the biggest obstacle. High and medium-high-tech industries and knowledge-intense services are less likely to employ when the need for skills is identified (they are more prone to training), possibly also because specialized skills are harder to find in the market and also represent tacit knowledge, which is a source of competitive advantage. Overall, around a quarter of companies also reported that training goals were achieved in the past and that lack of time was an important obstacle.

On average, around 30 percent of investigated companies provided no training in 2020. The share of companies with no training was highest in low and medium-low-tech companies (40 percent in 2020) and other services (38 percent). On the other hand, around 80 percent of knowledge-intense services provided training, and also three-quarters of high and medium-high-tech companies. If looking at the entire period (2010, 2015, 2020), only around six percent of large companies provided no training in comparison to 54 percent among micro companies. With regards to obstacles, the companies that did not undertake any education and training were satisfied with the existing skill structure, however, around 50 to 60 percent of companies (depending on the year) reported that they preferred to employ people with the required skills (instead of training employees). Around a third in 2020 (and 40 percent in 2010, 2015) reported that the costs of training were too high, and around a fifth of companies also reported that the workload was too heavy to allow part of the time to be devoted to training.

3.2 Firm performance and training

Firms are expected to benefit from training either in terms of its contribution to the value-added or as an additional measure of "continuous" improvement in human capital. To determine whether such a link can be established, regression analysis was conducted. Preliminary results are reported here.

To assess the importance of training for firm performance, an extended production function approach as suggested by Piekkola et al. (2021) was used, where output, as measured by value-added in the firm, depends on the employment of three categories of knowledge workers (organizational, ICT and R&D specialists) and other workers that don't belong to the group of knowledge work-

ers. To control for the contribution of education, first, the average number of years of education per employee in each company was included, as well as costs for education per employee. The relevant estimation equation is the following:

$$lnY_{it} = b_0 + b_L lnL_{it} + b_K lnK_{it} + b_{ICT} lnL_{ICTit} + b_{ORG} lnL_{ORGit} + b_{R\&D} lnL_{R\&Dit} \; b_{EDU} Years\_education + b_{EDU\ COST} Cost\_education + \sum_C b_c C_{it} + e_{it} \quad (1)$$

where K_{it} is capital per firm in a specific year and b_K is the relevant elasticity, L_{ORGit}, L_{ICTit}, $L_{R\&Dit}$ are the organizational, *ICT* and *R&D* workers and the coefficients b_{ORG}, b_{ICT} and $b_{R\&D}$ are relevant elasticities, while L_{it} denotes other workers employed by the firm and b_L is the relevant elasticity. The output also depends on education, measured by the average number of years of education per employee *(Years_education$_{it}$)*, where b_{EDU} is the relevant coefficient, and training costs *(Cost_training$_{it}$)*, where b_{EDU_COST} is the relevant coefficient. In the empirical specification, we control for the "group" or type of company depending on the investment in technology or complementary investment. Random panel effects estimation was used, where estimates were controlled for industry (NACE, level 2) and year. Firm size and technological intensity were investigated separately.

Table 6. Descriptive statistics

	p50	Mean	sd	N
Value-added per employee	29,834.9	37,628.8	38,495.5	4,181
Capital per employee	27,759.4	60,898.3	194,501.4	4,660
Average years of education	11.5	11.8	1.5	3,043
R&D employees	1.0	13.3	62.5	4,209
ICT employees	0.0	3.6	21.2	4,209
Organizational employees	1.0	5.1	13.9	4,209
Employment	32.0	131.2	401.1	4,206
Cost of training per employee (in euros)	20.7	217.5	1,342.4	4,209

Source: Statistical Office of the Republic of Slovenia (2021).

The average company had 29.8 thousand euros of value-added per employee and 27.8 thousand euros of capital per employee. The mean investigated firm had 131 employees, among which there were 13.3 R&D employees, 3.6 ICT employees and 5.1 organizational employees. The average employee had 11.5 years of education. The average firm invested 217 euros per employee in training (Table 6).

Table 7 reports preliminary results. The results show that the amount of human capital or knowledge, if assessed by the number of years of education of workers in a specific firm, has a highly significant impact on value-added,

mostly in high and medium-high-tech companies. Training costs per employee as a signal of firm investment in continuous training also has a significant impact on value-added. However, the results in Table 7 show that this holds only for small firms. This could be explained by the fact that these companies reported that they are trying to address the lack of human capital primarily through new employment. Additionally, we might also hypothesize that companies only report costs for training done by external providers. Anecdotal evidence shows that most of the training is done internally, which contributes to costs companies generally do not record.

Table 7. Regression results

		Technology intensity				Size		
	Total	High, medium-high-tech	Medium-low, low-tech	Knowledge intense services	Other services	Small	Medium	Large
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Average years of education	0.156***	0.229***	0.084***	0.175***	0.173***	0.125***	0.170***	0.166***
	0.011	0.042	0.015	0.031	0.016	0.013	0.025	0.037
ln(ICT workers)	0.108***	0.120*	0.097**	0.137***	0.019	0.173***	0.109**	0.083***
	0.019	0.049	0.035	0.04	0.038	0.039	0.037	0.025
ln(Organizational workers)	0.055**	-0.046	0.092***	0.093	0.104***	0.113***	0.064*	-0.01
	0.018	0.051	0.027	0.05	0.03	0.029	0.029	0.033
ln(R&D workers)	0.069***	0.037	0.118***	0.113**	0.066**	0.118***	0.091***	0.065*
	0.014	0.05	0.023	0.039	0.024	0.026	0.024	0.027
Ln(Other workers)	0.728***	0.845***	0.537***	0.652***	0.766***	0.668***	0.601***	0.702***
	0.021	0.074	0.028	0.063	0.032	0.028	0.044	0.055
Ln (Capital)	0.084***	0.058*	0.080***	0.039*	0.087***	0.079***	0.055***	0.117***
	0.005	0.023	0.007	0.016	0.008	0.007	0.012	0.019
Training cost per employee	0.00001*	0.00001	0.000009	0.000006	0.000007	0.00005*	0.000010	0.000007
	0.000005	0.00002	0.000008	0.00003	0.000006	0.000020	0.000008	0.000005
Constant	8.449***	7.145***	9.276***	8.265***	7.338***	8.321***	9.556***	8.404***
	0.268	0.629	0.195	0.502	0.223	0.502	0.644	0.657
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Size	Yes	Yes	Yes	Yes	Yes	No	No	No
Tech_type	Yes	No	No	No	No	Yes	Yes	Yes
N	2570	308	1358	415	855	1488	799	392
r2_w	0.342	0.6	0.268	0.343	0.45	0.161	0.231	0.663
r2_b	0.881	0.903	0.865	0.789	0.885	0.573	0.583	0.828
r2_o	0.895	0.918	0.88	0.808	0.9	0.563	0.584	0.831
sigma_e	0.327	0.268	0.324	0.448	0.233	0.383	0.359	0.183
sigma_u	0.39	0.447	0.408	0.537	0.408	0.372	0.39	0.361
rho	0.588	0.736	0.613	0.589	0.753	0.486	0.541	0.795

Source: Statistical Office of the Republic of Slovenia (2021).

It needs to be stressed that, first, the analysis is limited by the sample size and structure, which may not be completely representative of the sector or size of the groups and, second, the above results are very preliminary, as they do not include all relevant controls and, primarily, do not address the issue of endogeneity bias.

Conclusion

Education and training are important determinants of productivity and growth at the firm and aggregate levels. Slovenian companies are at the moment significantly lagging behind the European average if measured by the share of total investment devoted to employee training. Data also shows that firms differ a lot – larger companies invest more, and also technologically or knowledge-intense sectors invest more in different forms of training, with the most important forms being the strengthening of professional and technological skills needed in firms. Often, Slovenian companies also employ to cover specific skills needs, rather than train employees. With respect to that, the dominant discourse on skill "mismatch" has to be mentioned. Its supposedly common wisdom is that *"firms are not able to find the right skills to perform their activities."* According to a recent literature stream (e.g., Dosi et al., 2021), the managerial suggestion should be rephrased into *"firms should be more patient and more prepared to spend time and money to create the appropriate set of skills themselves."* Significant variability in productivity and training activities between firms might resemble different organizational capabilities. Future research should study the relationship between formal and informal training, organizational routines and corporate performances.

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IV.

THE PEOPLE AND THE SOCIETY

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THE WORK AND LIFE IN 2050: THE WORK-LIFE VALUES OF DIFFERENT GENERATIONS AND IMPLICATION FOR BUSINESSES

Introduction

Generation Z, often described as one of the most tech-savvy and entrepreneurial generations to date, will constitute the majority of the workforce in 2050. Having said that, research about Generation Z is scarce, especially when it comes to work related motives, values and expectations. The oldest members of this generation have barely entered the workforce, while the youngest are still in primary schools, with no working experience. Therefore, it is rather difficult to predict how they will influence future jobs and how managers should manage them. Understanding their values and motives is essential, since multiple studies have proven that having satisfied employees reduces not only turnover and absenteeism but also increases productivity, customer satisfaction and encourages Organization Citizenship Behavior (Singh & Jain, 2013). That being the case, it is important to study motives and values of different generations. In doing that, companies will be able to prepare in advance and set up an environment where their workforce will thrive and consequently, raise overall performance.

In this chapter, we analyze work motives and values of Generation Z (aged between 18 and 27 in 2022) and younger members of Generation Y (aged between 28 and 35 in 2022) in Slovenia, who will constitute the great majority of the workforce in 2050. The main goals are to analyze these two generations' motivational factors and thus determine their main motivation driver at work as well as define the main reason for these generations to potentially terminate their employment.

The chapter is organized as follows: we first briefly overview the concept of five existing generations, emphasizing Generation Y and Generation Z, their workplace motivations and characteristics. The theoretical introduction is followed by a thorough abstract of relevant European empirical studies on Generation Y and Z. The last part of the paper is dedicated to our own empirical research and analysis of Generation Z and younger members of Generation Y in Slovenia. Finally, the paper ends with discussion**,** which contains recommendations about possible future trends and study's limitations.

1 Concept of generations, their characteristics and workplace motivations

Generations and generational behavior at work has sparked the interest of scholars ever since the industrialization era. Nevertheless, the first to define them was the Hungarian-born sociologist, Karl Mannheim (1952, p. 290), who introduced the concept of generations in his essay, The Problem of Generations, explaining the term Generation location as *"an actuality that arises from the biological rhythm in human existence – the factors of life and death, a limited span of life, and aging."* To this day, many scholars from social sciences agree that historical, economic or social life experiences cause a distinct maturation of a specific generation, which results in generational differences (Wong et al., 2008). Ultimately, all generations also develop different preferences when it comes to work: beliefs about organizations, reasons to work, how to set goals and finally, the way a person envisions their career path (Kupperschmidt, 2000).

1.1 Generational work motives and characteristics

Nowadays, most researchers (e.g., Howe & Strauss, 2000; McCrindle, 2014; Scholz, 2014) acknowledge five unique generations. The Silent Generation, Baby Boomers, Generation X, and lastly, the two truly global generations, Generation Y and Generation Z. The Silent Generation refers to people born before 1949. Baby Boomers are individuals born from approximately 1950 to 1964 and their younger generation, Generation X, is considered to encompass people born from around 1965 and 1979 (Egri & Ralston, 2004; Scholz, 2019) (see Table 1 for brief overview of their work motives and values).

Table 1. Generations and overview of their work motives and values

Generation	Author	Findings
Silent Generation (- 1949)	Scholz (2019).	A generation that was profoundly marked by WW2. They are hard-working and believe things in life do not come easy.
Baby Boomers (1950 - 1964)	Mitchell (1998), Allen (2004), Hart (2006), Yu & Miller (2003).	Work is an important aspect of their lives. They are high achievers, respect authority, loyal to their organization, and diligent at work.
Generation X (1965 - 1979)	Egri & Ralston (2004).	Independent, entrepreneurial, and constantly need new challenges. They value positions in power and achievement significantly less than Baby Boomers.
Generation Y (1980 - 1994)	Mitchell (1998).	Have a need for meaningful work, continuous learning, and a strong desire to succeed. Their biggest source of happiness outside work is family.
Generation Z (1995 - 2010)	Lanier (2017).	Value jobs that bring stability, security, safety, and privacy. They are hyperconnected and consume information faster than any generation before them.

Source: Own work (2022).

Generation Y (hereinafter: Gen Y), also called Millennials, Nexters (Howe et al., 2000) or the Net Generation (Tapscott, 1998), typically begins with birth years from 1980 and ends around 1994. They were raised in a relatively peaceful period, up until September 11 and later on marked by the two economic crashes in 2000 and 2008. This Generation is said to be socialized in a materialistic world (Kim & Jang, 2014) and has been tremendously affected by globalization of society and the marketplace. They want their work to be meaningful, have the need of continuous learning and have a strong desire to succeed. Out of work, their biggest source of happiness is family (Mitchell, 1998).

Generation Z (hereinafter: Gen Z), born between roughly 1995 and 2010, or sometimes called Digital natives, is considered as the newest generation currently setting foot in the workplace. The most impactful event in their upbringing was the global recession, which caused them to become cautious when spending and careful in planning not only their education but also their career path (Segran, 2016). Technology and technological advancement have played a major role in their lives and has influenced their values and attitudes deeply. They are hyper-connected and their constant connectivity made them consume information faster than any generation before but it also shortened their attention span. They value jobs that bring them stability, security, safety and privacy (Lanier, 2017).

1.2 Empirical studies about motivation at work

As an employer, one would probably prefer to have self-motivated employees who would find their work an exciting and pleasurable activity. Ryan & Deci (2017) and Mahmud et al. (2021) name this kind of motivation intrinsic motivation where individuals do not need external pressures to perform the task. Among those are achievement, growth, respect, responsibility, and recognition (Furnham et al., 2009), taking the initiative, participation, and interesting work (Beyhar Acar, 2014). Many studies emphasize intrinsic motivators more than extrinsic ones since they are perceived as more valuable in bringing greater outcomes (creativity, quality, spontaneity, and vitality) (Reinholt, 2006). On the other hand, extrinsic motivation refers to societal values and expectations. It is a state where individuals expect to achieve a specific outcome for their behaviors, such as rewards or acknowledgment (Ryan & Deci, 2017). Examples are adequate earnings, considerate and sympathetic supervisor, job security, working conditions, non-monetary benefits and work-life balance (hereinafter: WLB) (Beyhar Acar, 2014). WLB emphasizes factors such as health, absence of stress, well-being, quality of life, organizational performance, and suitable human and social environment. This is important, because studies show that the absence of WLB may increase the chances of employees terminating their contracts (Sánchez-Hernández et al., 2019).

Another study on values and motivators regarding work and life conducted in Ireland, Poland, Slovenia and the United Kingdom found that it is important to manage not only employment contracts but also psychological contracts, defined as individual beliefs regarding mutual obligations in an employment relationship (Guest, 2004; Rousseau, 1995). Employers should provide support for performance and development as well as ensure good working conditions and pay, relationships and culture, and specific job characteristics (inter alia, interesting and challenging work, autonomy). Employees also expect from employers development opportunities, affirmation, meaningful work, stability, salary and WLB. In exchange, they are willing to offer their time, positive attitude, creativity, role-specific knowledge and skills (Mihelič et al., 2021).

Eilers et al. (2016) discovered the core values of Gen Z in Austria, Germany, Netherlands, and Switzerland to be: structure, security, and feeling good. Moreover, for Gen Z, combining family and work is extremely important. They prefer to have fewer responsibilities and are not in favor of working extra hours. At the same time, members of this generation expect to have a huge degree of

autonomy and are looking for a self-fulfilling job. Interestingly, their biggest fear for the future was discovered to be unemployment.

According to Furnham et al., (2009), personality and demographic variables also contribute to motivation and job satisfaction. In their study, which was conducted in the United Kingdom, they discovered that between nine and 15 percent of the variance in motivation results from demographic variables and the Big Five personality traits. Moreover, conscientiousness and job status seem to be significant predictors of job satisfaction. Apparently, between 11 and 13 percent of the variance in job satisfaction resulted from personality and other demographic variables.

Korelc (2018) compared workplace motivational factors of Generations Y and Z in Slovenia, with the purpose to study their perceptions of work motivations. The results showed that Gen Y values the relationship with colleagues and opportunity for personal growth the most. On the other hand, Gen Z puts high priority on having a fair and considerate boss and favors advancement and chances for promotion. Compared to Gen Y, it also places a significantly greater importance on job security and having a job as permanent as possible. Some of the key findings can be observed in Table 2.

Table 2. Empirical research of Gen Y and Gen Z on the most important work-related factors

Category	Generation Y	Generation Z
Work relations	Relationship with colleagues.	A fair and considerate boss.
Influence and advancement	Opportunity for personal growth and development.	Advancement and chances for promotion.
Financial and working conditions	Benefits (e.g., vacation, sick leave, pension, insurance).	Benefits (e.g., vacation, sick leave, pension, insurance).
Autonomy and skills	Personally interesting work.	Personally interesting work.

Source: Korelc (2018).

Zupan et al. (2015) conducted a study in which they searched for differences in work values of the young business student generation in China and Slovenia. The four most important work values for Slovene respondents were found to be advancement, interesting work, salary, and achievement. Moreover, Slovene business students scored high in valuing interesting work and freedom, which was discovered to be one of the fundamental values among young Slovenians also by Čater et al. (2013). The most important work-related value for Slovenes

was the importance of advancement, which was already studied in terms of the ambitious nature of the young generation (Goldman & Schmaltz, 2006).

2 Empirical analysis

The following section contains a description of the research methodology, including the method of data collection and composition of instruments in survey, survey's structure and distribution, sample description, data analysis and main results. The empirical analysis of the online survey was carried out with the purpose to find statistically significant differences between Gen Z and younger members of Gen Y.

2.1 Research methodology

The research for this topic started with the analysis of existing secondary data, namely, academic journals, literature and other statistical data. The mentioned literature was used to develop hypotheses and questions for our own online survey, which was the main source of primary data in this chapter. To test if there are any differences between Slovene Generations Y and Z, we used nine intrinsic motivational and nine extrinsic motivational factors from the literature (Herzberg, 1959; Korelc, 2018; Beyhan Acar, 2014). Additionally, the results of the secondary data suggested that Gen Z puts more emphasis on WLB and Corporate Social Responsibility, which is why we included an entire section in the questionnaire. Finally, we decided to explore the causes for employment termination amongst Gen Z and younger members of Gen Y.

2.2 Survey structure and distribution

The survey was designed in the online survey tool 1KA and the respondents were aged from 18 to 35 years old. The first three questions were designed as a seven-point Likert scale and were asking respondents to rate various work motivation related factors from 1 ("not important at all") to 7 ("extremely important"). In addition, the questionnaire measured the importance of WLB, Corporate Social Responsibility and, finally, their demographic information.

The survey was distributed via e-mail and shared on various social media platforms. Via e-mail, the main targets were regional student organizations,

sports clubs and other similar societies that contain members of generations Y and Z. Social media platforms (Facebook and LinkedIn) were used to post links to the survey on our private profiles and in several pre-existing groups. Last but not least, the link was shared amongst our friends, families and school colleagues, who shared in further in their private networks.

2.3 Sample description

The online survey was launched on September 9th, 2022, and was closed on September 22nd, 2022. We managed to obtain a sample of 403 respondents, out of which 295 finished the survey. Males represent 34 percent and females 66 percent of all participants. The great majority (91 percent) does not have children yet and 64 percent have at least a University degree. We managed to collect responses from all Slovenian regions, although the greatest number (55 percent) come from the Osrednjeslovenska region. Roughly half of all participants live in a city or town with more than ten thousand inhabitants and the other half live in towns containing less than ten thousand people. About 90 percent stated to be currently working and 76 percent of them have more than one year of working experience. It came as no surprise though, that the majority, (56 percent), works in bigger Slovenian cities, specifically Ljubljana and Maribor.

2.4 Analysis

In the first question, we asked the respondents to assess the effect 18 different factors have on their motivation. These factors were:

- EXTRINSIC: good relationship with coworkers, considerate and sympathetic supervisor, competitive salary, job security, appropriate and safe working conditions, non-monetary stimulations, work-life balance, working with modern technologies, working with recognized experts, and
- INTRINSIC: receiving regular and constructive feedback, opportunity for training and development, respect and recognition, participation in decision-making, possibility of promotion, possibility of personal growth, autonomy and responsibility at work, interesting work, contributing to the company's success.

There were no statistically significant differences between Gen Y and Gen Z in relation to the average effect extrinsic motivational factors have on their

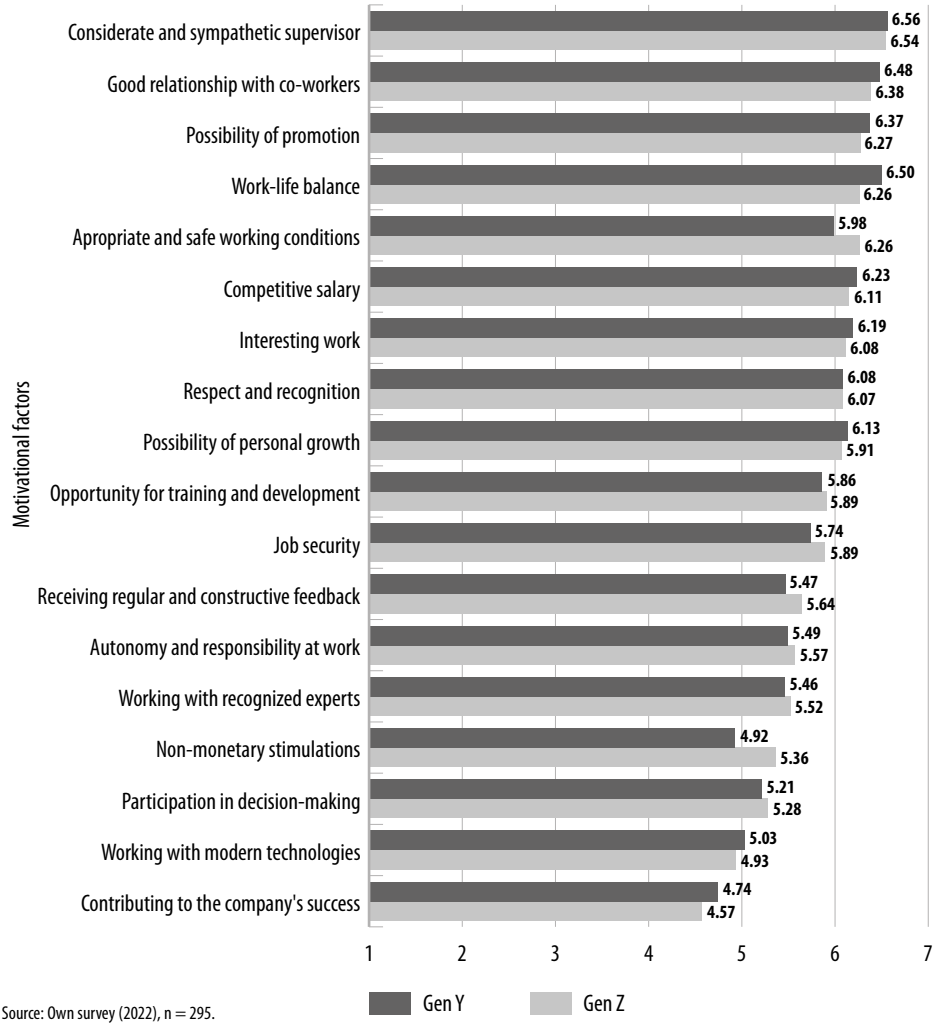
motivation at work,[1] even though Gen Z seems to be slightly more extrinsically motivated (mean = 5.83) than Gen Y (mean = 5.81). However, taking into account each extrinsic factor separately, there were two of them, for which we found statistically significant differences between the two generations in favor of Gen Y; these were good relationship with coworkers (mean Gen Y = 6.55, mean Gen Z = 6.38)[2] and work-life balance (mean Gen Y = 6.50, mean Gen Z = 6.26)[3]. There were no statistically significant differences regarding the remaining seven extrinsic motivational factors, yet Gen Z might be slightly more motivated than Gen Y only by the following three: job security (mean Gen Y = 5.74, mean Gen Z = 5.93), appropriate and safe working conditions (mean Gen Y = 5.98, mean Gen Z = 6.26, and non-monetary stimulations (mean Gen Y = 4.92, mean Gen Z = 5.36).[4]

There were also no statistically significant differences between Gen Y and Gen Z in relation to the average effect intrinsic motivational factors have on their motivation at work, yet it seems that Gen Z is slightly more intrinsically motivated (mean = 5.84) than Gen Y (mean = 5.81) as well.[5] Taking into account each intrinsic motivational factor separately, none of the tests turned out statistically significant, however, Gen Y seems to be a little bit more motivated than Gen Z by possibility of promotion (mean Gen Y = 6.37, mean Gen Z = 6.27), possibility of personal growth (mean Gen Y = 6.13, mean Gen Z = 6.11), and interesting work (mean Gen Y = 6.19, mean Gen Z = 6.11).[6]

Considering all 18 motivational factors, work-life balance was the fourth most important factor for Gen Z and the second for Gen Y. What is interesting is that Gen Z and Gen Y both ranked "considerate and sympathetic supervisor" as the most important motivational factor. Similarly, "contribution to the company's success" was the least important factor. No statistically significant differences in ranking were found for factors such as: "respect and recognition", "opportunity for training and development", "interesting work", "competitive salary" and "working with modern technologies". The biggest differences were observed for "non-monetary stimulations" and "appropriate and safe working conditions" which Gen Z values more than Gen Y. Figure 1 shows all motivational factors listed from the most to the least important for 190 members of Gen Z and 105 members of Gen Y.

1 $t = -0.26, p > 0.1$
2 $t = 2.00, p = 0.02$
3 $t = 2.18, p = 0.01$
4 Job security: $t = -1.33, p > 0.1$; appropriate and safe working conditions: $t = -2.16, p > 0.1$; non-monetary stimulations: $t = -2.68, p > 0.1$
5 $t = -0.32, p > 0.1$
6 Possibility of promotion: $t = 0.96, p > 0.1$; possibility of personal growth: $t = 0.25, p > 0.1$; interesting work: $t = 0.74, p > 0.1$

Figure 1. Motivational factors among Generation Y and Generation Z



Source: Own survey (2022), n = 295.

Question 2 encompassed eight questions, all pertaining to work-life balance, where the respondents were asked to rate each WLB dimension from 1 ("not important at all") to 7 ("extremely important"). Looking at both generations, the most important dimensions were: "having enough time for personal activities and hobbies", "having enough energy for family and hobbies after work", "being able to easily balance personal life and work" and finally, "no need to think about work while on vacation". Two dimensions were significantly more important for Gen Z than for Gen Y, namely "don't have to think about work while on vaca-

tion or at home" [7] and "having a clear demarcation between work and private life" [8]. Gen Z's mean of the first dimension was 6.16 and Gen Y's was 5.88. Regarding the second dimension, the means were 5.96 for Gen Z and 5.60 for Gen Y. Meanwhile, there were no statistically significant differences between the two generations regarding the other six WLB dimensions (i.e., "having enough time for personal activities and hobbies", "having enough energy for family and hobbies after work", "being able to easily balance personal life and work", "the possibility to work from home", "not working overtime", and "having a flexible work schedule"). We proved our assumption that WLB is not equally important for male and female respondents by using the Welch Two Sample t-test. Female members of both generations valued work-life balance significantly more[9] than men. Considering Gen Z, the mean of female group was 5.60 while the mean of the male group was 5.23. Female respondents from Gen Y scored a mean of 5.98 and men a mean of 5.32. Women's highest priority was "having enough energy for family and hobbies after work", while this factor only ranked third in the male group. For men, the most important factor was "having enough time for personal activities and hobbies". While this was true for Gen Z, we have found the same two factors among Gen Y respondents, but men prioritized "having enough energy for family and hobbies after work" and women prioritized "having enough time for personal activities and hobbies". We found "the possibility to work from home" and "not working overtime" at the bottom of the work-life balance priorities for both generations. The latter was not found important for males of Gen Z (mean = 3.77) but was somewhat important for females of Gen Z (mean = 4.85).[10] Similar means can be found for respondents of Gen Y (4.02 for males and 4.89 for females)[11].

When measuring WLB, we also used a technique of fictional scenarios and asked young generations what they would choose if they were in specific situations. Work motives and values were connected with several socio-demographic factors, *inter alia,* gender, residence, income, working experience and presence of children. People with children were the least likely to accept promotions and higher salaries in exchange for their free time. Oppositely, people earning more than 2201 euros were the most likely to accept those deals. Respondents living in a city had the greatest desire to land on prestigious positions; contrarily, respondents living in small villages were the least likely to go after such an offer. Finally, males were the most likely to accept deals that would require long com-

7 $t = -1.61, p = 0.05$
8 $t = -2.04, p = 0.02$
9 Gen Z: $t = 4.66, p < 0.001$, Gen Y: $t = 5.30, p < 0.001$
10 $t = 3.91, p < 0.001$
11 $t = 4.22, p < 0.001$

mutes. The findings, segmented in various demographic segments, can be seen in Table 3. The shadowed cells represent the group of respondents who were the most likely to accept each of the offers.

Table 3. Share of respondents that would accept a job offer which lowers their work-life balance (share in percent)

Respondents		Higher pay but working overtime and consequently less time for family and friends	Promotion and more prestigeous job position but more responsibilities, work overload, stress and possible exhaustion	Higher pay and a company car but a 1.5-hour commute to work and less time for hobbies
Gender	Female	49	48	67
	Male	48	55	77
Place of living	City (Ljubljana or Maribor)	45	58	64
	Small village (less than 500 inhabitants)	47	39	76
Monthly earnings	More than €2201	53	42	58
	Less than €801	50	46	72
Years of working experience	Less than three	49	56	70
	More than three	49	49	7
Children	Yes	36	40	60
	No	50	51	71

Source: Own survey (2022), n = 295.

Question 3 included three claims connected to different aspects of Corporate Social Responsibility, namely social, environmental, and global impact. Respondents evaluated on a scale from 1 ("not important at all") to 7 ("extremely important") how important it is that the organization operates responsibly. Having performed the Welch Two Sample t-test, we confirmed that Gen Z (mean = 5.55) gives more importance to CSR in general compared to Gen Y (mean = 5.32)[12]. More specifically, we also proved that Gen Z (mean = 5.45) places more importance on the environmental aspect of CSR compared to Gen Y (mean = 5.21)[13] and that being part of the organization that tries to make the world a better place means more to Gen Z (mean = 5.57) compared to Gen Y

12 $t = -1.62, p = 0.05$

13 $t = -1.98, p = 0.02$

(mean = 5.35)[14]. Meanwhile, there were no statistically significant differences regarding the importance both generations place on the social aspect of CSR.

Question 4 listed 18 possible causes for employment termination. Respondents evaluated each of them from very unlikely ("1") to very likely ("3"), based on how likely they would terminate their employment, if a certain cause occurred in their workplace. The causes for employment termination from the one most likely to cause Gen Z employees to leave their job to the one most unlikely to cause them to leave are shown in Figure 2, which also shows the likelihoods that each of these causes results in Gen Y employees terminating their employment.

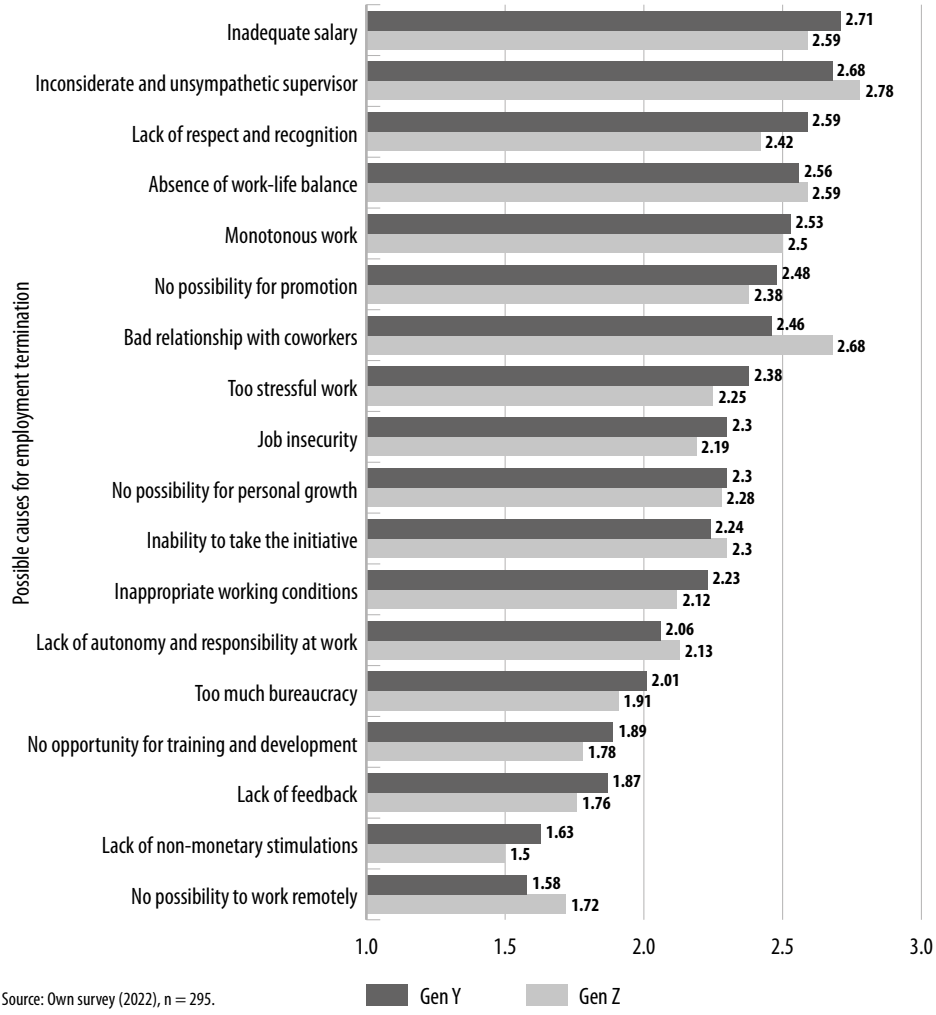
Gen Z would most likely leave their job in case of inadequate salary (2.71 out of 3), followed by having an inconsiderate and unsympathetic supervisor (2.68 out of 3) and lack of respect and recognition (2.59 out of 3). On the other hand, in case of no possibility to work remotely or lack of non-monetary stimulations, Gen Z is relatively unlikely to leave their job (1.58 and 1.63 out of 3, respectively). On the other hand, Gen Y would most likely leave their job in case of having an inconsiderate and unsympathetic supervisor (2.78 out of 3), followed by having a bad relationship with coworkers (2.68 out of 3) and inadequate salary (2.59 out of 3). Similarly to Gen Z, lack of non-monetary stimulations and no possibility to work remotely would very unlikely cause Gen Y to leave their job (1.5 and 1.72 out of 3, respectively).

Working remotely is gaining momentum and more and more people are reluctant to be pinned down in an office space. Therefore, we decided to isolate the respondents who answered that working remotely is extremely important (answer 7 on a 1–7-point Likert scale). The selected sample consisted of 73 out of 295 respondents and the calculated average age was 26.8 years with modus of 24 years old (meaning people who answered this were in the majority of the cases aged 24 years). This group encompassed 24 percent male and 76 percent female members of Generations Y and Z. An expected high percentage of them (77 percent) had at least a University degree. The great majority (64 percent) came from the Osrednjeslovenska region and 71 percent of them worked in Ljubljana or Maribor. Finally, yet importantly, only five percent currently worked fully remote. However, they would not necessarily leave their job if they hadn't had the opportunity to do so. Their top three reasons would actually be: not receiving adequate monetary compensation (mean 2.76 out of 3), having an inconsiderate and unsympathetic supervisor (mean 2.76 out of 3), and lack of

14 $t = -1.42$, $p = 0.08$

WLB (mean 2.70 out of 3), respectively. Additionally, they highly value flexible working hours (mean 6.72 out of 7) and their motivation is boosted most when having a considerate and sympathetic supervisor (mean 6.60 out of 7).

Figure 2. Possible causes for employment termination among Generation Y and Generation Z and the corresponding likelihoods



Source: Own survey (2022), n = 295.

In the last question, respondents were asked if they miss anything, when it comes to their current employer. This question was optional, open-ended and collected 137 respondent's opinions. Out of those, the most recurrent answer

was “emotional intelligence and empathy from supervisors and coworkers”. “A higher monetary compensation” ranked second and “a more organized and better-planned work” third. It seems that the interviewed generations also place significant importance on “being heard” and having the “opportunity to participate in a company’s decisions”. The main findings, with the highest frequencies, can be observed in Table 4.

Table 4. Most frequent unfulfilled motivational factors at respondent’s current workplace

Category	Most frequent answers	Frequency
Relationships at work	Emotional intelligence, empathy.	17
	Feedback.	8
	Better relationships with supervisors or co-workers.	8
	Better and more frequent communication.	7
	Recognition of good work from the supervisor.	5
Monetary compensation	Higher monetary compensation.	15
	Monetary benefits.	2
Leadership	Better planning & organization of work from supervisors.	13
	Higher competency and accountability of supervisor, leader.	5
Working environment	The opportunity to participate in decisions, to be heard.	8
	A flexible work schedule.	5
	Advancement opportunities.	5
	More responsibility, challenging work.	5
	Digitalization and innovation.	4

Source: Own survey (2022), n = 137.

3 Discussion

Many studies emphasize intrinsic motivators more than extrinsic ones, since they are perceived as more valuable in bringing greater outcomes (creativity, quality, spontaneity, and vitality) (Reinholt, 2006). However, according to our research, both Gen Y and Gen Z are on average more intrinsically than extrinsically motivated. Nevertheless, taking each motivational factor separately, both generations are the most motivated when their supervisors are considerate and sympathetic, which is an extrinsic factor. Gen Z seems to be overall

more motivated in the workplace than Gen Y and since Gen Z will constitute the majority of the workforce in 2050, future employers should exploit that. Namely, all else being equal, more motivated employees bring greater value to the company. However, Scholz (2019) argues that Gen Z is less focused on their work than their predecessors which implies there are other things that are more important to them than just their job. Indeed, several authors emphasized the importance of family, leisure, flexibility, work-life balance, and 100 percent feel-good environment (Sánchez-Hernández et al., 2019; Scholz, 2019). Moreover, the same as Gen Y, Gen Z is the least motivated by working with recognized experts, which corresponds with Scholz's (2019) statement of Gen Z being a more individualistic generation. Gen Z or the so-called "professional world improvers" (Jagaciak and Fink, 2017) also place more importance on Corporate Social Responsibility, especially on the environmental aspect, and want to make the world a better place. Therefore, companies should strive to have environmentally friendly and sustainable future operations.

In order to keep high employee retention rate (i.e., low employee turnover), companies will have to make sure their employees have adequate and competitive salaries, and that people in managerial and supervisory positions are considerate and sympathetic. Additionally, employees' achievements and efforts should be respected and recognized, the company culture needs to foster good employee relationships and employees should have a work-life balance (WLB). The latter can be achieved by flexible scheduling and/or work-from-home options, even though the absence of it would unlikely be the reason for employment termination for Gen Z and Y.

What managers need to keep in mind is what the younger generations value today might be a great indicator of what they will need in the workplace in the future. The top four motivational factors reflect that both Gen Y and Gen Z give greater weight to people-oriented factors. A considerate and sympathetic supervisor is the most important for both generations. Together with good relationships with co-workers, which places second for Gen Z and third for Gen Y, this might trigger a change in organizational culture for some companies. Company culture is important and hard to change, so we suggest companies start building a people-oriented culture as soon as possible. It might make sense to organize team-buildings and reorganize business premises to be more appropriate for employees to meet, share ideas and grab a cup of coffee, which again validates Scholz's (2019) findings about the feel-good environment. The possibility of promotion being ranked as the third most important motivational factor for Gen Z and the fourth for Gen Y, both generations must have a trans-

parent promotional plan to stay motivated for work. The biggest differences between the two generations were found for "non-monetary stimulations" and "appropriate and safe working conditions" in favor of Gen Z. Therefore, we suggest offering Gen Z benefits, such as a company car, coupons or discounts for certain products or services, more time to work on their own projects, flexible working, additional time off and opportunities for professional and personal development. More attention should also be placed on ergonomics, basic physical conditions in the workplace (such as temperature, noise, etc.) and adequate safety equipment in hazardous work environments.

One of the most important dimensions of WLB, i.e., the top fourth motivational factor for Gen Z and the top second for Gen Y, is "having enough time and energy after work" while "working overtime" is at the bottom of their priorities. We can therefore assume that both generations are willing to work overtime as long as it feels their personal lives are not affected. There are, however, some differences between genders. Women value WLB significantly more than men, who primarily want to have enough energy for after-work activities. Besides women, respondents with children also value WLB significantly more compared to other demographic groups and are oftentimes not willing to sacrifice it. Therefore, it is important that managers think about how to raise their productivity while they are at work. Optimizing the working schedule and giving an opportunity to work remotely, could give women and parents an opportunity to excel at work, while retaining their much-needed family time. Paying attention to Gen Z regarding clear demarcation between work and private life and assuring they do not need to think about their work while on vacation or at home could be one of the biggest challenges for the organization of work, especially considering the rise of remote work.

Albeit not being discovered as a top priority in our research, it is very likely that the future will bring, along with technological advancement, more remote work opportunities (Robinson, 2022). Young generations will find it progressively easier and more appealing to work for hybrid or remote-first companies, which will give people more opportunities for work, even abroad. This potential shift calls for an urgent modernization of working conditions in order to prevent the young and talented people from seizing better jobs outside of Slovenia.

One of our strong beliefs is also that managers should put more emphasis on emotional intelligence and empathy, since our results imply there is a great need to improve interpersonal relationships at work. We advise investing in corporate organization and work planning and set an example for employees,

who often feel leaders are not held accountable for their own tasks and deadlines. We advise managers to let their employees participate in the company's decisions and have a say in important matters. At the end of the day, listening to employees' needs is crucial if managers want to retain and motivate them in the future.

Lastly, we want to mention our research's limitations. The collected results were not proportionally distributed across regions, which could potentially make our sample unrepresentative. The distribution of respondents was uneven when it comes to gender, education and location of respondent's workplace. The analysis therefore predominantly reflects the answers of women, people with at least a University degree, and those coming from the Osrednjeslovenska region. Moreover, had we taken the whole Gen Y (aged up to 42 in 2022) as our research population, we could potentially have proven more statistically significant differences between the two generations. Finally, even though the concept of generations is used in many studies, there are several critiques of using generations as the unit of measure. Some authors argue there is no evidence of distinction among generations X, Y, and Z (Parry & Urwin, 2017), particularly where work-related outcomes are concerned (Costanza et al. (2012), while others emphasize a lack of evidence on the causes on distinctions. Also, the so-called cohort-based view might be overly simplistic as it views the generations based only on birth years (Lyons & Kuron, 2014), which assumes homogeneity of generation based on shared experiences and requires researchers to arbitrarily use the cut-off years (Wang & Peng, 2015). Last but not least, methodologists insist it is not possible to empirically separate the influence of generations from age and simultaneous time period effects.

Conclusion

Setting up conditions that foster a productive and constructive working environment is not an easy task. Having said that, it seems that the youngest generations do have distinct preferences and do not perceive all motivational drivers in the same manner. By knowing them, managers can put stress on those that really matter and avoid implementing inadequate stimulations, perks or promotion plans. The generations in 2050 will indeed expect, from the companies they work for, to have modern equipment and the latest technologies. Nevertheless, managers must keep in mind that technological advancement represents just one component of the equation. Employees, at the end of the day, exchange their time and expertise for adequate monetary compensation.

While salaries represent an enormous expense for employers, when adequate, they can significantly motivate employees and raise productivity (Jayachandran, 2020). Another just as important motivational driver is the company's culture. Young generations wish to have empathetic supervisors, frequent feedback and harmonious relationships with their coworkers. The lack of emotionally stable environment, backed up with a purposeful structure in the operational part, still seem to be one of the core problems of Slovenian companies.

One never knows what the future holds but there is one thing we can be sure of – the youngest generations will have to be managed in different ways than their predecessors. They will most certainly have different expectations, drivers, and desires that will push them to excel at work. Another disruption will inevitably come when the latest generation, Generation Alpha, begins to enter the workforce. This generation, encompassing individuals born in and after 2010, is expected to be by far the most diverse and educated generation, with technology influencing nearly all their developmental stages (Jha, 2020). Understanding generational particularities is thus crucial, especially because the future will bring a distinctively multi-generational workforce (Phakathi, 2017). For that reason, it is vital for managers to understand and monitor the shifts in work motivations over time, since employee satisfaction and happiness greatly contribute to a company's success (Singh & Jain, 2013). Hence, our farewell message for managers in 2050 is to always remember that: *"Customers will never love a company, until the employees love it first."* (Simon Sinek)

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CONSUMERS AS DRIVERS OF SOCIAL AND ECONOMIC CHANGE

Introduction

The digital revolution has not only changed companies but also consumers in certain respects. Digital transformation and the resulting business model innovations have greatly changed consumer expectations and behaviour, put pressure on traditional companies, and turned many markets upside down (Verhoef et al., 2021). Countries with high digital adoption rates tend to benefit from using digital channels in banking, grocery, healthcare, and telecommunication carriers. Consumers perceive digital tools as an essential part of the shopping experience, and expect stores to blend physical and digital channels to create a perfect hybrid shopping journey (Haller et al., 2022).

Additionally, increasing number of global trends have originated in the last couple of years due to accelerated global events, such as Covid-19 pandemic and recent rapid increases in inflation rate. Over the past few years, consumers have become aware that sustainability and wellness go hand in hand. They have become more conscious about the environment and their personal impact, thus switching to local brands/private-label products. On the other hand, they remain focused on price and convenience reducing spending on discretionary items and wanting more value for their money. So, companies need to stay flexible, agile, and very technologically savvy to fulfil the changing needs and expectations of their customers and ensure customized approaches, services, support, discount, and offers are provided (Haller et al., 2022).

The chapter seeks to provide an overview of the impacts, changed consumer behaviours and attitudes have on shaping the years ahead. The chapter begins with an overview of digital adoption, followed by the data on general global consumer trends, focusing on Europe. The research on Slovenian consumers

consists of analysis of the most important changes in consumer behaviour and expectations for the future and comparing such attitudes and behaviours of different generations of consumers (Gen Z, Y, X, baby boomers) (Marinšek et al., 2022). The conclusion contains the main findings of our primary research, which will be compared with trends and behaviours of consumers in Europe, limitations, recommendations, and managerial implications.

1 Key consumer trends worldwide

The behaviour of consumers is changing due to the digital revolution. The Covid-19 pandemic has changed the face of business, regardless of the industry. Over the past two years, about 68 percent of consumers have purchased products in a new way. Most consumers expect new ways of usage to either remain the same or even increase. In addition, 61 percent of consumers who make purchases through social networks are planning to do it more in three years (Salesforce, 2021). When it comes to Slovenia, in 2021, 90 percent of Slovenians were using the internet and 72 percent were making online purchases. Moreover, if we compare the purchasing rate of goods or services via internet in Slovenia, we can observe 25 percentage point increase between 2016 and 2021 (Eurostat, 2021).

While consumers are generally switching to online stores, digital touchpoints became more important than ever, since the consumers are more connected, informed, empowered, and active through various social media channels and search tools (Kannan, 2017). Digital technologies allow consumers to co-create value with companies, through personalizing, reviewing, and designing products, and in that way, they can help other consumers as well (Haller et al., 2022). Additionally, mobile devices are a perfect tool for companies to reach their customers. Using AI technologies in mobile apps can significantly improve their user experience, create a new norm, and defy traditional business rules (Verhoef et al., 2021). Mobile apps accelerated digital adoption amongst users in industries with higher mobile app utilization. They serve as the primary communication channel, and their existence ensures a higher level of digital users. In industries, like entertainment and banking, remote assistance via chat, phone calls and emails are diminishing, while the same remote assistance is booming in industries such as education, utilities, and insurance, ensuring the opportunity to increase mobile channels by optimizing digital channels (Hajro et al., 2022).

Although research shows that digital adoption is lower today in comparison to 2020, the overall usage is still high, with a net gain of 100 million users in Europe alone since 2019. Banking, grocery, and healthcare made the biggest gains, while the public sector, utilities and insurance lagged. A high level of digital adoption was noted amongst younger users, who lived in urban areas and had higher levels of education and income (Hajro et al., 2022). Also, millennials are the most digitally inclined generation, followed closely by Gen Z. People in general aspire to maintain digital transactions. However, 43 percent of customers prefer non-digital channels — meaning satisfying customers generally requires great experiences both online and offline (Salesforce, 2022).

Despite the high rates of digital adoption, lagging in design results in diminished satisfaction with user experience. Poor user experience is a major nuisance for 28 percent of users. In 15 out of 19 European countries, McKinsey's research demonstrated that user experience (UX) and user interface (UI) were the main reasons for dissatisfaction amongst users. Research also shows that consumers are losing trust in digital channels, due to the mishandling of personal data and cyberattacks. It's interesting to note that the same users now trust payment systems more (Hajro et al., 2022).

Europeans have begun to interact digitally with twice as many industries. Namely, banks occupying a leading position (Hajro et al., 2022). However, cash is still widely used, especially for smaller amounts and due to absence of additional fees. However, debit cards and mobile payments are the most common and popular choices for daily shopping. Consumers appreciate the possibility of instant and contactless payments, regardless of the platform or device. Despite incomplete literacy about digital euro, consumers agree that banks would be the safest and the most reliable providers (The European Central Bank, 2022).

On the rise are consumers' expectations for personalization. They love different kinds of offers, discounts, and personalized items, made just for them (Statista, 2022). Companies use big data to learn much about their consumers, so they can take a personalized approach towards each individual consumer or a group of consumers with similar interests and tastes. Companies must remain flexible in today's world, and they need to make various changes and improvements in their work. Consumers who appreciate and recognize it, tend to shop in those selected stores more. Using big data and focusing on various digital touchpoints is very important for consumers and for firms in every industry (Verhoef et al., 2021).

Sustainability is another crucial trend that massively impacted companies and consumers' purchasing choices. Consumers are increasingly aware how their actions impact the environment and hence are looking into more sustainable options. However, price, quality, and selection are continuing to be the most important aspects that influences buyers' decisions. IBM research says that not only rich consumers are willing to pay a premium, but additionally one-third of consumers of average income would buy sustainable products if the prices are comparable to unsustainable products (Haller et al., 2022). The difference between the generations is not that significant given everyone is slowly adopting sustainable products. However, younger millennials are most engaged with a sustainable way of living, while Generation Z is the least engaged in the community (Deloitte, 2022). Also, there is a reported gap that none of the sustainable companies have met their customers, which is a huge business opportunity for companies to tackle, especially those in the retail and consumer product sectors (Haller et al., 2022). Customers also want to see more well-known companies make a commitment to reusing, recycling, and repurposing as well as offering second-hand goods and expanding their availability across all channels (Statista, 2022).

Lastly, Covid-19 pandemic period and (2020) thereafter, has been marked as uncertain times. The pandemic and other global events caused turmoil in global markets, which consequentially had a tremendous impact on consumers who had to adjust their spending and saving habits (OECD, 2022). Inflation has reached its highest in comparison to previous decades. While 75 percent of baby boomers and 71 percent of Gen X consumers consider rising prices as their biggest worry, a little more than half (55 percent) of millennials and only 44 percent of Gen Z consumers share these concerns (Charm et al., 2022). Consumers are constantly changing their behaviour when purchasing, but in times of crisis, these habits change more rapidly and in a different pattern. Three-quarters of the consumers in the US switched their buying patterns to buying in bulk, delaying purchases, using programs such as "buy now pay later" and changing their retailers and/or brands due to high prices (Charm et al., 2022). Additionally, 66 percent of US consumers acted in response to rising inflation. Different categories experienced changes in sales after the Covid-19 pandemic, real debit and credit sales also increased by 16 percent, pet supplies increased by 11 percent, while categories like retail apparel and restaurants experienced a steady sale in 2021 (Charm et al., 2022).

2 Empirical research on consumer trends and digital adoption

2.1 Methodology of research

To analyse how consumer attitudes and behaviours are changing as a result of climate change, economic and geopolitical uncertainty in Slovenia, an online survey was carried out. The survey was conducted in Slovene language and examined the different touch points in the consumer journey, namely the impact of digitalization on their shopping, and purchasing habits, as well as the impact of environmental sustainability and social responsibility on consumers' choice of brands and products. We built our questionnaire using adapted questions and scales from various reports of consulting firms or research institutes (Charm et al., 2022; Hajro et al., 2022; Haller et al., 2022; Salesforce, 2022). Participants were recruited via bulk emailing and different social media platforms, such as Facebook, Instagram, and LinkedIn, through which a non-probability sample of participants was collected.

The survey was aimed at residents of Slovenia, aged 15-67, who have internet access. The questionnaire was open from September 3rd to September 20th, 2022. The survey received 303 responses in total, out of which 267 were fully completed and 36 were partially completed. We have decided to use all valid responses, meaning where respondents answered at the least one question in the questionnaire. The final sample (Table 1) comprised of most of the respondents belonging to Generation Y (38 percent), followed by Generation X (29 percent), Generation Z (21 percent) and baby boomers (12 percent). Of all the respondents, 39 percent were male, 61 percent female, while only one respondent from Gen Y preferred not to answer. Regarding the highest finished formal education, most respondents had second cycle Bologna degree (31 percent), followed by Master of Science (pre-Bologna) or PhD (27 percent), then first cycle Bologna degree (23 percent), high school (11 percent), college (seven percent), and vocational school (one percent). Most respondents (20 percent) indicated their personal net monthly income to be between 1,001 euros and 1,600 euros, followed by 1,601 to 2,200 euros (18 percent) and 2,201 to 3,100 euros (17 percent). This is then followed by people who have personal net monthly income above 3,100 euros (14 percent) and those between 551 to 1000 euros (12 percent) Lastly people who have personal net monthly income of less than 550 euros (six percent).

We performed basic descriptive analysis for all questions, followed by comparisons of the four generations. We used a series of chi-square tests, one-way ANOVA and Kruskal-Wallis tests and Friedman ANOVA, and reported statistically significant differences ($p < 0.05$), where they existed.

Table 1. Socio-demographic variables shown across the generations

Socio-demographic variables	Gen Z 15-25 years old		Gen Y 26-41 years old		Gen X 42-57 years old		Baby Boomers 58-67 years old	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Gender*								
Male	20	36	43	42	30	41	10	31
Female	36	64	59	58	44	59	22	69
Education								
Vocational school or less	0	0	0	0	1	1	1	3
High school	11	20	6	6	6	8	7	23
College	0	0	4	4	4	5	10	32
Bologna First Level	31	55	28	27	3	4	0	0
Bologna Second Level	11	20	45	44	20	26	6	19
M. Sc. or PhD	3	5	19	19	42	55	7	23
Net monthly income range								
Up to 550 €	15	27	2	2	0	0	0	0
From 551 to 1000 €	13	23	8	8	3	4	8	25
From 1001 to 1600 €	11	20	23	23	11	14	8	25
From 1601 to 2200 €	4	7	26	25	15	20	4	13
From 2201 to 3100 €	5	9	18	18	18	24	6	19
Over 3100 €	1	2	16	16	14	18	5	16
I don't want to answer/I don't know	7	13	9	9	15	20	1	3

Note: *one respondent preferred not to answer.

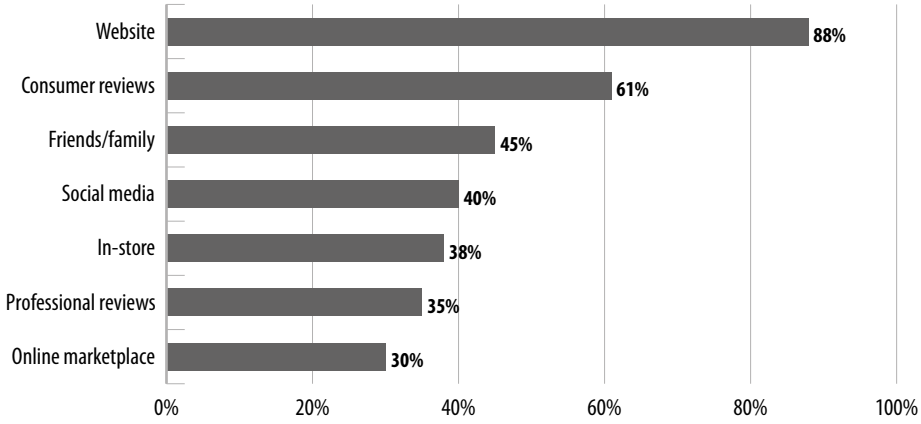
Source: Own survey (2022).

2.2 Survey results

First, we examined the importance of different touchpoints along the customer journey. The most used sources of information are websites of the manufacturer or service provider, reviews and opinions of other buyers, and recommendations from friends and family (Figure 1). The least used channel is

the online marketplace. Statistically significant differences among generations exist concerning usage of social media as a source of information (Gen Z and Y used them more than Gen X and baby boomers) and reviews and opinions of other buyers (millennials use them more than baby boomers).

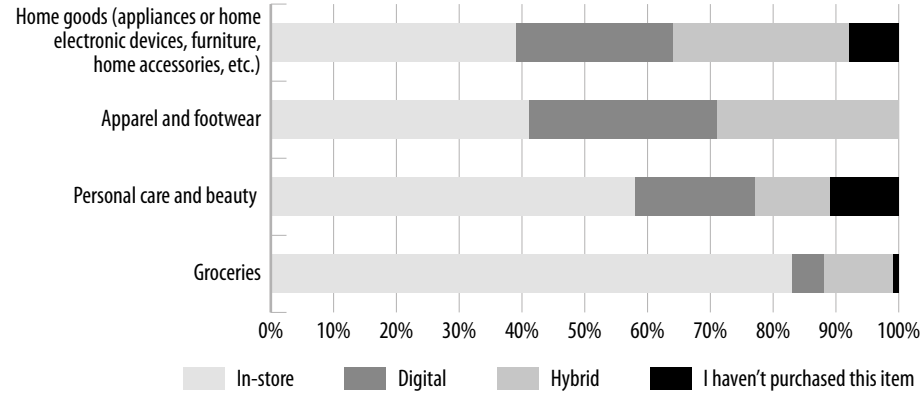
Figure 1. Sources of information consumers use to learn about the new products and/or services



Source: Own survey (2022), n=301.

Regarding channels used by consumers to shop for products and/or services, 90 percent of respondents chose a website as a primary shopping channel and 86 percent continue to use physical stores, followed by social media (11 percent), call and place an order (seven percent) method, chat (one percent), and voice devices and interactive TV are both less than one percent. There are no statistically significant differences among the generations regarding use of different channels for shopping. Physical store is still the main channel for buying groceries (83 percent), cosmetics (58 percent), apparel and footwear (41 percent), and home goods (39 percent) (Figure 2). 30 percent of respondents chose digital channels as the second most important one for apparel and footwear and the hybrid channel (30 percent) is in second place for home goods. Statistically significant differences exist among generations at cosmetics. Gen X and baby boomers predominantly buy in a physical store compared to millennials, who are shifting their purchases to online and hybrid, while for groceries, millennials, and Gen X use hybrid channels more than baby boomers and Gen Z. Gen Z tends to buy groceries predominantly in a physical store.

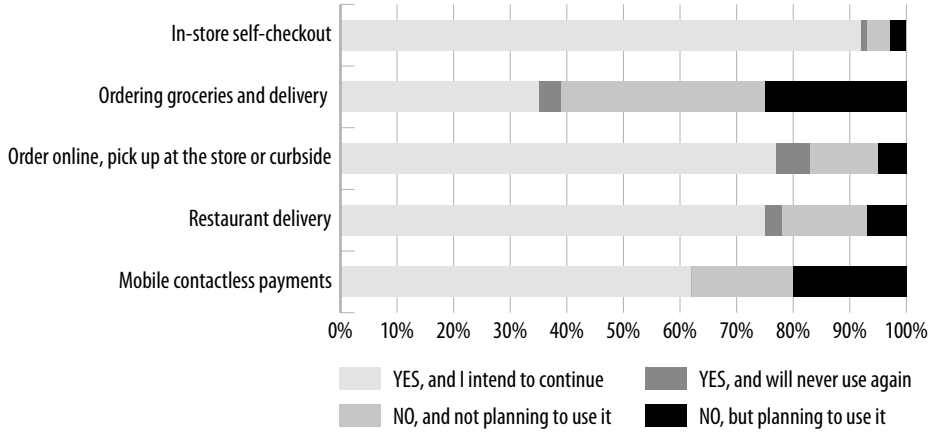
Figure 2. The primary channels for buying different categories in the last year



Source: Own survey (2022), n=300.

Furthermore, we asked respondents to define which digital touchpoints they have already used and whether they intend to continue using them (Figure 3). Most of the respondents indicated that they already use in-store self-checkout (92 percent), order online, pick up at the store or (78 percent), restaurant delivery (75 percent), mobile contactless payment (62 percent), order groceries and have them delivered (35 percent). They plan to continue using them. Statistically significant differences between generations exist, where Gen Z uses the in-store checkout more than baby boomers. Furthermore, millennials order groceries online more than Gen Z, but Gen Z uses restaurant delivery much more than Gen X.

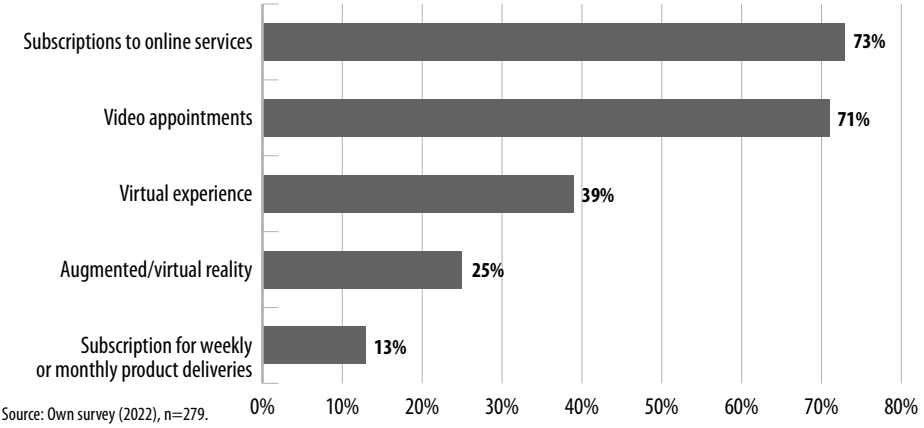
Figure 3. Usage of different channels and intention of usage for the future



Source: Own survey (2022), n=290.

Among the most used technologies and services (Figure 4), respondents specified subscriptions, video appointments, and virtual experience. Statistically significant differences exist among generations, where Gen Z stands out in using subscriptions to online services, and millennials use subscriptions for weekly or monthly products.

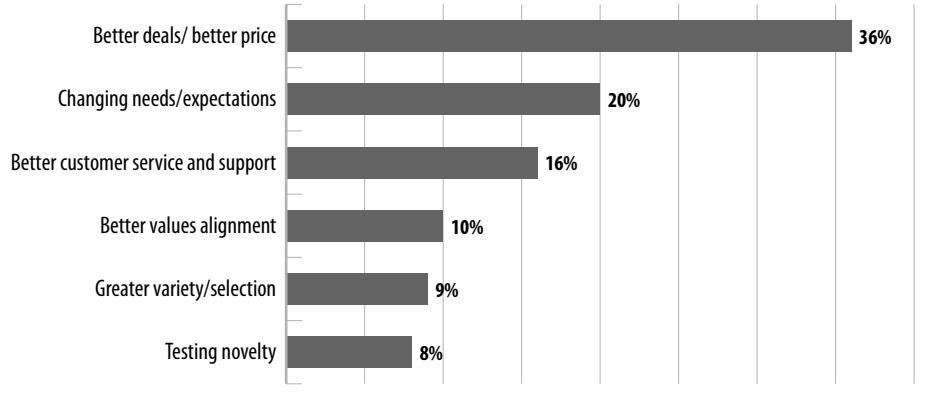
Figure 4. Already used services and technologies



Source: Own survey (2022), n=279.

To determine the preferred payment method, we asked respondents to choose three payment methods. The results showed that the most popular payment method is debit card (63 percent), followed by credit card (57 percent), cash (51 percent), mobile contactless payment (32 percent), and cryptocurrency (two percent) and other (two percent). Statistically significant differences between generations exist only for the usage of credit cards, where Gen X and baby boomers use them much more than Gen Z.

Figure 5. Main reasons for switching the brand or a provider



Source: Own survey (2022), n=106.

To elaborate on the matter of switching brands, we asked our respondents if they had changed the brand or supplier they extensively used in the past year and the reason for switching (Figure 5). Over the last year, 38 percent of respondents changed their brand or a provider that they used regularly. Better deals were mentioned as the main driver of switching brands in the past year, while no one chose delivery as a factor for switching. There are no statistically significant differences among the generations regarding the reasons for switching brands.

Figure 6. Satisfaction factors for online shopping

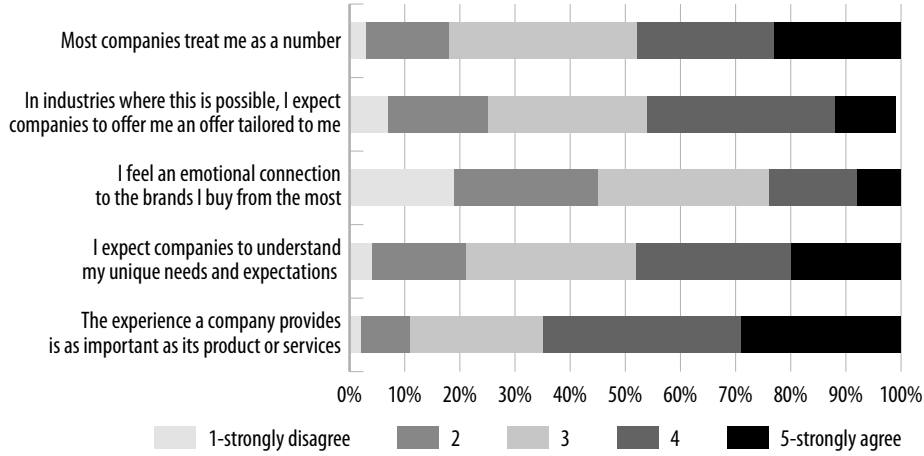
Source: Own survey (2022), n=280.

Regarding the importance of below mentioned criteria for complete satisfaction when shopping online (Figure 6), we can conclude that all the listed categories on average are important to our respondents. Easy product search (mean = 4.5) and user-friendly experience (mean = 4.4) were the two categories that have the highest importance while customer reviews and user-generated content (mean = 3.8) had the lowest importance to the respondents when shopping online. Statistically significant differences exist among generations only in regards to the accurate and informative product descriptions, where baby boomers and Gen X care more about it than millennials.

Regarding expectations for personalization (Figure 7), it can be concluded that respondents are more likely to agree than stay neutral that an experience a company provides, is as important as its products or services (mean = 3.8). It's important to mention that companies are expected to understand consumers' unique needs and expectations (mean = 3.4) and provide personalized offers in industries where it is possible (mean = 3.3). Consumers also stated that most

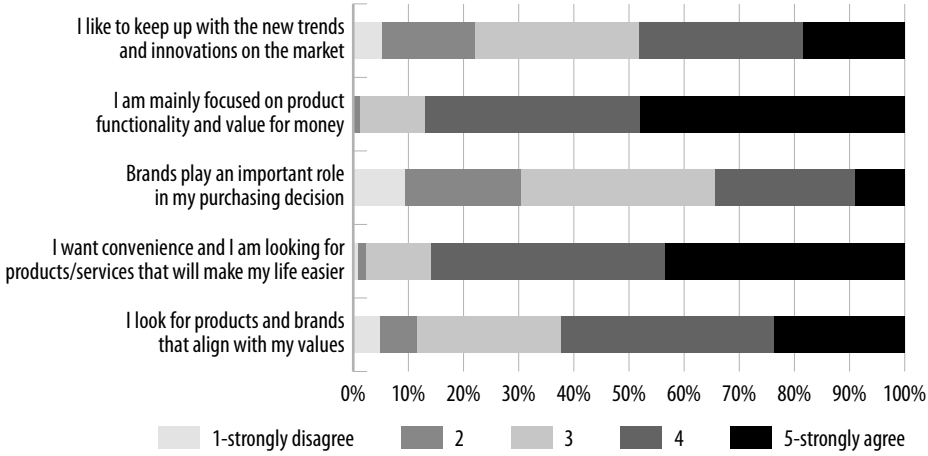
companies treat them as a number (mean = 3.5). Interestingly, the respondents disagreed that they feel an emotional connection to the often-purchased brands (mean = 2.7). However, there is a statistically significant difference between generations in regard to expectations of consumers to have their unique needs and expectations met by companies, where baby boomers care about it more than Gen Z and millennials. On the other hand, baby boomers expect more offers to be tailored to their needs, where possible, compared to all other generations.

Figure 7. Expectations for personalization



Source: Own survey (2022), n=280.

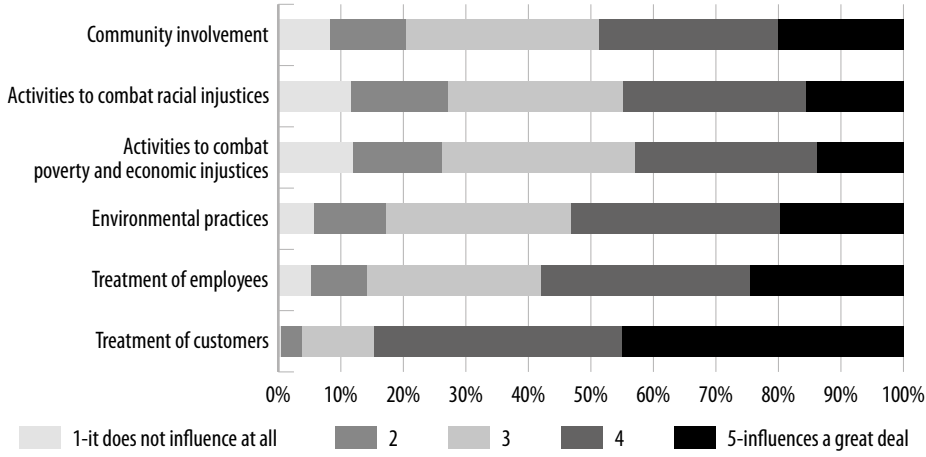
Figure 8. Drivers of shopping behaviour



Source: Own survey (2022), n=269.

Regarding drivers of shopping behaviour (Figure 8), respondents are on average mainly focused on product functionality and value for money (mean = 4.3) and on convenience, looking for brands and products that make their lives easier (mean = 4.3), followed by looking for products and brands that align with their values (mean = 3.7). Respondents expressed even lower agreement with the statement that they like to keep up with innovations and new trends in the market (mean = 3.4), while they are on average neutral about the role of brands in their shopping behaviour (mean = 3.0). There is a statistically significant difference between Gen X and baby boomers, regarding the following statement: *"I like to keep up with the new trends and innovations on the market"*, where baby boomers prefer to keep up with the new trends and innovations more than Gen X.

Figure 9. Customers' appreciation of companies' values and sustainability activities



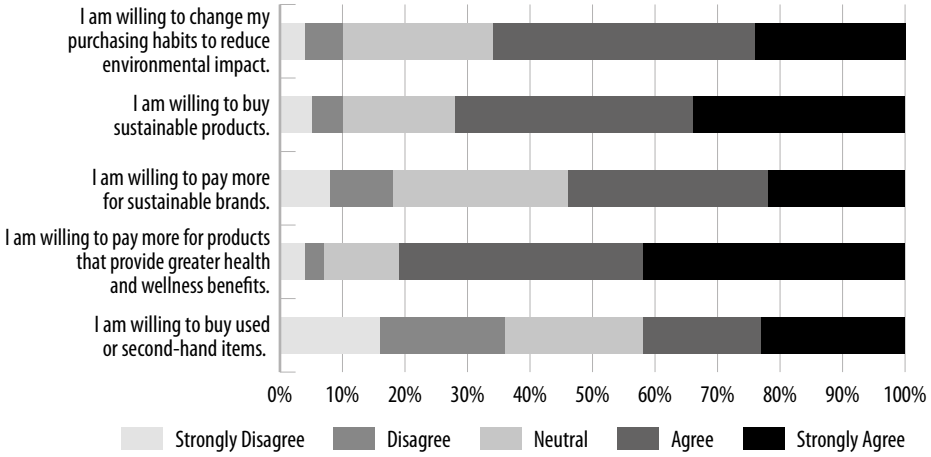
Source: Own survey (2022), n=269.

Regarding consumers' appreciation of companies' values and sustainability activities (Figure 9), the respondents agree that the treatment of customers (mean = 4.3) and employees (mean = 3.6) along with environmental practices (mean = 3.5) influence their decision to buy from a company. On the contrary, the influence of activities to combat poverty and economic injustices (mean = 3.2), involvement in the community (mean = 3.4), and anti-discrimination activities (mean = 3.2) are still positive but close to neutral. Statistically significant differences between generations were observed towards activities to combat poverty and economic injustices, where baby boomers and Gen X care more about these activities that companies engage, compared to Gen Z and millennials

who are not influenced by it while making their purchasing decisions. Another difference between generations was observed in community involvement, like charity and sponsorships, where Gen X and baby boomers appreciate companies that practice such activities, whereas Gen Z and millennials are neutral.

Regarding attitudes and behaviours towards sustainability (Figure 10), respondents agree that they will pay more for products that provide greater health and wellness benefit (mean = 4.2), will buy sustainable products (mean = 4.0), change purchasing habits to reduce environmental impact (mean = 3.8), pay more for sustainable brands (mean = 3.6), and buy used or second-hand items (mean = 3.1). Statistical difference between generations was not found.

Figure 10. Consumers' attitudes about sustainability



Source: Own survey (2022), n=269.

In terms of the current uncertain economic conditions, such as inflation and price increases, 20 percent of the respondents were very concerned, and 52 percent were concerned. On the other hand, two percent of respondents were very unconcerned, and nine percent not concerned, while 17 percent of respondents indifferent. A statistically significant difference between generations was not found. However, 87 percent of respondents shopped at discount retailers, 71 percent purchased a commercial brand, 69 percent used a coupon to purchase a product, 53 percent bought a large-size packaging for a lower price, 28 percent delayed purchase, 27 percent visited several stores to find discount, 22 percent bought a small size and quantity, and three percent used the buy now pay later option. A statistically significant difference between generations was not observed. Regarding buying different (1=decreased a lot, 5=increased a

lot) product categories in quantity, respondents decreased their buying of home goods (mean = 2.7) and going to restaurants (mean = 2.7). For other categories consumption remained the same (mean = 3.0). The statistically significant difference between generations was not observed.

Discussion and Conclusion

The purpose of this chapter was to provide an overview of how consumer attitudes and behaviour changed and how these changes shape the years ahead. This research of Slovenian consumers revealed how digitalization and other trends shape consumers expectations, their way of searching for information, and finding out which are the main drivers of the purchasing behaviour and purchasing process. The main findings and the managerial implications are presented in the Table 2, while in more detail the research revealed that digital channels continue to dominate customer engagement since the websites of the manufacturer or service provider are the primary method for searching for information and shopping for goods or services. However, when it comes to buying goods, much depends on product or service customer needs, for instance, most respondents indicated the physical store as the main option to buy groceries. Thus, the released pandemic restrictions did not return customers to the physical stores but laid the foundation for a new hybrid shopping trend, which is widely used by consumers in apparel, footwear, personal care, and home appliances purchases.

Among the new services or technologies that have tightly burst into our day-to-day life are ordering and delivery of groceries, mobile contactless payment, restaurant delivery, ordering online and picking up the products at the store or curb side, and in-store self-checkout. The respondents stated they intend to use these options. In addition, the study showed that several types of subscriptions are popular, such as on-demand entertainment and video appointments, while product delivery options on a weekly or yearly basis are not popular among our respondents.

Our research findings supported the action of switching brands, hindered by better deals. Even though that remains the main reason, other reasons for this change are changing needs and expectations coupled with need for better customer service and value alignments. When customers shop online, they are most satisfied when the website of the seller has an easy product search functionality, competitive prices, and good customer support, while free delivery, customer reviews and user-generated content play a less important role in their satisfaction

level. Regarding expectations for personalization, respondents have stated that buying experience is just as important as products or services that the company offers, suggesting that they are focused on the whole journey and not just the final product purchased. On the other hand, they have also stated that they don't really feel much of an emotional connection to the brands they buy, suggesting they probably would switch between brands seamlessly. Respondents additionally stated on average that they are neutral regarding brands when making purchasing decision, while convenience, product functionality, value for money, and products that will make their lives easier are very important to the respondents. It is also important to them that companies they buy from, treat their customers and employees properly, while anti-discrimination activities and activities for combating inequality by companies have a lesser influence on consumers when they are making purchasing decisions. Regarding payment methods, even though digitalization is gaining strength, consumers in Slovenia still prefer to use a debit card, credit card, and cash. In juxtaposition only three percent of our respondent's indicated cryptocurrency as a preferred payment method.

When it comes to sustainability, about 69 percent of respondents are willing to change their purchasing habits to reduce their environmental impact, while 74 percent of respondents are prepared to buy sustainable products. Meanwhile, 82 percent of respondents are willing to pay more for products that provide them with greater health and wellness benefits, and around 56 percent of respondents are willing to pay more for sustainable products. However, only 43 percent of respondents stated that they are willing to buy used or second-hand products.

Lastly, regarding the current economic situation that is expected to be of a transitory nature, around three-quarters of Slovenians are concerned or very concerned about price increases. This can be the underlying reason that almost 90 percent of Slovenians shopped in discount stores in the previous year, and around 70 percent have purchased a commercial brand or used a coupon when purchasing goods. Though, consumers exhibit rational shopping behaviour, the amount of purchased items used in everyday life for various purposes have not significantly changed.

There were some limitations to our study, namely we used a non-probability sample which resulted in unequally distributed respondents according to their age. Baby boomers being the smallest (12 percent) and Generation Y being the largest (38 percent), followed by Generation X and Generation Z (28 and 21 percent, respectively). Also, according to gender, it wasn't ideally equally distributed, where we had almost 1/3 males and 2/3 females. Another limitation

is that 81 percent of our respondents had higher education (Bologna first cycle or higher). Further, most of our respondents have higher monthly net personal income than an average in Slovenia. Namely, 28 percent of the respondents have monthly net personal income less than 1300 euros, and 14 percent of our respondents have higher monthly net personal income than 3100 euros. This puts more than half of our respondents in between these two mentioned income groups.

We would like to briefly compare our research results for Slovenia with the globally conducted research from IBM (Haller et al., 2022). In terms of primary method of buying, we can see that Slovenia aligns with global trends in a way that groceries, personal care and cosmetics, and apparel and footwear are bought in store. While global consumers prefer to buy home goods via hybrid channels, Slovenian consumers prefer to buy them in-store. Slovenian consumers also don't lack behind global consumers in that they also like to learn about products directly on a manufacturer's website. This means consumers don't always shop through the same channels they learned about the products. In terms of tech-enabled touchpoints, Slovenian consumers don't use grocery delivery and don't intend on using it in the future, meanwhile the usage of other digital touchpoints like in-store self-checkout, restaurant delivery, etc, is the same as for the global consumers. Willingness to change purchasing habits in order to reduce environmental impact is even higher in Slovenia in comparison to other global consumers. Our research shows that 69 percent of Slovenian consumers are willing to do so. Willingness to change habits shows that respondents are overall open-minded about sustainability, which is consistent with the global trend (Haller et al., 2022).

All the differences between Slovenian and global consumers can become the solid ground for Slovenian businesses to bridge new ways of engagement with tried-and-true ones. Nowadays, the main challenge to the business world is to predict and adjust to the challenges of increasing digital usage in areas of social commerce, virtual influencers, flexible workplaces, and sales enhanced with artificial intelligence (AI). The new reality may have forced the marketers to focus on bettering digital experiences not only to increase customer satisfaction, but also to bring opportunities to create high-value moments and transactions for consumers, by identifying their behaviour and designing processes in such a way that it reflects common objectives throughout the whole digital commerce (Gartner, 2022).

Table 2. A summary of key findings

Trend	Findings	Managerial implications
Digital adoption	Manufacturers'/providers website is the main source of information for the consumers, while digital touchpoints are the main channel of communication.	Investing in technologies should be one of the main goals of every company. Developing websites and increasing the number of digital touchpoints will provide users with additional channels of communication. Improving digital experience is directly connected to successful experience and services.
Sustainability	Consumers gravitate towards sustainable businesses and are willing to buy sustainable products and pay more for them.	Willingness to pay creates the opportunities for the business to strive towards sustainability and expand their offer/ portfolio.
Drivers of consumer behaviour	Consumers are driven by the better deals/ prices, while functionality, value for money and convenience are their main focus.	Respecting the main drivers, companies can align positively toward the changes in consumer behaviour (e.g., bundling and discounts).
Consumer preferences	Consumers expect from companies to provide them with tailored offers that satisfy their unique needs and expectations. When shopping online main criterion for complete satisfaction are easy product search and user-friendly experience. Preferred payment methods are debit and credit cards, followed by cash.	By offering the plethora of payment methods, easy product search, user-friendly experience and tailored offers, companies will minimise the limitations of preferences and consequentially increase the satisfaction of the consumers.

Source: Own work (2022).

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