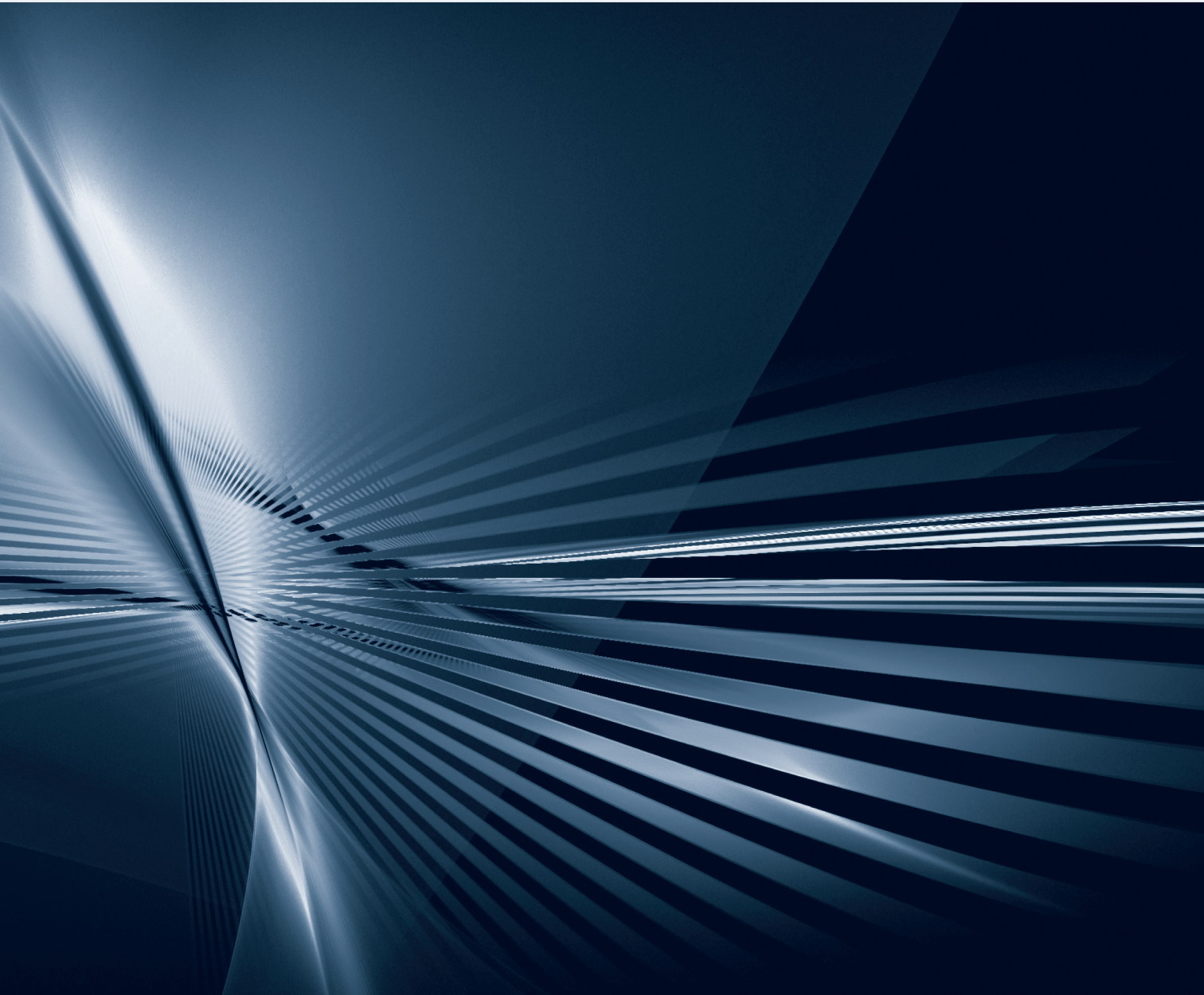


ORGANIZACIJA

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ORGANIZACIJA

Organizacija (Journal of Management, Informatics and Human Resources) is an interdisciplinary peer-reviewed journal which is open to contributions of high quality, from any perspective relevant to the organizational phenomena.

The journal is designed to encourage interest in all matters relating to organizational sciences and is intended to appeal to both the academic and professional community. In particular, journal publishes original articles that advance the empirical, theoretical, and methodological understanding of the theories and concepts of management and organization. The journal welcomes contributions from other scientific disciplines that encourage new conceptualizations in organizational theory and management practice.

We welcome different perspectives of analysis, including the organizations of various sizes and from various branches, units that constitute organizations, and the networks in which organizations are embedded.

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- managerial and entrepreneurial aspects of education;
- business information systems (such as digital business, decision support systems, business analytics etc.);
- enterprise engineering (e.g., organizational design, business process management, enterprise transformation paradigms etc.);
- papers that analyse and seek to improve organizational performance.

Organizacija (Revija za management, informatiko in človeške vire) je interdisciplinarna recenzirana revija, ki objavlja visoko kakovostne prispevke z vseh vidikov, ki so pomembni za organizacijske procese in strukture.

Revija je zasnovana tako, da spodbuja zanimanje za različne vidike v zvezi z organizacijskimi vedami in je namenjena tako akademski kot strokovni skupnosti. Revija objavlja izvirne članke, ki spodbujajo empirično, teoretično in metodološko razumevanje teorij in konceptov managementa in organizacije. Pozdravljamo tudi prispevke iz drugih znanstvenih disciplin, ki spodbujajo nove koncepte v organizacijski teoriji in praksi. Objavljamo članke, ki analizirajo organiziranost z različnih vidikov, so usmerjeni na organizacije različnih velikosti in iz različnih sektorjev, na enote, ki sestavljajo organizacije, in na mreže, v katere so organizacije vpete.

Teme so pokrivajo predvsem naslednja področja:

- organizacijska teorija, upravljanje, razvoj in organizacijsko vedenje;
- management človeških virov (kot so organizacija in razvoj zaposlenih, vodenje, ustvarjanje vrednosti s pomočjo človeških virov, organizacijski pojavi na delovnem mestu itd.);
- vodstveni in podjetniški vidiki izobraževanja;
- poslovni informacijski sistemi (kot so digitalno poslovanje, sistemi za podporo odločanju, poslovna analitika itd.);
- podjetniški inženiring (npr. organizacijsko oblikovanje, upravljanje poslovnih procesov, paradigme preoblikovanja podjetij itd.);
- članki, ki analizirajo organizacijsko uspešnost in prizadevanja za izboljšanje le-te.

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E-invoicing: A Catalyst for Digitalization and Sustainability

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Background and Purpose: Digitalization brings a wide range of opportunities for both digital and sustainable transformation. One of the first steps on this journey is the digitization of business documents and digitalization of business processes. The European Commission has recognised the advantages of digitalization, particularly in the context of e-invoicing, which can contribute significantly to economic prosperity and align with public policy goals such as deficit reduction and sustainable development. Despite the successful adoption of e-invoicing in the public sector, the uptake of e-invoicing in business-to-business (B2B) transactions is surprisingly low. This research focuses on Slovenia, a small European country that implemented e-invoicing as mandatory between enterprises and the public sector in 2015.

Methods: To investigate e-invoicing adoption in the wider population, we designed an online survey, which was conducted among 284 organizations in Slovenia. The collected data were analyzed using SPSS 28 software. One sample t-test was used to evaluate the importance of identified advantages, barriers and incentives for e-invoicing usage. Further, we ran an independent sample t-test to identify statistically important differences in the importance of advantages, barriers, and incentives between organizations with lower and higher levels of e-invoicing usage.

Results: The results showed that organizations recognize the benefits of e-invoicing well and perceive them as important. The most important barriers to e-invoicing adoption are related to the business environment, unawareness and lack of knowledge about how to implement e-invoicing. Desired incentives for wider e-invoicing adoption are related to easier and lower costs of technical implementation, provided training and education, including best practices, as well as the availability of government grants and other support measures on the state level, including legislation, public directory of business entities using electronic document exchange and service providers.

Conclusion: The paper provides important information for decision-makers and public administrations to take appropriate measures and incentives to further support wider adoption of e-invoicing and exchange of other e-documents to exploit opportunities of digitalization better.

Keywords: e-invoicing, Adoption, Digitalization, Sustainability, EU, Slovenia

1 Introduction

Today's market conditions, characterised by phenomena such as increasing competition, globalisation, market uncertainty, fast technological development and the rapid growth of start-ups with increasingly digitalized value and business models, are driving organizations towards digital transformation (Nadkarni & Prügl, 2020; Pucihar et al.,

2022; Zammuto et al., 2007). Digital transformation refers to the strategic use of digital technologies and the organizational capabilities that enable their effective use (Kljajić Borštnar & Pucihar, 2021; Pucihar et al., 2021; Tijan et al., 2021; Vial, 2019).

One of the first steps on the digital transformation journey of every organization is to digitise business documents and digitalized business processes (Verhoef et al.,

2021). Business documents are related to the processes of buying, selling, shipping and receiving goods, providing services, receiving and issuing invoices and payments, and all related response messages between organizations. The first endeavours of digitisation of business documents started in the 1980s (then called electronic data interchange - EDI) and later spread to large retail chains, which were among the first to recognise the benefits of exchanging business documents in a standardised electronic format, which enabled automated processing of large volume of business documents in enterprise business information systems (Marolt et al., 2021a). The advantages of digitisation and digitalization are reflected in faster process execution, fewer errors, document accessibility and lower operating costs, which results in reduced costs and increased efficiency (Horák et al., 2020; Marolt et al., 2021b).

The benefits of digitization and digitalization have also been recognised by the European Commission. For example, according to the European Commission's Directorate General for Informatics (DG DIGIT), the use of e-invoicing (exchange of invoices in standardized electronic format) in the public sector can make a significant contribution to economic prosperity (Connecting Europe Facility Stakeholder Management Office, 2019). The use of e-invoicing supports public policy priorities such as reducing the public sector deficit, promoting financial transparency, and promoting sustainable development. It also makes an important contribution to cost reduction and efficiency in the public sector. In addition, it also benefits private sector service providers and creates opportunities for the public sector to act as a catalyst for wider adoption of digital processes common to the private sector (European Commission, n.d.).

Quantitative estimates by the "European e-invoicing initiative" indicate potential savings of around EUR 240 billion over a six-year period in the area of e-invoicing, taking into account that 30 billion invoices are issued and exchanged per year in the European Union (European Commission, 2010). It is important to mention that digitalization and digital transformation bring enormous potential also for sustainability (Jović et al., 2022). The environmental benefits of e-invoicing are very significant, as the EU can reduce CO₂ emissions by 1 million tonnes per year by reducing paper consumption and energy costs for transportation (Veselá & Radiměřský, 2014). This is why the European Commission published a Communication in 2010 entitled "Reaping the benefits of electronic invoicing for Europe". This was followed by Directive 2014/55/EU on electronic invoicing in public procurement (Directive 2014/55/EU of the European Parliament and of the Council of 16 April 2014 on Electronic Invoicing in Public Procurement, 2014). EU Member States have signed up for the mandatory exchange of e-invoices between enterprises and the public sector. It is worth noting that Denmark was the first country to introduce mandatory e-invoicing back

in 2005, followed by Sweden, Finland, Norway, Austria, Italy, Slovenia, Spain and Switzerland, which also belong to the early adopters (Koch, 2017).

Following the introduction of mandatory use of e-invoicing among enterprises and the public sector, there were expectations from various stakeholders that the widespread use of e-invoicing would easily be extended to business-to-business transactions. Enterprises issuing e-invoices to the public sector have the appropriate software solutions to prepare and issue e-invoices, and their employees have acquired the appropriate skills and competencies to carry out these procedures. As e-invoicing to other enterprises is done in the same way and with the same software solutions as to the public sector, it is a big surprise that the use of e-invoicing among enterprises has not grown significantly per se but has only slightly increased in recent years (Bojanc et al., 2020; European Commission, 2022; Koch, 2019). Most of the adoption of business-to-business e-invoicing has come from some of the larger enterprises that have directly invited their suppliers or buyers to use e-invoicing (European Commission, 2021b; European Multi-Stakeholder Forum on E-Invoicing (EMSFEI), 2018; Koch, 2019), while in business-to-business transactions the use of e-invoicing is still scarce.

In this research, we focus on Slovenia, which has joined the mandatory use of e-invoices among enterprises and the public sector as of 1 January 2015, using the national eSLOG standard (Zakon o Opravljanju Plačilnih Storitve Za Proračunske Uporabnike (ZOPSPU-1), 2016). The main purpose of this study was to gain insights into the current situation in the field of business-to-business e-invoicing and identify reasons why e-invoicing has not become more widespread among enterprises (in the context of business-to-business use). In particular, we were interested in understanding the perceived advantages and barriers of e-invoicing and what incentives should be taken to widespread and increase e-invoicing use to fully exploit its potential of increased efficiency, reduced costs and CO₂ emissions. For that purpose, we prepared the survey in cooperation with key Slovenian stakeholders. The survey was conducted among 284 organizations.

The paper provides a comprehensive literature review of the field and detailed information about e-invoicing in the EU and Slovenia, including legislative and regulatory frameworks. The survey results include information about e-invoicing use and perceived advantages, barriers and incentives for wider adoption. The results of the survey provide valuable information for decision-makers and policymakers, especially in light of the preparations for the legally mandatory use of e-invoicing between enterprises. Understanding information from the field before the introduction of legislation may resolve many potential problems that might otherwise arise later.

2 Literature review

2.1 Definition of e-invoices

An e-invoice is an invoice that has been issued, transmitted and received in a structured electronic format. As such, it allows the automation of its generation, sending, transmission, reception and processing of the invoice using appropriate (business) information systems and technologies (European Parliament, 2014). Some enterprises use visualised electronic invoice formats such as PDF, JPG, and HTML instead of structured e-invoices (Directive 2014/55/EU of the European Parliament and of the Council of 16 April 2014 on Electronic Invoicing in Public Procurement, 2014; Koch, 2016, 2019). These types of document formats are not considered as e-invoices. The exchange of visual electronic document formats only represents savings for enterprises in terms of printing, postage, intra-organisational routing and archiving. However, it does not allow the automation of processes and procedures.

The e-invoicing has been around for decades (Koch, 2019). As early as the 1980s, large organisations were using EDI (Electronic Data Interchange) as a technology to transfer invoice data. At the time, these systems were point-to-point systems that required significant investment in establishing and maintaining connections between trading partners (Penttinen & Hyytiäinen, 2008). Electronic data interchange (EDI) was initially implemented between enterprises only. Later, the Internet was used as a backbone to transfer e-invoices between individuals, enterprises and government, significantly reducing the cost of implementing e-invoices in organisations (Lian, 2015).

Today, digital transformation and emerging technologies enable new approaches to business performance (Martínez-Román et al., 2020; Nasiri et al., 2020; Tiwari et al., 2023). The transmission of e-invoices based on open standards (e.g. XML) over the Internet has economic and practical advantages over the costly, complex and bilateral EDI exchange systems used previously (Penttinen & Hyytiäinen, 2008; Tanner & Richter, 2018). E-invoicing has become a global phenomenon and has recently been increasingly adopted by governments and organisations as well as medium and large enterprises (Olaleye et al., 2023).

2.2 Benefits of e-invoicing

Recent literature clearly outlines many potential benefits of e-invoicing compared to paper invoicing, both for the economy and society due to increased efficiency and simplicity and for the environment due to reduced paper consumption and CO₂ emissions (Bellon et al., 2022; Hagsten & Falk, 2020; Keifer, 2011; Koch, 2019; Moretto &

Caniato, 2021; Ollo-López & Aramendía-Muneta, 2012; Penttinen & Tenhunen, 2010; Poel et al., 2016; Qi & Che Azmi, 2021; Tiwari et al., 2023; Yip & Bocken, 2018).

E-invoices can be handled and processed more efficiently than paper invoices (Bellon et al., 2022). It offers faster delivery times, shorter payment delays and increased reliability as it reduces administrative errors (Edelmann & Sintonen, 2006; Lumiaho & Rämänen, 2011; Poel et al., 2016). In addition, there is the possibility to automate the processes of issuing, exchanging, receiving, automatically validating and archiving invoices (Poel et al., 2016). It enables for greater efficiency of human resources, as it relieves staff of administrative tasks, allowing them to spend their time on other, more productive tasks. E-invoicing can significantly reduce costs, e.g. reducing printing, postage and operational costs (Berez & Sheth, 2007; Edelmann & Sintonen, 2006; El Hani, 2001; Fairchild, 2004; Haq, 2007; Penttinen & Tuunainen, 2010).

Various studies estimate savings of up to 64% when using e-invoicing (European Commission, 2022; Koch, 2016, 2019). These estimates only consider the financial benefits of e-invoicing. When non-financial benefits are considered, the additional savings are multiplied by the number of e-invoices received and issued. The Billentis report publishes indications of the saving potential through the use of e-invoicing in the public sector of some European countries (Koch, 2016). While no estimates are given for Slovenia, potential savings of around EUR 600-700 million per year are shown for smaller countries such as Austria and Switzerland, and an estimated EUR 6,5 billion per year is given for Germany. The calculations of the estimates are made under two constraints. In the first scenario, only 60% of invoices are exchanged as e-invoices (XML format) and the remaining 40% in visualised electronic formats (PDF format). If each country switched entirely to e-invoicing, the potential savings would be even higher. Another limitation of the estimation is that it only includes data for the public sector.

One of the advantages to be highlighted is also the increased efficiency and traceability of the processes, as the information is obtained in real-time, and it is, therefore, easier to check where the e-invoice is in the billing process (Veselá & Radiměšský, 2014). Electronic invoices enable faster processing and approval cycles. Some suppliers are often willing to offer an additional discount for earlier payment (Keifer, 2011). It can provide a competitive advantage for organisations and make them less geographically dependent (Fairchild, 2004; Keifer, 2011; Koch, 2019; Korkman et al., 2010; Sandberg et al., 2009).

Implementing e-invoices also benefits other partners in the supply chain by increasing the digitalised buyer-supplier relationships, thereby bringing new business-to-business (B2B) opportunities (Rask et al., 2009). It also increases commitment and offers convenience to the supply chain partners and better customer service (Fairchild, 2004;

Penttinen & Tuunainen, 2010; Poel et al., 2016; Sandberg et al., 2009). Tanner and Richter (Tanner & Richter, 2018) emphasise the importance of understanding and involving business partners when developing new systems solutions.

E-invoicing could also prove extremely useful in enabling supply chain finance (SCF), as it enables faster, cheaper processes and innovative solutions (Caniato et al., 2016; Marak & Pillai, 2018, 2021; Wuttke et al., 2013). As traditional credit risk assessment models have become less reliable, modern digital technologies, including e-invoicing, are even more important than before for real-time monitoring of supply chains (Moretto & Caniato, 2021).

For the government, e-invoicing can greatly contribute to financial compliance and increase tax collection (Krysovaty et al., 2021; Olaleye et al., 2023; Skare et al., 2023). There is a positive influence of perceived benefits and trust in e-government on e-invoice adoption. E-invoice adoption also has a positive influence on the efficiency of tax compliance (Qi & Che Azmi, 2021).

The positive effects of e-invoicing were also evident during the Covid-19 pandemic. The process of issuing, transmitting and processing e-invoices is very independent from a geographical point of view, so it perfectly aligns with social distancing and isolation regulations of COVID-19 and allows organizations to avoid major problems with both the issuance, processing and payment of invoices, despite the hectic situation. However, the COVID-19 pandemic has disrupted the introduction and implementation schedule and deadlines of electronic invoicing in various countries worldwide. Covid-19 has slowed down the speed of implementation, regulations, and legislation (Moretto & Caniato, 2021; Olaleye et al., 2023).

E-invoices are also convenient for consumers, providing an easier way to pay and reducing the likelihood of forgetting to pay the invoice (Poel et al., 2016).

Finally, e-invoices bring several environmental benefits such as reduced paper consumption, increased energy efficiency, generated carbon savings and reduced greenhouse gas emissions (Mirabella et al., 2011; Moberg et al., 2010; Poel et al., 2016; Pohl et al., 2019) (Veselá & Radiměšský, 2014). Data shows that paper invoices are responsible for 10% of all trees cut down worldwide (Ruisaho, 2014). Global deforestation is a major problem because trees absorb greenhouse gases, contributing to climate change and global warming. In addition to the trees that are cut down, paper invoices have a negative impact on CO₂ emissions. Paper invoices produce, on average, four times more CO₂ than e-invoices (Federation of Finnish Financial Services, 2010). This difference is partly due to the amount of saved paper and the delivery automation; however, most of the difference results from improved work efficiency due to time savings and consequent emissions savings.

Although the technology may also cause some carbon emissions, the switch to e-invoicing reduces the overall environmental impact of invoice processing. It should

be noted that e-invoices present only one type of business document. The effects are multiplied by using other electronic documents such as quotations, purchase orders, despatch advice, etc. In addition to reducing paper consumption, organizations that send and receive electronic documents also help to reduce fossil fuel pollution by cutting down on post-mail deliveries.

Artificial Intelligence (AI) has revolutionised business operations and sectors and will majorly impact e-invoicing. With AI, e-invoicing systems can analyse and extract relevant information from e-invoices to predict payment behaviour, optimise invoice delivery times for faster payments and even automate responses to invoice queries. Using machine learning (ML) algorithms, AI-enabled e-invoicing systems can significantly increase the efficiency, accuracy and productivity of e-invoicing systems, as they can process huge volumes of invoices instantaneously while ensuring much higher accuracy than manual processes through process automation (Malladhi, 2023).

In addition to improving the efficiency and processing of e-invoices, AI can detect and prevent potential fraud and make the invoicing process resilient to errors and oversights. Through deep cognitive insight, pattern analysis and anomaly detection, AI can instantly and with high accuracy detect fraudulent invoices, differences in amounts or discrepancies in customer data and raise the alarm (Bruin, 2023).

2.3 E-invoicing impediments

The lack of progress in e-invoicing adoption in recent years might imply that, despite the recognised benefits of adoption, other key factors for organisations are preventing the uptake of e-invoicing from keeping pace with expectations (Hagsten & Falk, 2020). The low adoption rate of e-invoices could indicate that the diffusion is still at an early stage of the process, dominated by factors that prevent enterprises from using e-invoices, such as high costs, lack of system compatibility, increasing frequency of errors and organisational inertia (Haag et al., 2013; Marinagi et al., 2015).

The main reason for the slow adoption rate of e-invoicing in enterprises was related to the lack of demand and resistance to change in financial administration. The level of knowledge and expertise was found to be low, which resulted in a longer adoption time (Edelmann & Sin-tonen, 2006; Salmony & Harald, 2010). Buyer fragmentation could be another reason for the difficulty in adopting such technology (Keifer, 2011). Perhaps the disinterest in e-invoicing is related to how it is perceived and who will benefit from its use (Hernandez-Ortega, 2012). According to Capgemini (Capgemini, 2009), the benefits are wide-ranging but potentially greatest for the demand side (buyers), while the environmental benefits may seem abstract.

Empirical studies in Finland (Edelmann & Sintonen, 2006), Sweden (Hagsten & Falk, 2020; Sandberg et al., 2009), Spain (Hernandez-Ortega, 2012), Germany (Haag et al., 2013), the Czech Republic (Veselá & Radiměřský, 2014), Belgium (Poel et al., 2016) and Netherlands (Arendsen & van De Wijngaert, 2011) show that, in addition to cost, the key factors for e-invoicing adoption are firm size, system compatibility, customer requirements, frequency of errors, usability, information deficit, knowledge, efficiency, and underlying ICT infrastructure.

2.4 E-invoicing in Europe

In 2010, the European Commission published a Communication entitled “Reaping the benefits of electronic invoicing in Europe”, which called on Member States to introduce e-invoicing and to overcome the problems arising from the lack of interoperability of existing e-invoicing systems (European Commission, 2010).

European Directive 2014/55/EU on electronic invoicing in public procurement was adopted to remove market and trade barriers resulting from different national rules and technical standards (Directive 2014/55/EU of the European Parliament and of the Council of 16 April 2014 on Electronic Invoicing in Public Procurement, 2014). In addition to reducing paper-based transactions and simplifying, streamlining and automating e-commerce, the main objective of the Directive was to introduce a single European standard for e-invoicing developed by CEN (CEN, 2017). The European e-Invoicing Standard EN 16931 ensures interoperability between different Member States and supports cross-border public procurement and e-commerce. According to the Directive, contracting authorities and contracting entities ensure the receipt and processing of electronic invoices that comply with the European electronic invoicing standards.

E-invoicing has become a common practice for public administration organisations among EU countries thanks to Directive 2014/55/EU (European Commission, 2023). However, although e-invoicing provides a lot of benefits, the rate of adoption has been slow and currently, only a small percentage of enterprises in Europe use e-invoicing (Arendsen & van De Wijngaert, 2011; Edelmann & Sintonen, 2006; Poel et al., 2016). Several previous studies have paid attention to e-invoicing adoption, from the business level (Hagsten & Falk, 2020; Hernandez-Ortega, 2011; Vreck & Magdalenic, 2011) to understanding individual user acceptance of e-invoicing (Lian, 2015).

The main drivers of e-invoicing adoption are regulatory framework, government mandates, customer demand, and supplier innovation (Keifer, 2011). While organisational readiness can play a key role in e-invoicing adoption (Penttinen & Tuunainen, 2010; Sandberg et al., 2009), external pressure, such as supplier and customer requests and regulations, can also be strongly associated with the

decision to adopt e-invoicing (Hagsten & Falk, 2020).

Compatibility and usefulness are the most important aspects related to the adoption, while perceived usability is essential for continued use (Hernandez-Ortega, 2012). E-invoicing may also be more attractive for enterprises with a large or growing number of invoices (Hernandez-Ortega, 2012). Larger enterprises may have a higher need to simplify their systems and processes and find it easy to implement an e-invoicing system, and their smaller counterparts face difficulties in adopting it due to high investment and integration costs (Fairchild, 2004; Penttinen & Hyytiäinen, 2008; Poel et al., 2016; Sandberg et al., 2009).

However, the low adoption rate in European countries is likely to change in the near future as more and more European countries are announcing the introduction of mandatory e-invoicing for all enterprises. Italy is the sole country within the EU with mandatory business-to-business e-invoicing as of January 1, 2019. Poland and Romania will introduce mandatory e-invoicing in 2024, with France, Spain, and Germany expected to follow, but they have yet to announce a rollout timeline (VAT Update, 2023). As a result of mandatory business-to-business e-invoicing in Italy, tax revenue increased by €3.5 billion in 2019. Of this, €2 billion came from additional VAT revenue, €945 million from detecting fraudulent input tax credits, and €580 million from direct taxation (OpenPeppol, 2021).

In December 2022, the European Commission published its long-awaited proposal for legislative changes to the “VAT in the digital age - ViDA” initiative (Proposal for a COUNCIL DIRECTIVE Amending Directive 2006/112/EC as Regards VAT Rules for the Digital Age, 2022). The ViDA proposal includes mandatory e-reporting and e-invoicing for intra-EU transactions. Intra-EU transactions refer to commercial transactions between different countries of the European Union. The ViDA proposal makes e-invoicing the default invoicing method. Unstructured electronic formats, such as PDF, will also no longer be considered e-invoices from a tax point of view.

2.5 E-invoicing in Slovenia

According to the European Commission’s DESI 2022 (The Digital Economy and Society Index), Slovenia ranks fourth among Member States in the e-invoicing category (European Commission, 2021a). DESI is an index summarising important indicators of digitalisation development in EU Member States and their digital competitiveness. The index for the e-invoicing indicator, which was only 2.33% for Slovenia in 2015, has jumped to 58.4% in 2022 due to the introduction of the legally mandatory use of e-invoices for business-to-government transactions.

The beginnings of standardisation of business electronic documents in Slovenia date back to 2001, when the Chamber of Commerce and Industry of Slovenia, on

the initiative of enterprises, launched the eSLOG project “Electronic Commerce of the Slovenian Economy” (Slovenian National eBusiness Centre., 2023). The project involved experts from more than 90 large enterprises. It resulted in the development of an eSLOG standard for electronic business documents, which today includes purchase orders, despatch advice, payment reminders, statements of account and invoices in XML format. It is important to note that eSLOG documents are widely supported in enterprise business information systems. Many service providers enable electronic document exchange between business partners.

A key step towards the wider use of e-invoicing in Slovenia was the mandatory e-invoicing to the public sector as of 1 January 2015. Since then, the issuer is obliged to issue an invoice to the public sector user in eSLOG format and may attach a visualisation of the invoice in PDF or other formats and annexes. The exchange of e-invoices with public sector users shall occur exclusively through the single entry and exit point of the Republic of Slovenia’s Public Payments Administration (PPA). Issuers may choose to send e-invoices via an e-invoicing service provider that has signed a contract with the PPA. In contrast, smaller issuers may enter invoices manually on the PPA’s online portal (Uprava Republike Slovenije za javna plačila, 2023).

A key advantage of the Slovenian e-invoicing ecosystem is that business software solution providers have integrated e-invoicing exchange services offered by service providers into their software solutions. This enables their end-users to fully automate the processes for sending and receiving e-invoices and other business electronic documents, as they do not need to use additional software solutions to copy manually, import or export documents but instead per-form legally compliant all processes through existing software solutions already in use in the enterprise.

Despite all these achievements and positive effects of the e-invoicing ecosystem in Slovenia, which enables easy issuance, sending, exchange, receipt and processing of e-invoices, the mass use of e-invoices among enterprises has not yet occurred. However, a change in this area is expected in the future. The government has announced that it will draft a proposal for a law on the exchange of e-invoices and other e-documents, following the example of other European countries, which will make the exchange of e-invoices mandatory for all business entities. As the introduction of this law is likely to take some time, it is important to better understand the current status of business-to-business e-invoicing and the reasons for it now.

3 Research method

To analyse the development and current status of e-invoicing in Slovenia, a questionnaire was prepared in coop-

eration between the Slovenian National eBusiness Centre, the Slovenian Chamber of Commerce and Industry, the ICT Horizontal Network, the Digital Innovation Hub of Slovenia and the Faculty of Organisational Sciences of the University of Maribor. The questionnaire was prepared based on a literature review and the participation of domain experts in the field of digital business and digital transformation, e-invoicing and eSLOG standards.

Our research aimed to investigate e-invoicing adoption in a wider range of enterprises, so we chose the survey method. We decided to conduct an online survey, which allows us to capture and obtain the views of a wider population in a relatively short time and in an economical way (Lefever et al., 2007). In addition, this way of data gathering makes it faster and easier to prepare the data for subsequent statistical analysis (Bakla et al., 2013).

The questionnaire consisted of 22 questions divided into the following sections: organisation demographics, e-invoicing usage, perceived advantages, barriers and incentives to e-invoicing usage and respondents’ demographics. Prior to distribution, the questionnaire was tested with 10 domain experts and adjusted where needed.

The survey was distributed to their members by digital transformation supporting organisations and associations (Digital Innovation Hub Slovenia, Chamber of Commerce and Industry, e-invoicing service providers).

In the survey, we used the definition of the size of an enterprise following the European Commission’s regulations, meaning micro-enterprises with 1-9 employees, small enterprises with 10-49 employees, medium-sized enterprises with 50-249 employees, and large enterprises with more than 250 employees, respectively.

The survey was carried out via the online service Ika.arnes.si between 18 April and 2 May 2023, and it reached 1638 respondents, of which 901 started the survey. In total, 284 (17%) respondents completed the survey.

The collected data were transferred to SPSS 28 software to perform frequency analysis and descriptive statistics to calculate shares of different categories of e-invoicing usage. Further on, we ran one sample t-test to evaluate the importance (on a 5-point Likert scale from 1 being “not important at all” to 5 “very important”) of identified advantages, barriers and incentives for the usage of e-invoicing. If the variable mean value was not statistically significantly lower than 4 (with a confidence level of 95%), we confirmed the importance of the evaluated variable. After the assessment of which advantages, barriers and incentives are important to organisations for e-invoicing adoption, we ran an independent sample t-test to identify if there are any statistically important differences about important advantages, barriers and incentives between organisations with lower and higher extent of e-invoicing usage.

4 Survey Results

4.1 Descriptive statistics

284 representatives of organizations from 75 different locations in Slovenia and 19 different industries took part in the survey. The size structure of the participating organisations in terms of number of employees was 117 (41.2%) micro, 115 small (40.5%), 45 medium-sized (15.8%) and 7 (2.5%) large organisations. The respondents were employed in the following positions: 62 (22.2%) executive directors, 26 (9.2%) finance managers, 12 (4.2%) IT managers, 51 (18%) accounting managers, 31 (10.9%) other business managers, 18 (6.3%) IT officers and 77 (27.1%) employees in other positions.

An analysis of the sending and receiving of invoices by invoice format and organizations size shows that the majority of micro (89.7%), small (90.4%), medium (86.7%) and large (85.7%) organisations still receive paper invoices. A slightly smaller proportion of micro (73.3%), small (73.9%), medium (86.7%), and large (71.4%) organisations still send paper invoices. A similar proportion of organisations that receive and send paper invoices also receive and send them in PDF format via e-mail. A much smaller proportion of organisations receive (39.7% of micro, 45.2% of small, 40% of medium-sized, 42.9% of large organizations) and send (28.4% of micro, 27% of small, 24.4% of medium-sized and 28.6% of large organizations) invoices in PDF format with e-signature.

The most commonly used standard for e-invoices is the national eSLOG format, which is used for receiving (65.5% of micro, 71.3% of small, 77.8% of medium and 57.1% of large organisations) and sending e-invoices

(76.7% of micro, 78.3% of small, 86.7% of medium and 85.7% of large organisations). Other e-invoicing standards, such as EANCOM, EDIFACT, and UBL, are used less and more in large organisations (28.6% for receiving and 14.3% for sending e-invoices).

Furthermore, we analyzed shares of sending and receiving of e-invoices by partners, which shows that organisations exchange e-invoices mostly with suppliers 85.2% and customers 82.7%. A slightly lower share of e-invoices is exchanged with the public administration, 70.4%, which is reasonable as not all organizations do business with public administration, where e-invoicing is obligatory. A lower share of e-invoices is exchanged with logistics providers (28.5%), retailers (37.7%) and consumers (20.4%). The results also showed that organisations exchange e-invoices much more with domestic partners (54,2%) than exchanges with foreign partners(14,6%).

We also analysed the proportion of e-invoices received and sent compared to other invoice forms (Figure 1). The results showed that, on average, organisations receive 18.3% and send 23.22% of invoices in eSLOG format and receive only 0.9% and send 0.82% of e-invoices in other e-invoicing standards. The highest average proportion of invoices received, 40.73%, and 36.62%, sent, are in paper format. Furthermore, the average proportion of 4.36% of invoices received and 5.34 of invoices sent is in PDF format with e-signature. On average, organizations receive 35.71% and send 33.99% of invoices in PDF format.

We were also interested in how organizations generate e-invoices. The majority of organisations use an ERP (Enterprise Resource Planning) solution for generating e-invoices, 57.8%, 27.4% use a dedicated software application, 22.6% use the PPA portal, 17.8% use a web application, 13.5% have developed their custom e-invoicing software

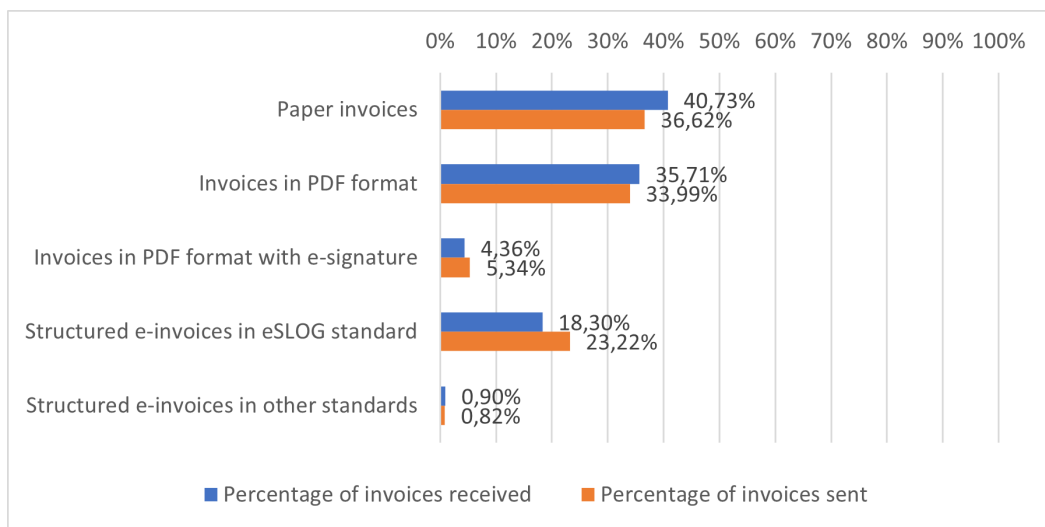


Figure 1: Percentages of invoices received and sent by the form of occurrence

solution, 11.5% use a business partner software solution, and 4.4% use a web service from a business partner.

4.2 Advantages, barriers and Incentives for e-invoicing adoption

To analyse the importance of e-invoicing usage advantages, barriers and incentives for adoption, we performed a one-sample t-test to test the statistical significance of importance (test value 4 – meaning important on a 5-point Likert scale) for each defined variable. With one sample t-test, we tested if the mean values of variables statistically significantly differentiate (at 95% confidence level) and are lower from value 4 as defined criteria for importance on a 5-point Likert scale.

The T-test for e-invoicing usage advantages (Table 1) confirmed that organizations perceive all investigated advantages as statistically important, except “improved cash flow and finances”. The following e-invoicing advantages were considered as important (in ranking order): business process automation, faster processing of invoices, faster delivery of invoices, improved business effectiveness, reduction of employee time, reduction of costs, business process tracking, increase of productivity, lower error rate, better relationships with customers and suppliers, better business process compliance.

Furthermore, we ran one sample t-test (Table 2) to identify statistically significant barriers to e-invoicing usage. Results have shown the following barriers as significantly important (in ranked order): suppliers do not send e-invoices, customers do not receive e-invoices, unawareness of the benefits of using e-invoices, and lack of knowledge to implement e-invoicing.

T-test of the importance of e-invoicing usage incentives is shown in Table 3. The analysis shows the extent to which organisations (1 strongly disagree - 5 strongly agree) agree with the incentives given for e-invoicing. The one sample t-test shows that the following incentives would most likely encourage organisations to adopt e-invoicing (results in ranking order): reduced initial costs of implementing e-invoicing, increased awareness of the benefits of e-invoicing, business software providers integrating e-invoicing into their solutions, customer requirements for the use of e-invoicing, education on e-invoicing, digitalization financial grants, incentives from the government and institutions, calls for tenders for digitalization, publicly presented examples of good practice, public directory of business entities for the exchange of e-invoices, government to legislate mandatory e-invoicing for all companies, public catalogue of service providers and their solutions.

Table 1: T-test of means for the importance of e-invoicing usage advantages

e-invoicing usage advantages	Test Value = 4						
	t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
			One-Sided p	Two-Sided p		Lower	Upper
Business process automation	8.924	269	<.001	<.001	.481	.38	.59
Faster processing of invoices	8.575	272	<.001	<.001	.469	.36	.58
Faster delivery of invoices	8.499	274	<.001	<.001	.451	.35	.56
Improved business effectiveness	6.818	256	<.001	<.001	.362	.26	.47
Reduction of employee time	5.590	270	<.001	<.001	.314	.20	.42
Reduction of costs	4.789	273	<.001	<.001	.296	.17	.42
Business process tracking	4.968	271	<.001	<.001	.287	.17	.40
Increase of productivity	4.336	267	<.001	<.001	.269	.15	.39
Lower error rate	4.407	271	<.001	<.001	.268	.15	.39
Better relationships with customers and suppliers	-.357	255	.361	.722	-.023	-.15	.11
Better business process compliance	-.525	261	.300	.600	-.034	-.16	.09
Improved cash flow and finances	-2.728	249	.003	.007*	-.196*	-.34	-.05

* p-value is lower than .05 at a confidence level of 95%, and the mean value is lower than 4

Table 2: T-test of means for the importance of e-invoicing usage barriers

e-invoicing usage barriers	Test Value = 4						
	t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
			One-Sided p	Two-Sided p		Lower	Upper
Suppliers do not send e-invoices	-.402	244	.344	.688	-.024	-.14	.10
Customers do not receive e-invoices	-.599	242	.275	.550	-.037	-.16	.08
Unawareness of the benefits of using e-invoices	-1.925	239	.028	.055	-.112	-.23	.00
Lack of knowledge to implement e-invoicing	-1.885	241	.030	.061	-.124	-.25	.01
The complexity of implementing e-invoicing	-4.643	237	<.001	<.001*	-.311*	-.44	-.18
High costs of e-invoicing IT implementation	-4.263	226	<.001	<.001*	-.330*	-.48	-.18
Information security concerns	-7.584	237	<.001	<.001*	-.534*	-.67	-.40
Lack of management support	-7.779	229	<.001	<.001*	-.652*	-.82	-.49
Limited IT capabilities in the organisation	-8.740	230	<.001	<.001*	-.688*	-.84	-.53
Low level of e-business adoption	-8.265	220	<.001	<.001*	-.729*	-.90	-.55
Not aware of e-invoicing providers and solutions	-13.314	223	<.001	<.001*	-1.112*	-1.28	-.95

* p-value is lower than .05 at a confidence level of 95%, and the mean value is lower than 4

After assessment of which advantages, barriers and incentives (Table 1-3) are important for organizations for e-invoicing adoption, we aimed to identify if there are any statistically important differences in opinions between organizations with lower and high extent of e-invoicing usage. We defined criteria for a greater extent of e-invoicing usage by average percentage (20%) with added standard deviation (22%) of e-invoicing usage. The calculated criteria for a higher extent of e-invoicing usage was set to 42%. This criteria formed two distinct groups of organizations with different extents of e-invoicing usage. A lower e-invoicing usage group consists of 186 organizations, and a higher extent of e-invoicing usage group consists of 41 organizations.

To compare two groups with lower and higher extent of e-invoicing usage, we ran an independent T-Test with Levene's test for equality of variances to test if the assumption on the homogeneity of variances was violated (Table 4).

Independent T-test identified statistically significant and practical important differences between the two compared groups with a confidence level of 95%. Organiza-

tions with greater e-invoicing usage perceive the following advantages as more important than those with lower e-invoicing usage: higher business process automation, reduced employee time and increased productivity. Furthermore, organizations with a greater extent of e-invoicing usage perceive as a more important incentive that software providers integrate e-invoicing into their business information systems than those with lower e-invoicing usage.

Organizations with lower usage of e-invoicing reported higher integration costs with existing systems as a more important barrier than those with higher e-invoicing usage.

5 Discussion

The survey results have shown that paper and PDF invoices are still the predominant format for exchanging invoices. 40.73% of invoices are received, 36.62% are sent in paper format, 40.70% of invoices are received, and 39.33% are sent in PDF format (with or without e-signature). In all structured electronic formats, 19.20% of invoices are received, and 24.04% are sent, with the vast ma-

majority of these invoices exchanged in the eSLOG standard. This distribution also aligns with the findings in the Billentis reports, where PDF and paper are the dominant formats for exchanging invoices (Koch, 2016). As expected, medium-sized and large enterprises receive the highest number of e-invoices, as they are generally better IT-supported for receiving e-invoices. In contrast, many smaller enterprises, especially micro-enterprises, lack the IT solutions and expertise to deal with e-invoices. The higher proportion of structured e-invoices sent than received is because 70.4% of the organisations surveyed exchange invoices with the public sector, for which eSLOG invoice format is mandatory. Although 81.1% of the respondents indicated sending e-invoices in a structured eSLOG format, these represent only 23.22% of all exchanged invoices. This confirms our study's assumption that although many organisations have the technological and organisational support to send e-in-

voices, they do not use this method of exchange to a large extent for various reasons.

In addition to the assessment of the current state of e-invoicing adoption in organizations in Slovenia, we also identified statistically significantly important advantages (Table 1), barriers (Table 2), and incentives (Table 3) for e-invoicing perceived by survey respondents. It is noticeable that respondents perceived the majority of e-invoicing usage advantages as necessary. The most important advantages are business process automation, faster processing of invoices, faster delivery of invoices, improved business effectiveness and business process tracking. Significantly recognized were the reduction of employees' time, reduction of costs, and lower error rates, which led to increased productivity. There were only two benefits that were not recognized as statistically important. The first is "improved cash flow and finances", which is understandable,

Table 3: T-test of means for the importance of e-invoicing usage incentives

e-invoicing usage incentives	Test Value = 4						
	t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
			One-Sided p	Two-Sided p		Lower	Upper
Reduced initial costs of implementing e-invoicing	6.805	254	<.001	<.001	.353	.25	.46
Increased awareness of the benefits of e-invoicing	6.070	256	<.001	<.001	.307	.21	.41
Business software providers integrate e-invoicing into their solutions	5.485	246	<.001	<.001	.304	.19	.41
Customer requirements for the use of e-invoicing	4.306	253	<.001	<.001	.228	.12	.33
Education on e-invoicing	4.378	255	<.001	<.001	.227	.12	.33
Digitalization financial grants	3.266	246	<.001	.001	.219	.09	.35
Incentives from the government and institutions	1.724	248	.043	.086	.112	-.02	.24
Calls for tenders for digitalization	1.523	243	.065	.129	.102	-.03	.23
Publicly presented examples of good practice	.653	245	.257	.514	.041	-.08	.16
Public directory of business entities for the exchange of e-invoices	.434	242	.332	.665	.029	-.10	.16
Government to legislate mandatory e-invoicing for all companies	-.739	248	.230	.461	-.052	-.19	.09
Public catalogue of service providers and their solutions	-1.810	242	.036	.071	-.119	-.25	.01
Competitors use e-invoicing	-2.771	253	.003	.006*	-.189*	-.32	-.05

* p-value is lower than .05 at a confidence level of 95%, and the mean value is lower than 4

Table 4: Independent T-test for comparing groups with high/low e-invoicing usage

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
Business process automation	Equal variances assumed	18.447	0.000*	2.701	225	0.004	0.007	0.402	0.149	0.109	0.695
	Equal variances not assumed			4.332	146.866	0.000	0.000*	0.402	0.093	0.218	0.585
Reduction of employee time	Equal variances assumed	7.352	0.007*	1.490	225	0.069	0.138	0.240	0.161	-0.078	0.559
	Equal variances not assumed			2.033	96.065	0.022	0.045*	0.240	0.118	0.006	0.475
Increase of productivity	Equal variances assumed	2.203	.139	-2.113	219	.018	.036*	-.297	.141	-.574	-.020
	Equal variances not assumed			-2.156	67.697	.017	.035	-.297	.138	-.572	-.022
High integration costs with existing systems	Equal variances assumed	.604	.438	2.251	194	.013	.026*	.476	.212	.059	.894
	Equal variances not assumed			2.112	52.411	.020	.039	.476	.226	.024	.929
Software providers integrate e-invoicing	Equal variances assumed	10.397	.001*	-2.700	210	.004	.007	-.373	.138	-.645	-.101
	Equal variances not assumed			-3.573	101.437	<.001	<.001*	-.373	.104	-.579	-.166

* p-value is lower than .05 at confidence level 95%

as e-invoicing is about business process simplification and optimization rather than payment and financial discipline. Respondents also did not recognize "better relationships with customers and suppliers" as an important benefit of e-invoicing. This might be related to an invoice being the last business document in the buyer-supplier business transaction process. Many other activities and factors lead towards sustainable and trustworthy buyer-supplier relationships (from the quality of products and services to trustworthy business operations and cooperation).

Surveyed organizations recognized the important barriers: suppliers do not send e-invoices, customers do not receive e-invoices, lack of knowledge about the benefits of using e-invoices and lack of knowledge to implement e-invoices. The first two barriers are related to the business

environment of an organization. If business partners are not using e-invoicing or any other e-document or particular information technology, this also impacts the organization itself. Lack of awareness and knowledge have always been the most important barriers to adopting information technology or business innovation. Therefore, different stakeholders in the country's entire ecosystem (including policymakers) need much effort and many incentives to raise awareness of digitalization opportunities and support their implementation.

Respondents are encouraged to consider almost all incentives that could support the broader adoption of e-invoicing (see Table 3). Incentives are related to government funding schemes, some already in place through the Digital Innovation Hub of Slovenia and other programs. It is

also crucial to provide legislation for mandatory e-invoicing between enterprises. In addition, a public directory of business entities for exchanging e-invoices and a public catalogue of service providers and solutions on a national level would be beneficial. In addition, training, education, and learning from best practices have been recognized as important to obtain needed knowledge for e-invoicing implementation. Implementing e-invoicing in business ecosystems and supply chains is also considered a significant incentive. Finally, without proper information technology and service infrastructure, wider e-invoicing adoption is impossible.

We also examined how more advanced organizations with a greater extent of e-invoicing usage are perceiving e-invoicing usage benefits, barriers and incentives compared to those with lower use of e-invoicing (see Table 4). We can conclude, as expected, that those organizations with higher e-invoicing usage perceive business process automation, reduction of employee time and increase of productivity as more important advantages compared to those with lower e-invoicing use. This can be explained by the fact that organisations with a higher extent of e-invoicing are more aware of the advantages of e-invoicing because they recognise these usage advantages in their work.

E-invoicing reduces the need for manual data entry, validation, and reconciliation, saving time and resources for both the sender and the receiver of the invoice. E-invoicing frees up employees from tedious and repetitive tasks related to invoice processing, such as printing, mailing, scanning, filing, and archiving. This can increase employee satisfaction and productivity and reduce labor costs and errors. E-invoicing is one of the important catalysts for digitalization and sustainable development for enterprises and economies. By adopting e-invoicing, businesses can improve their efficiency, profitability, customer satisfaction, and environmental impact. All these benefits contribute not only to more profitable but also to more sustainable business operations.

We can conclude that e-invoicing adoption is also cost-sensitive. Therefore, we find that a good practice approach is for software providers to integrate e-invoicing into their business solution, as organizations with higher e-invoicing usage point out. Most e-invoices (57.8%) are prepared with enterprise resource planning (ERP) solutions, ranging from global vendors such as SAP and Dynamics NAV to various Slovenian ERP vendors. All major Slovenian ERP business software solution providers have integrated the services of e-invoicing providers into their software solutions. This has enabled organizations to automate the sending and receiving of e-invoices and to perform the entire e-invoicing process within a single software solution without unnecessary manual copying, importing or storing of documents. The cost sensitivity of implementing e-invoicing should be considered, especial-

ly for micro and small organisations, as they have fewer staff, IT support and financial resources available. For enterprises that only issue a few invoices per year, various online e-invoicing portals are available. An example is the unrestricted use of the PPA (national) web portal for generating and issuing e-invoices to the public sector (limited to 100 hundred invoices per year), used by almost a quarter of the respondents.

Organizations with lower e-invoicing usage perceive the barrier of high integration costs with existing systems as more important. Thus, this might be the reason for lower e-invoicing usage. Given the integrations already made in the software solutions available to organisations, there is also a lack of knowledge to implement e-invoicing in these organisations, which was also identified as one of the more important barriers (see Table 2) that can be addressed by raising awareness. The survey participants identified increased awareness of the benefits of e-invoicing and reduced initial costs of implementing e-invoicing as the two most important drivers (Table 3).

6 Conclusions

In this paper, we present an insight into the development of e-invoicing in the small EU country Slovenia. We present the efforts of various stakeholders who have advocated and contributed significantly to establishing and expanding e-invoicing in Slovenia. In the theoretical part of the paper, we also describe important regulations, legislation, and policies in Slovenia and the EU that have significantly impacted this field's evolution. The current situation of e-invoicing in Slovenia is based on an established ecosystem, which ensures interoperability for electronic document exchange. However, we still have enormous opportunities to improve digitalization of e-invoices and other business documents, processes and entire business models.

It is important to note that we also show the significant advantages of electronic document exchange in terms of generating significant time and financial savings and reducing environmental impact. Considering the large number of invoices exchanged (approximately 30 billion invoices exchanged per year), there is a huge potential to reduce CO2 emissions by 1 million tonnes per year by reducing paper consumption and energy costs for transportation. The numbers are impressive; however, the huge potential of digital transformation of enterprises and societies and its impact on sustainable development and sustainability has not yet been entirely revealed.

In the main part of the paper, we present the survey results on developing e-invoicing among organisations in Slovenia. 284 organisations participated in the survey, whose representatives fully responded to the online questionnaire. The findings of the survey show that despite the

legal regulation and mandatory exchange of electronic invoices with the public sector, e-invoicing has not yet been widely extended to business-to-business transactions. Most enterprises still exchange invoices in paper and PDF format to a large extent.

To encourage further digitisation of business processes and digital transformation of organisations, we have identified the need for legislation supporting the mandatory exchange of e-invoices in a standardised format for all business entities. This type of legal regulation of mandatory exchange of e-invoices between organisations has already been introduced in some European countries (Italy and Serbia), and several countries are preparing to introduce it (Belgium, France, Poland, Spain and Romania). We expect this regulation to be introduced in Slovenia in the near future as well. This will ensure the widespread use of e-invoicing and the resulting benefits, increased competitiveness of organisations and significant environmental impact.

The widespread use of e-invoices among organisations is also the basis and potential for further development of digitalization and digital transformation of enterprises. With the comprehensive digitisation of all business documents, related business processes can also be digitalized. This results in increased productivity and, thus, the competitiveness and sustainability of not only the individual organisation but also the entire economy in Slovenia.

An important role in these endeavours will also be played by the national registry of e-invoice recipients, which was established in April 2018 under the Readiness of Slovenian e-invoicing (ROSE) measure, in line with the European Directive 2014/55/EU. The register contains structured information on how e-invoices are received by each (organization) recipient's system. Currently, the registry is maintained by the National eBusiness Centre, which operates within the Chamber of Commerce and Industry. In the future, it would be necessary to establish this register on a national level and ensure cross-border interoperability.

SMEs supporting organizations (chambers of commerce, IT service providers, educational institutions, various associations for digitalization and innovation hubs) will continue to play an important role in sharing knowledge about opportunities for digitisation, digitalization, and digital transformation. It will be crucial to ensure adequate co-funding and appropriate solutions for different types of organisations. Micro and small enterprises are particularly vulnerable in this respect. Therefore, appropriate services will have to be provided for their specific needs.

The results of our study provide important information on the development of the use of e-invoicing and the opportunities for further development of the electronic exchange of other business documents. It provides important information for decision-makers and public adminis-

trations to take appropriate measures and incentives and support establishing the appropriate ecosystem for digital transformation in the country. The paper also contributes to a better understanding of the advantages, barriers and incentives of e-invoicing and digitisation of other business documents for practitioners on their path to digital and sustainability transformation.

However, like any research, also our research has limitations. The most significant limitation stems from the sampling method, as the survey mainly involved organisations that have already taken specific steps in digitalization. To balance the results, we compared them with the national digitalization results conducted annually by the Statistical Office of the Republic of Slovenia (based on EUROSTAT). Nevertheless, we did not detect any major discrepancies. Where any were detected, we aimed to provide reasonable explanations from observation and expert knowledge in the field. The limitations also provide opportunities for future research. Gathering data from various sources with different research methods and approaches is important to get deep insights and better understand the field's evolution. In our case, the following research opportunity will be after the adoption of mandatory e-invoicing between all business entities, which will happen in the next few years. Observing the digitalization achievements of other business documents and processes will also be interesting.

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E-računi: Spodbujevalci digitalizacije in trajnostnega potovanja

Ozadje in namen: Digitalizacija prinaša številne priložnosti za digitalno in trajnostno preobrazbo. Eden od prvih korakov na tej poti je digitalizacija poslovnih dokumentov in poslovnih procesov. Evropska komisija je prepoznala prednosti digitalizacije, zlasti na področju e-izdajanja računov, ki lahko pomembno prispeva h gospodarski blaginji in se uskladi s cilji javnih politik, kot sta zmanjšanje primanjkljaja in trajnostni razvoj. Kljub uspešni uvedbi uporabe e-računov v javnem sektorju je razširjenost izdajanja e-računov pri transakcijah med podjetji (B2B) presenetljivo nizka. Ta raziskava se osredotoča na Slovenijo, majhno evropsko državo, ki je leta 2015 uvedla obvezno izdajanje e-računov med podjetji in javnim sektorjem.

Metode: Da bi raziskali uporabo e-računov v širši populaciji, smo zasnovali spletno anketo, ki smo jo izvedli med 284 organizacijami v Sloveniji. Zbrane podatke smo analizirali s programom SPSS 28. Za oceno pomembnosti identificiranih prednosti, ovir in spodbud za uporabo e-računov smo uporabili T-test. Izvedli smo tudi T-test za ugotavljanje statistično pomembnih razlik o pomembnosti prednosti, ovir in spodbud med organizacijami z manjšim in večjim obsegom uporabe e-računov.

Rezultati: Rezultati so pokazali, da organizacije dobro prepoznavajo prednosti uporabe e-računov in jih dojemajo kot pomembne. Najpomembnejše ovire pri uvajanju e-računov so povezane s poslovnim okoljem ter nepoznavanjem in pomanjkanjem znanja o tem, kako uvesti e-račune. Zelene spodbude za širše uvajanje e-izdajanja računov so povezane z enostavnejšo in cenejšo tehnično izvedbo, zagotavljanjem usposabljanja in izobraževanja, ki vključuje najboljše prakse, ter z razpoložljivostjo državnih subvencij in drugih podpornih ukrepov na državni ravni, vključno z zakonodajo, javnim imenikom poslovnih subjektov, ki uporabljajo elektronsko izmenjavo dokumentov, in ponudnikov storitev.

Zaključek: Članek podaja pomembne informacije za odločevalce in javno upravo, da sprejmejo ustrezne ukrepe in spodbude za nadaljnjo podporo širši uporabi e-računov in izmenjave drugih poslovnih e-dokumentov za boljše izkoriščanje priložnosti digitalizacije.

Ključne besede: e-računi, Uvedba, Digitalizacija, Trajnost, EU, Slovenija

Collaborative Synergies for Elevated Destination Experiences: A Model of Cooperation between Hotel Companies, DMOs, and Local Stakeholders

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Background and Purpose: As outlined in the National Tourism Development Strategy until 2030, Croatia aims to provide higher value, innovative, sustainable, and authentic tourist experiences. There is a need to examine how the main tourism stakeholders can contribute to the transformation of traditional and commodified tourism products into premium-class offerings that add value throughout the entire value chain. It is important for premium-class hotels to take additional steps in improving their offerings to positively impact the entire destination and enhance service quality. This paper aims to: explore initiatives for promoting innovation in premium-class experiences within destinations focusing the cooperation between on hotel companies and DMOs; identify anticipated trends influencing the future of the tourism industry, and assess the future prospects of premium-class hotels in Croatia.

Design/Methodology/Approach: The methodology incorporated both quantitative and qualitative approaches, driven by the structured nature of the questions in the online survey that target sales and/or marketing directors of hotel companies that have premium-class hotels in their portfolio. Suitable statistical methods were employed to conduct the analysis for the quantitative portion of the data. Content analysis was utilized to analyze the open-ended questions. For this purpose, the MAXQDA software for coding, categorizing, and exploring patterns within the data.

Originality/value: This study represents one of the pioneering investigations into the essential initiatives that hotel companies need to undertake in order to orchestrate the development of a destination that relies on its premium-class experiences. Furthermore, the study examines the role of supporting institutions such as destination management organizations (DMOs) in facilitating this process. A conceptual model to improve the development of the premium hotel segment and destination at the same time, pursued by the responsible practices and initiatives of the hotel companies and strong partnerships with DMO and the local community, is proposed.

Keywords: *Premium-class hospitality, Destination management organizations, Elevated experiences, Cooperation model, Tourism*

1 Introduction

The responsibilities of Destination Management Organizations (hereafter DMOs) are well-established and often regulated by law in many destinations, including

developing destination products. However, the nature of the tourism product necessitates ongoing decision-making processes, making the strategic management of destination management organizations a constant endeavour (Fairley, 2019). The literature analysis highlights that the

effectiveness of destination management relies heavily on the capability of various stakeholders to fulfil their roles and is closely associated with the pivotal role of a DMO (Korossy et al., 2022). However, managing a destination involves navigating these various stakeholders' differing needs, making it a challenging task. Tourism is inherently characterized by its emphasis on innovation and creative endeavours (Hjalager, 2010). It is evident in practice that hotel companies in destinations are often quick to adopt innovations and influence the emergence of new tourism trends through their service offerings. It is so partially because of knowledge spillovers that play a vital role in enhancing the innovation performance of hotel companies by fostering the development of fresh insights and innovation capabilities (Veiga et al., 2022). As a result, it is crucial to explore what additional steps hotel companies can take to ensure that improvements in their product and service provision process positively impact the entire destination, thereby enhancing the quality of services across the value chain. This is particularly important for premium hotel products that target a market seeking high-quality experiences for which they are willing to pay a premium. Furthermore, it is important to analyze how DMOs can enhance their role in facilitating the rapid absorption of positive effects generated by establishing a premium hotel offering within the destination's value creation chains. These initiatives aim to cultivate high-quality, leisurely, and sustainable tourism experiences that align with current tourism trends and the preferences of travelers.

The objective of this paper encompasses three main aspects. Firstly, it aims to investigate the key initiatives that hotel companies providing premium-class accommodations and DMOs can undertake to promote optimal innovations and practices in developing premium-class experiences within a given destination. Secondly, it seeks to uncover the trends that directors anticipate will have an impact on the tourism industry in the coming years. Lastly, it aims to shed light on the prospects of premium-class hotels in Croatia.

The authors acknowledge the importance of addressing these fundamental inquiries for multiple reasons. Firstly, although extensive research has been conducted on destination management and the role of DMOs in enhancing the appeal and competitiveness of tourist destinations (Coban and Yildiz, 2019), there is a limited focus on investigating their specific association with premium hotels regarding comprehending these innovations and implementing similar practices within the destination context. Secondly, the existing body of research examining the ways and possibilities by which premium hotels can influence a destination's overall quality and offerings needs to be more extensive and adequate. Therefore, it is necessary to bridge this gap and delve deeper into understanding the potential impact of premium hotels on elevating the destination's quality standards through close collaboration with key stakehold-

ers. Thirdly, addressing the aforementioned questions will contribute to formulating a comprehensive model proposal that facilitates such collaboration within the tourist destination, fostering the development of high-quality destination products, with hotel companies taking the lead in creating premium hotel offerings and promoting such practices within the destination ecosystem. Fourthly, the authors chose Croatia as the research location, despite it not being widely recognized as a luxury or premium-class tourism destination. Nevertheless, there is a strong desire to shift away from the conventional sea and sun tourism, which is predominantly seasonal. Croatia faces significant seasonality in tourist traffic compared to other Mediterranean countries, with 92.5% of total beds located in Adriatic Croatia, leading to peak months with the highest average space load. To address these challenges, Croatia aims to offer higher value, innovative, and sustainable tourism products. This strategic focus on authentic and sustainable tourism is outlined in the National Tourism Development Strategy until 2030 (Croatian Parliament, 2022). The goal is to reposition Croatia as a destination that delivers unique, authentic and sustainable experiences to its visitors. The emphasis on authenticity, curated offerings, sustainability, and a profound connection with local culture and heritage reflects the preferences of modern luxury travellers. Indeed, there is a need to examine how the main tourism stakeholders can contribute to the transformation of traditional and commodified tourism products into premium-class offerings that add value throughout the entire value chain. This process will enhance the overall quality of tourism products in the destination, aligning with the growing trends of authentic and curated experiences.

Based on the information provided, the following research questions have emerged:

1. What role do premium-class hotels play in significantly enhancing the quality of services throughout the entire value chain within the destination?
2. What is the role of DMOs in enhancing the success of developing premium-class offerings within the destination?
3. What trends will impact the future of the tourism industry?
4. What lies ahead for premium-class hotels in Croatia, and what are the underlying factors driving this direction?

Valuable insights will be provided to support the design and implementation of an effective model that fosters collaboration between DMOs and hotel companies, ultimately leading to the development of high-quality destination products.

The methodology utilized in this study incorporated both quantitative and qualitative approaches to accommodate the structured format of the questions presented in the online survey. The survey questionnaire consisted

of close-ended, open-ended, and Likert scale-based questions. The specific target participants for this research were sales and/or marketing directors and directors of operations¹ representing hotel companies in Adriatic Croatia as they are responsible for designing and pricing specific hotel products in their portfolio.

The paper is organized coherently, following a logical structure. The subsequent section presents a comprehensive literature review, delving into relevant existing research. Chapter 3 elaborates extensively on the methodology employed in this study, providing a detailed explanation of the approach adopted. Chapter 4 is dedicated to presenting research findings, highlighting the outcomes of the investigation. Moving on to Chapter 5, an in-depth analysis and discussion of the results ensue, accompanied by the introduction of an additional value proposition: a conceptual model of cooperation within the tourism destination. The final chapter encompasses concluding remarks and an assessment of the study's limitations.

2 Literature Review

The subjectivity and contextual nature of luxury make it challenging to establish a universally accepted definition. Scholars and experts recognize this challenge and acknowledge that luxury hospitality's definition varies depending on individual perspectives, cultural influences, and shifting consumer expectations. Heyes (2021) emphasizes the investigation of luxury hospitality, encompassing tangible components such as material characteristics, amenities, and services, along with intangible facets encompassing emotions, experiences, and exclusivity. This accentuates the multidimensional character of luxury hospitality and underscores the importance of accounting for diverse variables in its definition and comprehension. Similarly, Luna-Cortes et al. (2022) acknowledge the need for more consensus in defining luxury hospitality and the associated factors. They highlight the diversity of luxury experiences and the varying expectations of consumers, which further complicates the development of a unified definition. These insights underline luxury hospitality's complexity and subjective nature, requiring a holistic and flexible approach to understanding its intricacies. Prominent trends in luxury tourism include the pursuit of authenticity, slow tourism (Krešić and Gjurašić, 2022), health and wellness, and sustainable tourism (Amatulli et al., 2021). Given the significant contribution of tourism services to the global economy, it is crucial for the hotel industry to adopt proactive environmental strategies that not only generate widespread social acceptance but also enhance market legitimacy (Jacobs et al., 2010). An adequately designed and effectively implemented environmental management program holds the potential to enhance levels of

job satisfaction and organizational commitment among luxury hotel staff members (Sourvinou and Filimonau, 2017). By embracing environmental management practices luxury hotels can establish new trends and standards for other sectors within the hospitality industry to follow (Bohdanowicz ET AL., 2011). Lopes et al. (2022) have acknowledged the influence of digital transformation on the evolutionary trajectory of the luxury tourism industry. These trends reflect the evolving preferences of luxury travellers seeking meaningful experiences, well-being, and environmentally conscious practices. According to Novotna and Kunc (2019), a significant determinant shaping the future of luxury tourism is the shift in consumer values from a focus on material possessions to a preference for experiential purchases. This change in consumer behavior has profound implications for the luxury tourism industry as it necessitates a reevaluation of product offerings and the delivery of immersive and memorable experiences to meet the evolving needs and desires of luxury travellers. The 2018 report by Global Data titled "Tapping into the Luxury Travel Market" highlights key trends in luxury travel. These include market growth and diversification, a shift from opulence to exclusivity, a focus on authenticity, wellness, responsible travel, and the importance of customization and technology. Defining luxury hospitality comprehensively remains challenging, necessitating adaptability in diverse contexts and markets. As a result, a definitive and all-encompassing definition still needs to be discovered. Instead, a comprehensive and flexible approach is imperative for comprehending and delineating luxury hospitality within diverse contexts and markets. Thomsen et al. (2020) highlight the necessity for further research that specifically delves into the realm of unconventional luxury. They emphasize the importance of exploring and understanding luxury experiences that deviate from traditional notions, urging scholars to investigate and shed light on this emerging area of study. The luxury travel industry has experienced significant growth and has become a key contributor to global economic development. Several factors have contributed to the growth of the luxury hotel market (Zion Market Research, 2019):

1. Growth in Travel and Tourism: The expansion of the travel and tourism industry has played a significant role in the growth of luxury hotels. As more people travel for leisure and business purposes, the demand for luxury accommodation has increased.

2. Profitability and Asset Value: Luxury hotels are known for their high profitability and asset value. Investors and hotel companies recognize the potential for generating substantial returns from luxury properties, which has driven the development of new luxury hotels.

3. Changing Lifestyles: The emergence of new lifestyles, characterized by a desire for unique and extraordi-

¹ Considering the variation in job systematization among hotel companies.

nary experiences, has fueled the demand for luxury travel. Consumers are seeking exclusive and personalized experiences, and luxury hotels are well-positioned to cater to these preferences.

4. Strong Advertising and Branding Strategies: Hotel companies have implemented robust advertising and branding strategies to promote luxury properties. Effective marketing campaigns have helped create brand awareness and attract affluent travelers.

According to market research (Soeg, 2022) the global luxury hotel market was projected to approach the \$200 billion mark by 2021. Additionally, the global luxury travel market is expected to reach \$1.3 trillion by 2027 (ReportLinker, 2021), with a projected compound annual growth rate (CAGR) of 11.1% during the period 2021-2027 (Allied Market Research, 2021). The rise in luxury travel can be attributed to the desire for unique experiences, increasing disposable income of middle- and upper-class individuals, and the growing need for quality family time. The luxury travel market is expected to be driven by the baby boomer generation, who will dominate the growth with a projected CAGR of 10.7%. The Generation X segment is also anticipated to contribute to the market growth, with an estimated CAGR of 11.5% during the forecast period (Allied Market Research, 2021). Overall, the growth of the luxury travel industry and luxury hotels is influenced by various factors, including changing consumer preferences, rising disposable income, effective marketing strategies, and the overall expansion of the travel and tourism sector.

In light of the aforementioned, it is crucial to acknowledge the patterns observed in the expansion of the luxury segment and commence the creation of destinations while considering the prospective trends within the luxury travel market. By crafting distinct experiences that cater to the demands of the luxury travel market, destinations can simultaneously enhance their competitive edge. Nonetheless, in order to attract the luxury travel market, the focal point must be on providing premium-class offerings. Cultivating a premium hotel offering within the destination plays a pivotal role in the overall development of the destination. In order to enhance their productive integration, hotels can establish relationships with support organizations like DMOs. Taking a destination management perspective, the results of the study conducted by Vieira et al. (2022) indicate that support organizations play a crucial role in facilitating interfirm relationships and promoting productive integration within a destination. By effectively coordinating various stakeholders and resources, a well-functioning DMO can drive sustainable practices and effectively address existing and potential challenges. Therefore, destination management plays a pivotal role as a fundamental tool in the endeavour to construct a future that is more inclusive, sustainable, and competitive (Guerreiro, 2022). The establishment of a robust DMO offers

significant potential for enhancing the competitiveness of a destination. DMOs also play a crucial role in fostering, not only cooperation, but also promotion across industries. DMOs are taking on the role of influencers for the destination (Nicole, 2022).

Hotels and DMOs can leverage their strengths and resources by working together to create enhanced visitor experiences and drive destination growth. This collaborative approach facilitates the alignment of marketing efforts, strategic planning, and the development of unique and compelling offerings that showcase the destination's attractions and meet the evolving needs and preferences of luxury and future travellers. Cooperative behavior plays a vital role in achieving sustainable planning and development within tourism destinations. However, there is a scarcity of evidence regarding the factors influencing actors' choices to cooperate. Cooperation in tourism development is topical because no tourism product would exist without engagement of various parties. Tourism destinations can be conceptualized as intricate networks involving numerous co-producing actors who deliver a wide range of products and services. As stated by Bititchi et al., (2004, 253), the concept of cooperation practices should be viewed within the framework of a mutually beneficial scenario, commonly referred to as a win-win situation. The complexity highlighted distinguishes destination development and management from organizational development and management (Haugland et al., 2011). The study conducted in a European Alpine tourism destination, for instance, demonstrates that only relationship-based factors, when combined with communication variables, exhibit a strong positive influence on cooperative behaviour (Beritelli, 2011). The framework proposed by Bramwell and Sharman (1999) examines whether specific collaborations effectively address power imbalances among stakeholders and introduces the concept of partial consensus. Through its collaborative efforts, a DMO can contribute to the long-term viability and success of the destination, while also maximizing its appeal to visitors and maintaining a positive relationship with the local community. DMO serves as a valuable platform for leaders in its destination, as underlined in the research of Beritelli et al. (2015). According to the aforementioned, premium-class hotels must establish targeted partnerships with DMOs, the local community, and other crucial stakeholders to coordinate premium-class offerings within a destination effectively. This collaborative approach is essential to promote the destination's growth by providing high-quality tourism experiences. It is important to underline that Gonzales-Torres et al. (2022) emphasize the importance for hotel companies to meticulously design their partner configuration based on the specific type of innovation they seek to introduce, particularly in the context of premium experiences targeting the luxury travel market. They highlight that careful attention should be given to areas such as service and marketing

when establishing partnerships. By strategically aligning their collaborations within these domains, hotels can effectively harness external expertise and resources, propelling innovation in their services and bolstering their marketing endeavour. This strategic approach underscores the significance of collaboration and strategic alliances in cultivating innovation within the hotel industry. It enables companies to enhance their competitiveness and effectively address the evolving needs of their customers. Organizations in tourism are increasingly involved in collaborative partnerships, such as service bundling for tourism packages. The drivers of service bundling are analysed in the paper of maggioni et al. (2014). This study identifies four clusters of hoteliers based on their networking orientation: Relational/Socials, Opportunists, Innovators, and Marketers. Each cluster demonstrates unique collaboration approaches and motivations for partnership engagement. The study of Tsou et al. (2019) underscores the importance of strategic decision-making regarding partner selection and the utilization of IT resources to foster successful co-development in the hotel sector. The research conducted by Dogan et al. (2019) suggests that residents' perceptions of hotel social responsibility practices have a direct and indirect impact on their support for additional tourism development. Residents' satisfaction with their community mediates this impact. Facilitating active participation of individuals in destination-level tourism development poses considerable challenges. But, living environment, job position, and education are important factors influencing individual's attitudes towards tourism development as concluded in the study of Uran and Juvan (2010). The "bottom-up" approach is widely considered as the ideal approach in this context (Žibert et al., 2017).

Coban and Yildiz (2019) have devised a destination management model for Cappadocia to foster sustainability and enhance competitiveness within its tourism industry. The model emphasizes the pivotal roles of cooperation and coordination. The framework developed in the study of Foris et al. (2020) establishes an interconnected relationship between the analysis of the internal environment through the utilization of the value chain concept and the identification of appropriate Lean Six Sigma methods applicable to the management of tourist destinations. By integrating these approaches, the framework aims to optimize the management practices within the tourist destination, ultimately leading to enhanced performance outcomes. The significance of governance is also highlighted in the research conducted by Ivars-Baidal et al. (2019). While information and communication technology (ICT) undoubtedly influences destination management models, the effectiveness of the smart tourism development approach will not solely rely on technology. It equally hinges on an appropriate governance framework that systematically incorporates three key levels: strategic-relational, instrumental, and applied.

3 Research Methodology

The employed methodology encompassed both quantitative and qualitative approaches due to the structured format of the questions in the online survey. The survey questionnaire included close-ended, open-ended, and Likert scale-based questions. The target participants were sales and/or marketing directors and directors of operations of hotel companies in Adriatic Croatia. The researchers directly contacted the directors, explained the purpose of the research, and invited them to participate in the survey. The questionnaire was distributed via email, and the researchers ensured that the directors were already aware of the upcoming survey. The research was conducted during March and April in the year 2023.

The analysis encompassed the utilization of appropriate statistical methods for the quantitative portion of the data, while the open-ended questions were formulated with four primary objectives in mind:

1. Gaining Managerial Insights on Driving Service Excellence across the Destination's Value Chain: This involved identifying managers' observations regarding specific actions that hotel companies, featuring premium-class hotels in their portfolio, could undertake to make a significant impact on enhancing the quality of services throughout the entire value chain within the destination.

2. Identifying Initiatives for Advancing Premium-Class Offerings by DMOs: The aim was to determine managers' expectations concerning the actions that DMOs can undertake to enhance the success of developing premium-class offerings within the destination.

3. Exploring the Future Outlook and Trends for the Development of Premium-Class Hotels: This sought to gather insights on managers' perspectives regarding the future development and trends related to premium-class hotels.

4. Examining the Model of Cooperation between Premium-Class Hotels and Other Key Stakeholders in the Destination: The objective was to understand how premium-class hotels can collaborate with other significant stakeholders within the destination for mutual benefit.

The research aimed to analyze directors' perspectives on strategies for enhancing service quality in premium-class hotels and the success of premium-class offerings within a destination. Using a content analysis methodology, both qualitative and quantitative aspects were explored. Categories were identified for each open-ended question, resulting in a structured quantitative representation. A qualitative coding process revealed distinct themes, subthemes, and concepts from directors' responses. A keyword-driven approach refined the quantitative analysis by connecting responses to specific themes. This methodology provided a nuanced exploration, combining qualitative richness with a structured quantitative framework, ensuring a thorough examination of the data and contributing to robust findings.

The criteria for selecting the sample:

1. Hotel companies that have 5-star and 4-star hotels in their portfolio based on the Croatian rating system of the Ministry of Tourism and Sport as of January 2023.

2. Hotel companies located in the Adriatic Croatia

Only hotel companies that comply with both criteria were considered. Hotel companies that have their 5-star hotels in more than one Croatian administrative region were counted once. Still, the online survey was distributed to sales and/or marketing directors responsible for the portfolio in the specific region. This was applied in one case only.

In accordance with the provisions outlined in the Croatian Accounting Law, the sample of hotel companies in Croatia includes 10 large companies with over 250 employees and 2 medium-sized companies with 50 to 250 employees. Out of the total of 12 hotel companies contacted for the survey, 11 sales and/or marketing directors and directors of operations actively participated and completed the online questionnaire, resulting in a response rate of 84.6%.

The gender distribution of directors, categorized by male and female representation, can be graphically depicted to visually represent the gender composition.

Based on the data provided, the breakdown of directors by educational background, and age group is as follows:

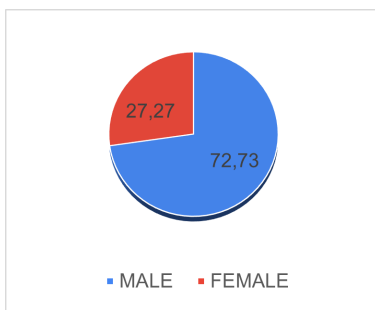
- Educational Background:

Directors with Master of Arts (M.A.) degree: 72.8%
Directors with Master of Science (M. Sc.) degree: 27.2%

Please note that the table represents the percentage distribution of directors within each age group.

The majority of the sample consists of directors with 15-19 years of working experience and 10-14 years of working experience, comprising 72.8% of the total.

Croatia boasts a total of 62 5-star hotels, including those with special standards such as Radisson, Sheraton, West In, Hilton, and Lone. This constitutes 8.20% of the overall hotel landscape in the country. When examining the number of beds in all Croatian hotels and contrasting them with those in the highest category, the latter accounts for 14.41%. Specifically, hotels of the highest category contribute 17,660 beds. However, when comparing this figure with the total bed count in categorized tourist facilities (excluding beds in households), the share of beds in top-tier hotels diminishes to 4.29%. Incorporating beds in households and other accommodation facilities, which exceed 700,000, into the total bed count in categorized tourist facilities results in hotels claiming 11.26% of the share. Yet, the share of beds in the highest-category hotels in this scenario is only 1.58%. The hotel companies included in the sample collectively manage a total of 22 5-star hotels. When considering the overall number of 5-star hotels in the Adriatic Croatia region, this indicates that the hotel



Source: authors' analyses

Figure 1: Distribution of male and female sales and/or marketing directors

Table 1: Age groups of sales and/or marketing directors

AGE GROUP	FREQUENCY	%
30-39	6	54,55
40-49	4	36,36
50-59	1	9,09
	11	100

Source: authors' analyses

companies from the sample oversee approximately 45.8% of the total 5-star hotels in the area.

4 Results

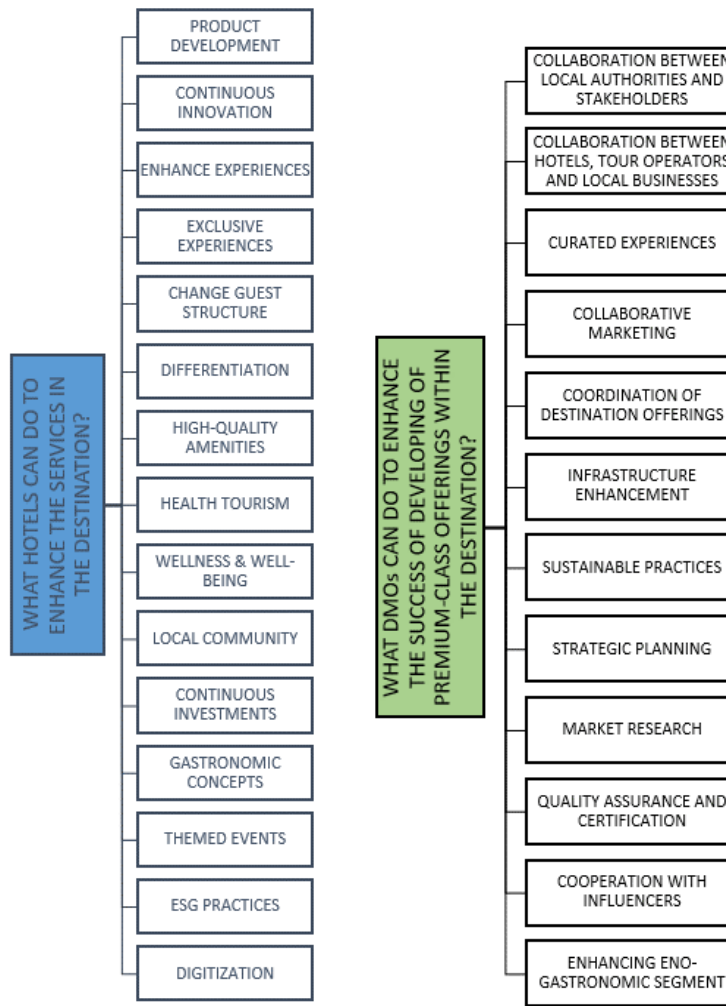
In order to gather directors' perspectives on specific actions that hotel companies with premium-class hotels in their portfolio could undertake to significantly enhance the quality of services throughout the entire value chain within the destination, directors were provided with the opportunity to share their opinions in the online questionnaire. They were encouraged to write about their thoughts and comments as extensively as they desired. The same approach was adopted when gathering opinions on the actions that destination management organizations (DMOs) can take to enhance the success of developing premi-

um-class offerings within the destination.

Based on the received comments and opinions, the authors analyzed and synthesized the common viewpoints derived from all the comments and the views expressed by the directors in the survey questionnaire. The data was quantitatively expressed by identifying number of categories and linking specific views to each category (for each open-ended question). This approach allowed for a systematic categorization and analysis of the data, providing a structured framework to understand the quantitative aspects of the information. 15 categories were identified for the first question and 12 for the second.

The abovementioned is presented graphically in Figure 2.

In the following table the main themes, subthemes and concepts that emerged are presented.



Source: authors' analyses

Figure 2: The common categories for actions hotels and DMOs can take to support the development of premium-class offerings within the destination

<p>RQ1: What role do premium-class hotels play in significantly enhancing the quality of services throughout the entire value chain within the destination?</p>	<p>RQ2: What is the role of DMOs in enhancing the success of developing premium-class offerings within the destination?</p>
<p>MAIN THEME 1 Customer-Centric Excellence SUBTHEMES 1. Local Community Engagement Concept 1: <i>Involvement of the local community in service development</i> 2. Differentiation Strategies Concept 2: <i>Strategies to distinguish premium-class hotels from competitors</i> 3. Exclusive Experiences Concept 3: <i>Creation of unique and exclusive guest experiences</i></p>	<p>MAIN THEME 1 Collaborative Destination Development SUBTHEMES 1. Collaboration Among Tourism Entities Concept 1: <i>Collaborative initiatives among hotels, tour operators, and local businesses</i> 2. Collaboration with Local Authorities Concept 2: <i>Collaboration with local authorities for destination development</i></p>
<p>MAIN THEME 2 Upscale Offerings SUBTHEMES 1. High-Quality Amenities Concept 1: <i>Provision of amenities emphasizing quality and luxury</i> 2. Luxurious Spa and Wellness Centers Concept 2: <i>Development of spa and wellness centers for premium guests</i></p>	<p>MAIN THEME 2 Curated and Experiential Tourism SUBTHEMES 1. Development of Curated Experiences Concept 1: <i>Creation of carefully curated and customized guest experiences</i> 2. Enogastronomic Segments Concept 2: <i>Emphasis on gastronomic experiences within the destination</i></p>
<p>MAIN THEME 3 Innovation and Sustainability SUBTHEMES 1. Digitization Strategies Concept 1: <i>Integration of digital technologies for enhanced guest experiences</i> 2. ESG Practices Concept 2: <i>Adoption of Environmental, Social, and Governance practices</i></p>	<p>MAIN THEME 3 Infrastructure and Planning SUBTHEMES 1. Infrastructure Enhancement Concept 1: <i>Development and improvement of destination infrastructure</i> 2. Well-Defined Planning Concept 2: <i>Strategic and well-defined planning for destination growth</i></p>
<p>MAIN THEME 4 Collaborative Strategies SUBTHEME 1. Cooperation with Main Stakeholders Concept 1: <i>Collaborative efforts with stakeholders for mutual success</i></p>	<p>MAIN THEME 4 Sustainability and Quality Assurance SUBTHEME 4 1. Sustainable Practices Concept 1: <i>Implementation of sustainable tourism practices</i> 2. Quality Assurance and Certification Concept 2: <i>Ensuring and certifying high-quality standards</i></p>

Figure 3: The main themes, subthemes and concepts for actions hotels and DMOs can take to support the development of premium-class offerings within the destination

The authors compared the directors' opinions with the new trends in luxury tourism and hospitality as pointed in the literature review section. The findings emerged are presented visually in the figure 4.

Overall, the opinions of the sales and/or marketing directors are consistent with the identified trends, indicating a recognition of travellers' evolving preferences and demands, the significance of unique and visually appealing hotel designs, and the growing importance of sustainability in the industry. Authors further compared the female and male director opinions. The comparison is presented

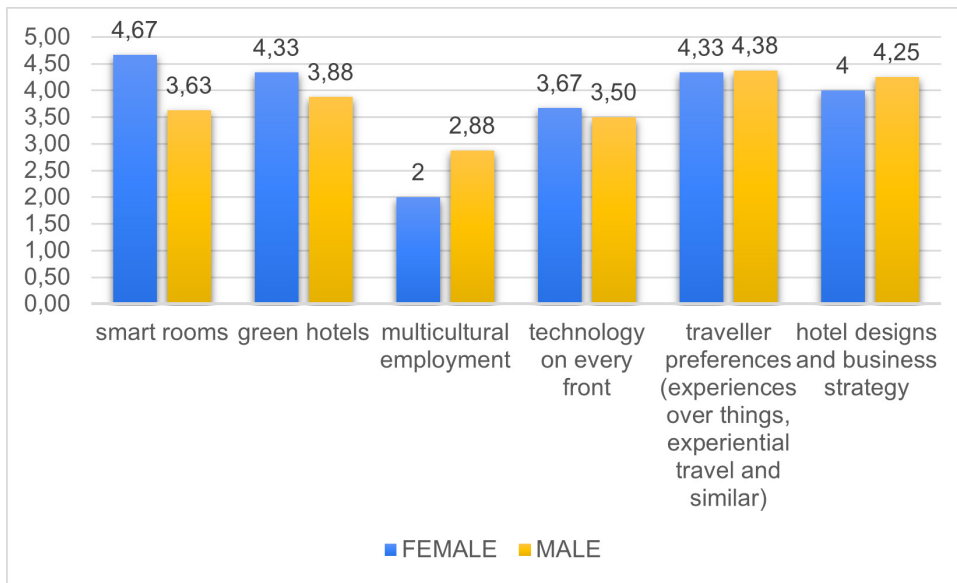
graphically in Figure 5.

Both female and male directors acknowledge the importance of traveller preferences as a key trend that will shape the future of the tourism industry. While females prioritize smart rooms and the green hotel concept, males emphasize hotel design and business strategy. These insights highlight the diverse perspectives within the industry and the multifaceted nature of future trends in hospitality.



Source: authors' analyses

Figure 4: The strength of different trends that will impact the future of the tourism industry in the eyes of Croatian sales and/or marketing directors



Source: authors' analyses

Figure 5: The comparison of opinion between female and male opinion

Based on the responses from the directors in the sample, the key success factors and positive perspectives regarding premium-class hotels in Croatia are as follows:

1. Growing Trend of Luxury Segment
2. Greater Resilience of Premium-Class Hotels to Crises
3. Market Saturation with Mass Tourism
4. Market Shift towards Slow Tourism
5. Growth in Personalization of Experiences
6. Authenticity of Destinations in Croatia
7. Attractive Destination for Luxury Segment
8. Strategic Location

These key success factors and positive perspectives collectively highlight the directors' optimism and belief in the potential growth and success of premium-class hotels in Croatia.

5 Discussion

Through content analysis, a comprehensive examination of directors' perspectives regarding the role of premium hotels and destination marketing organizations (DMOs) in the advancement of premium-class offerings and quality tourism within a specific location resulted in the identification of several principal categories. Among the key concerns emphasized by directors within the realm of premium hotels are centred on aspects such as product development, ongoing innovation, the provision of enhanced and exclusive experiences, as well as the composition of the guest structure. Conversely, in the context of DMOs, noteworthy focal points encompass collaboration between local authorities and various stakeholders, cooperative endeavours among hotels, tour operators, and local businesses, the curation of experiences, joint marketing initiatives, and improvements in infrastructure. Prominently highlighted in the majority of comments and viewpoints expressed by directors within the sample, these keywords were extrapolated using content analysis methodology. Through qualitative analysis, four overarching themes emerged from the directors' responses. The first theme, Customer-Centric Excellence, underscores the directors' emphasis on tailoring services to meet the unique needs and preferences of guests, incorporating elements such as local community engagement and differentiation. The second theme, Upscale Offerings, highlights the commitment to providing premium amenities and services, particularly in the realms of high-quality amenities and luxurious spa and wellness centers. The third theme, Innovation and Sustainability, indicates a strategic focus on technological innovation and sustainable practices, reflected in categories like digitization and ESG practices. Lastly, the fourth theme, Collaborative Strategies, reveals the directors' recognition of the importance of collaboration with various stakeholders for overall success, as exemplified by the cooperation with main stakeholders.

The main findings that arise out of the qualitative analyses of the common viewpoints derived from all the comments and the views expressed by the directors on the specific actions hotels can undertake to enhance the quality of services in the destination are:

1. Continuous innovation in product development, innovations, particularly in the wellness segment and exclusive gourmet programs, is important for maintaining and enhancing a destination's appeal.

2. Differentiation between premium hotels and other accommodations relies on offering superior experiences and amenities, and investing in upscale dining, exclusive experiences, and luxurious spa, health and wellness centers.

3. Continuous improvement of services and curating exceptional guest experiences through unique gastronomic concepts, wellness programs, themed events, and immersive activities can elevate a destination's reputation as a premium locale.

4. Placing focus on health and wellness tourism and well-being can attract clientele with higher purchasing power who seek specialized experiences.

5. Hotels can support local artists and cultural events to provide guests with an enriching and authentic experience through collaborations with galleries, cultural programs, and themed evenings.

6. Collaboration and partnerships with local stakeholders are crucial for the success of exclusive packages that combine sports, wellness, gastronomy, nature, well-being, and local experiences.

7. Investing in premium segments can yield positive impacts on hotels and the local community. By attracting guests with greater purchasing power, it leads to a shift in guest structure, favoring high-end clientele. This, in turn, fosters the growth of local establishments and services, further enhancing the destination's overall appeal and economic development.

8. Communication and cooperation with the local community is essential.

9. Highlighting the venues of the destination and catering to guests engaging in different activities can enhance the overall visitor experience.

10. Active participation in tourist events and manifestations provides an opportunity to showcase premium services, engage with visitors, and elevate the destination's profile.

11. To stay competitive, it is essential for premium hotels to prioritize digitization, incorporate environmental, social and governance issues into business strategies, and diversify offerings.

Through qualitative analysis, four distinct themes emerged from the directors' responses. The first theme, Collaborative Destination Development, signifies a shared emphasis on collaborative efforts among hotels, tour operators, local businesses, and authorities for the holistic devel-

opment of the destination. The second theme, Curated and Experiential Tourism, underscores the importance placed on offering curated and experiential tourism, with specific attention to curated experiences and enogastronomic segments. The third theme, Infrastructure and Planning, highlights a strategic focus on infrastructure development, planning, and obtaining necessary permits for the enhancement of the destination. The fourth theme, Sustainability and Quality Assurance, reflects a collective commitment to sustainability practices and maintaining high quality in offerings, as evidenced by categories like sustainable practices and quality assurance and certification.

The main findings that arise out of the qualitative analyses of the common viewpoints derived from all the comments and the views expressed by the directors on the specific actions DMOs can undertake to enhance the success of developing of premium-class offerings within the destination:

1. Collaboration between local authorities and businesses is key in implementing changes and engaging the local community in decision-making processes. These findings align with the research outcomes presented by Fairley (2019). DMOs should foster open communication and collaboration with local authorities and regulatory bodies, build strong relationships based on mutual understanding and shared goals, engage in regular meetings and consultations to address challenges, seek feedback, and advocate for the needs of hotels and other service providers and investors, actively participate in relevant industry associations or chambers of commerce to amplify the collective voice and influence decision-making processes.

2. Fostering collaboration among hotels, tour operators, and local businesses can create exclusive packages and curated experiences, including partnerships for guided tours, VIP access to attractions, personalized services, and opportunities to explore hidden gems.

3. DMOs play a pivotal role in fostering collaboration between hotels and other tourism stakeholders, promoting local products and culture, and investing in overall infrastructure, facilities and aesthetics of the destination to raise their value in the premium tourism segment. One mean could be through constant education and communication with stakeholders, local community included.

4. DMO can enhance networking and collaboration among stakeholders through stakeholder engagement, coordination of destination offerings, and collaborative marketing.

5. Providing help and support for beach concessions, parking concessions, and permit acquisition facilitates new products and investments, attracting business ventures and enhancing the visitor experience. DMOs should facilitate the process of securing beach concessions by streamlining administrative procedures and providing information on best practices. DMOs should collaborate with local transportation authorities to develop comprehensive park-

ing plans that prioritize convenience and accessibility for visitors.

6. Considering sustainable practices and environmentally friendly solutions during waterfront development can contribute to the long-term success and appeal of the area, such as integrating green spaces, promoting sustainable transportation options, and implementing waste management systems.

7. DMOs should provide valuable information on tourist preferences, market research, and industry trends that guide the destination's policies and strategies for sustainable growth.

8. DMOs play a crucial role in advocating for the development of premium products/experiences and facilities by ensuring that funds prioritize such establishments.

9. To revitalize airline operations and restore them to pre-Covid levels, a collaborative approach involving subsidies, lobbying efforts, and engagement with the local community can be pursued.

10. To effectively target the premium segment, strategies such as special marketing campaigns, cooperation with influencers, and organizing tailored events and activities can be employed.

11. Prioritizing the development and promotion of premium health programs and services in areas with a rich tradition of health tourism can be achieved through cooperation, quality assurance and certification, and collaboration with travel agents and tour operators specializing in wellness tourism.

12. The local cuisine of a destination significantly contributes to the overall experience of tourists during their visit. It serves as a vital cultural aspect, allowing travellers to immerse themselves in the unique flavours, traditions, and culinary heritage of the place they are exploring. The culinary exploration becomes a memorable part of the travel experience, leaving a lasting impression on tourists. Moreover, a destination's reputation for exceptional local cuisine can become a significant draw for tourists, encouraging them to visit specifically for gastronomic adventures. Constantly enhancing the eno-gastronomic offerings of a destination is crucial for DMOs. By doing so, DMOs can capitalize on the significant impact that food and beverage experiences have on attracting and satisfying tourists.

The authors compared the directors' opinions with trends that shape the luxury tourism. The following findings emerged:

1. Traveller Preferences: Sales and/or marketing directors assigned the greatest importance to traveller preferences, particularly the shift towards prioritizing experiences over material possessions. This aligns with the trend identified in the literature (Global Data, 2018; Novotna and Kunc, 2019; Krešić and Gjurašić, 2022; Amatulli et al., 2021) which emphasizes experiential travel and the desire for unique, immersive, and memorable experiences.

2. Hotel Designs and Business Strategy: The directors also recognized the significance of hotel designs and business strategies that cater to evolving consumer preferences. This includes the emergence of “cool” and luxury brands that are visually appealing and shareable on platforms like Instagram. The focus on local design and flavor suggests a growing demand for authentic and culturally relevant experiences. Experiential social spaces were also mentioned, indicating the importance of creating engaging and social environments within hotels.

3. Green Hotels: The directors acknowledge the importance of sustainable practices in the hospitality industry. The emphasis on green hotels aligns with the growing awareness and concern for environmental issues among travellers and the wider community. This suggests that the integration of eco-friendly initiatives and sustainable practices is increasingly seen as a crucial aspect of future hotel development and operations. Directors have acknowledged the significance of the “green hotel” trend. The study conducted by Sunhaji and Wihuda (2023) emphasizes that spiritual leaders, who possess spiritual values, altruistic love, and vision, have a positive impact on encouraging voluntary green actions from their subordinates. Additionally, it has been found that spiritual leadership fosters service innovative behavior among employees (Alfarajat and Emeagwali, 2021). As a result, hotel companies are encouraged to promote such an atmosphere within their organizations. As they prioritize environmentally friendly approaches, it is likely that we will see significant progress in fostering more eco-conscious and responsible operations among hotels and related businesses. The collective effort towards a greener approach can have a substantial and positive impact on the industry’s overall sustainability and contribute to a more responsible and environmentally conscious future.

Directors from the sample emphasized these as the top three trends.

When comparing the female and male director opinions the results show that female directors associate the greatest importance with the concept of smart rooms. This suggests that they recognize the growing significance of technology and automation in enhancing guest experiences and convenience within hotel rooms. The second most important trend for females is the green hotel concept, aligning with their emphasis on sustainability. This indicates their recognition of the increasing importance of eco-friendly practices and environmental responsibility in the hospitality industry. Females, like their male counterparts, highlight traveller preferences as a crucial trend that will shape the future of the industry. This underscores the importance of understanding and catering to the evolving needs and desires of modern travellers. Male directors assign the highest importance to traveller preferences. This emphasizes their recognition of the significant impact that changing traveller preferences and behaviors have on the hospitality industry. The second most important trend for

males is hotel design and business strategy. This indicates their focus on creating visually appealing and distinctive hotel experiences, aligning with the emerging trend of “cool” and visually Instagrammable brands. Similar to females, males also highlight traveller preferences as an important trend in the future. This suggests a shared understanding of the evolving demands and expectations of travellers.

The key success factors and positive perspectives regarding premium-class hotels in Croatia are as follows:

- **Growing Trend of Luxury Segment:** Directors recognize the increasing demand and popularity of the luxury segment in the hospitality industry. This trend suggests a favorable market environment for premium-class hotels in Croatia.

- **Greater Resilience of Premium-Class Hotels to Crises:** The directors perceive premium-class hotels as having a higher level of resilience compared to other hotel segments during times of crisis. This resilience could be attributed to factors such as their target market, pricing strategies, and ability to provide unique experiences.

- **Market Saturation with Mass Tourism:** The directors believe that the market in Croatia is saturated with mass tourism. This implies that there is a need for alternative offerings and experiences, which premium-class hotels can provide.

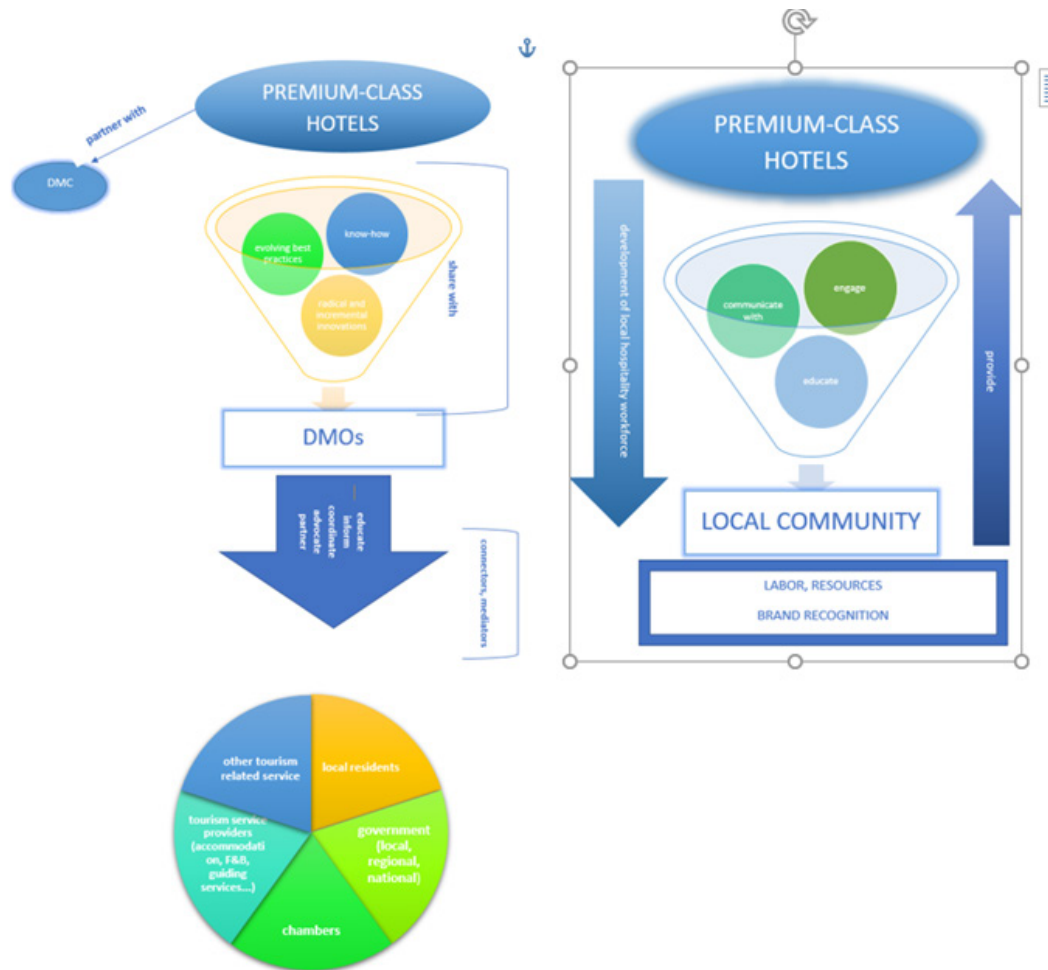
- **Market Shift towards Slow Tourism:** The directors indicate that the market is shifting towards slow tourism, which aligns with Croatia’s potential to offer leisurely and immersive experiences. Premium-class hotels are well-positioned to cater to this growing demand for slower-paced and experiential travel.

- **Designing Personalized and Unique Experiences:** Croatian hotel companies are seen as having the resources and knowledge to design personalized and unique experiences specifically tailored to the luxury segment. This capability enhances the value proposition of premium-class hotels.

- **Attractive Destination for Luxury Segment:** Croatia is perceived as an attractive destination for the luxury segment. Its natural beauty, cultural heritage, and diverse offerings contribute to its appeal among luxury travellers.

- **Strategic Location:** Directors recognize Croatia’s favorable location, close to key markets actively seeking premium-class services and experiences. This proximity can provide a competitive advantage for premium-class hotels in terms of accessibility and market reach.

Based on the research results, views and comments of the respondents and grounded in the literature on the topic of luxury hospitality and premium-class hotel services, the authors propose a model of cooperation between different stakeholders in the tourism ecosystem that fosters high-quality and responsible tourism driven by the development of premium-class hotel product. The model is presented hereafter (Scheme 1).



Source: author’s contribution

Scheme 1: Model of cooperation between premium-class hotels and other key stakeholders in the destination

Undeniably, the concept of luxury in hospitality has evolved beyond material possessions and physical amenities. Today, the ‘new luxury’ is more focused on providing personalized experiences and emotional connections with guests. Guests seek a sense of familiarity, comfort, and a home-like atmosphere during their stay. This shift in expectations challenges the traditional notion of luxury travel and necessitates a deeper understanding of guest preferences and desires. Creating the ‘home-from-home’ feeling involves going beyond the physical aspects of the hotel and focusing on creating a warm and welcoming environment. It requires attention to detail, personalized service, and an understanding of the guests’ individual needs and preferences. Peace and tranquillity are highly valued by luxury travellers, as they seek respite from their busy lives and seek moments of relaxation and serenity.

Furthermore, luxury experiences today go beyond the tangible aspects of a hotel stay (Kiessling et al., 2009; Williady et al., 2022). Guests are looking for meaningful and authentic connections with the service and the brand. They value experiences that evoke emotions, create memories, and provide a sense of exclusivity. Hotel companies play a crucial role in shaping the perception of prestige and symbolic value through innovative service offerings. To meet these evolving expectations, hotel companies need to continuously innovate and adapt their services. This includes both radical innovations that bring about significant changes and incremental innovations that improve existing services. By staying at the forefront of innovation, luxury hotels can differentiate themselves and provide unique and memorable experiences that meet the desires of their discerning guests. Overall, the ‘new luxury’ in hospitality is

characterized by a focus on personalized experiences, emotional connections, and creating a sense of home and tranquillity. Hotel companies that embrace these shifts in guest expectations and continuously innovate in their services are well-positioned to succeed in the evolving landscape of luxury travel. However, the success of hotel companies alone is insufficient, particularly in enhancing destination competitiveness by improving the overall quality of other services and products within the destination. While hotels are important stakeholders that significantly influence destination competitiveness (Mendieta-Peñalver et al., 2016), there are other stakeholders whose products, services, and contributions also contribute to the destination's attractiveness and competitiveness. Thirumaran and Raghav (2016) emphasize the need to highlight the distinctions among the primary resources of the destination, such as attractions, accommodations, infrastructure, and service personnel. It is crucial that complementary services expected by guests in the destination are provided at a comparable or closely similar level of high-quality comfort.

In this context, hotel companies that offer premium-class services should prioritize the creation of personalized and memorable experiences for guests, while also actively collaborating with other key stakeholders in the tourism industry, including residents, to collectively enhance the overall value proposition of the destination. The primary partner for hotel companies is the destination management organization (DMO) or the entity responsible for coordinating various stakeholders within the destination (Presenza, 2023). The collaboration between hotel companies and DMOs should be considered fundamental in establishing a well-organized destination that aims to provide premium-class offerings and embrace the principles of slow tourism. DMOs play a vital role in curating destination narratives, co-developing and co-designing the destination product, and ultimately promoting it. Hotel companies should share their knowledge and continuously evolving best practices in creating premium hotel experiences and other complementary services that meet market expectations.

The exchange of knowledge, best practices, and innovations between hotel companies and DMOs will facilitate the tasks of DMOs, particularly in the aspect of fostering the collaborative development of high-quality products and services within the destination. These products and services can complement the offerings of premium hotels and create a cohesive and comprehensive destination experience. The role of DMOs extends to providing guidance and training to various stakeholders in the destination, with the aim of creating responsible and innovative tourism experiences that contribute to the overall quality and desirability of the tourism destination. It is important to note that the success of a destination should not be solely measured by an increase in tourist arrivals. DMOs also play a crucial role in fostering collaboration and promotion

across industries, as well as taking on the role of influencers for the destination (Nicole, 2022). Therefore, a strong partnership, cooperation, and co-development of experiences between hotels and DMOs are highly recommended.

The central aspect of socially responsible business practices involves showing respect for, engaging with, and effectively communicating with the local community. It also includes investing in the local community and supporting its sustainable growth. Establishing a partnership with the local community is mutually beneficial for both hotels and residents, as it fosters a healthy and sustainable development. There are numerous examples of how hotels can contribute to the local economy while also ensuring that the local culture is deeply integrated into every aspect of a guest's experience. This expectation is particularly relevant for premium-class hotels, as they have the opportunity to introduce local sourcing practices, such as using local produce, bedding, and entertainment, among other initiatives. Supporting local artisans and crafts can greatly enhance the value of the experiences provided by premium-class hotels. There are various approaches to achieving this. One example is organizing and promoting specific workshops that highlight local crafts, which also fosters the co-creation of authentic experiences. Guests are often eager to discover hidden gems and engage in the most authentic activities. They have a genuine interest in exploring new cultures and traditions (Skift, 2018). Premium-class hotels can contribute to the local community by hosting important and interesting social events, which positively impacts their reputation. Ultimately, the human capital and individuals within a destination ecosystem play a crucial role as integrators of knowledge and skills (Boes et al., 2016). Maintaining constant communication with the local community can raise awareness and provide new perspectives on attractive job opportunities within the premium-class hotel sector. This approach serves as an excellent means to foster the development of the local hospitality workforce. Hotel companies can implement paid volunteering programs, allowing their employees to dedicate time to educate the local community on topics related to luxury hospitality, premium-class services, and employment opportunities. Collaboration with educational institutions can be established to develop specific training programs. Additionally, hotel companies can drive positive change through targeted donation programs that focus on charitable themes aligned with local challenges. These initiatives can include youth programs, animal welfare, environmental conservation, healthcare, and more. By educating both guests and community members, hotel companies not only raise awareness but also actively contribute to the sustainable development of the local community. The key to achieving enduring positive outcomes lies in the community's active participation, transcending the role of a mere observer to become an integral contributor to the process. Local community play a vital role in identi-

fyng and promoting tourist resources and attractions that serve as the foundation for tourism development. The engagement of the community in decision-making enhances the trust of individuals in the tourism sector. First of all, the key to fostering the active involvement of the local community in the development of high-quality tourism products lies predominantly in the attitude, motivation, aspirations, vision, and engagement of both the local government and the destination management system. Their shared commitment to achieving a superior level of quality in tourism products within the destination sets the stage for creating the necessary conditions for a comprehensive and top-notch offering by all stakeholders involved. Without the local community acknowledging the concerted efforts of the local government and destination management, their participation is likely to be limited to mere information exchange and generic consultations. Hence, it becomes imperative for the local government and the destination management system, equipped with the tools and enhanced powers provided by the 2024 Law on Tourism in Croatia, to clearly define priorities and projects. These entities should strategically invest and encourage participation through various means, including co-financing. The local government should revitalize and repurpose all of its primarily abandoned buildings and land holdings to align with the new and envisioned image of the destination. This entails either selling or leasing these properties under specifically defined criteria, offering preferential pricing, or providing other forms of support. Conversely, activities and projects that do not align with the envisioned goals can be deterred through decision-making and regulatory measures. This approach allows them to spotlight endeavors that benefit the local population, contributing significantly to the advancement of high-quality tourism through offerings such as gourmet establishments with refined cuisine, sophisticated dining outlets, premium-themed bars, glamour galleries, chic boutiques, accommodations, green spaces and gardens, eco-tourism and nature trails, and more. Subsequently, much like the transformative influence of a snowflake, the local population begins to adapt their offerings. This adaptive approach is the sole method through which the local community can actively and indirectly foster the advancement of high-quality tourism within the destination.

Collaborating with destination management companies (DMCs) is crucial for allowing guests to create unique and personalized travel experiences. While premium hotels excel at crafting exclusive services, DMCs possess the expertise in packaging the cultural and natural resources of a destination into value-added products and experiences for guests. Customization, considered as the fifth "C" in the new definition of luxury, emphasizes the importance of tailoring experiences to individual preferences (Skift, 2018). By partnering with DMCs, hotels can ensure that they meet the evolving demands of the industry and pro-

vide guests with exceptional and personalized experiences.

6 Conclusion

The directors emphasize the importance of investing in premium offerings, collaborating with local stakeholders, and providing unique and exceptional experiences to attract discerning travellers and foster the overall growth and development of the destination. On the other side, they strongly believe that DMOs should highlight the importance of collaboration, strategic planning, infrastructure development, sustainable practices, and targeted marketing to attract the premium segment, enhance the visitor experience, and drive sustainable growth in the tourism industry.

DMOs can play an important role in ensuring the seamless integration of premium hotel offerings and their associated benefits into the destination's overall tourism ecosystem. This can be achieved through various means but collaboration is essential. DMOs can foster strong partnerships and open channels of communication with premium hotel companies in the destination. By actively engaging with these stakeholders, DMOs can stay informed about the latest innovations, market trends, and customer preferences, enabling them to provide valuable guidance and support. DMOs can actively promote the premium hotel offerings and the destination as a whole, leveraging their marketing expertise to attract target audiences seeking high-quality experiences. This can include highlighting the unique features, cultural authenticity, and sustainability initiatives associated with the premium hotel products and other premium experiences developed in the destination. DMOs can advocate for policies and regulations that support the growth and sustainability of premium offerings in the destination.

Directors highlighted Croatia's appeal as a desirable market for luxury travellers and expressed optimism regarding the future development of premium-class hotels in the country.

In summary, fostering high-quality tourism products in Croatia requires robust state support. This includes implementing a favorable tax policy, streamlining legislative regulations for the hotel industry, and expediting procedures for the sustainable valorization of valuable state property. The current development trajectory, marked by a surge in coastal capacity and a predominance of seasonal, low-quality accommodations with limited economic impact, is deemed detrimental to Croatia's economy and society. Reorienting towards a more sustainable model is imperative for positive development.

Contributions of the study

This article makes multiple significant contributions:

1. **Extensive Literature Review:** The article presents an extensive literature review on the concepts of luxury tourism, destination cooperation, and collaborative partnerships within the destination ecosystem. This review provides a comprehensive understanding of the subject matter and serves as a valuable resource for further research and analysis.

2. **Practical Insights for Managers:** The study offers actionable insights for hotel managers, destination management organizations, and policymakers. It highlights the need for nuanced approaches to meet evolving guest expectations, foster sustainable tourism practices, and enhance the overall quality of the tourism experience. This comprehensive understanding will guide stakeholders in navigating the dynamic landscape of premium tourism and contribute to the long-term success of both premium-class hotels and destination development.

3. **Focus on Corporate Social Responsibility:** The article emphasizes the importance of sustainable tourism development and corporate social responsibility (for hotel companies in particular).

4. **Premium Destination Offer:** The article emphasizes the significance of a premium destination offer. It highlights the benefits of developing a unique and high-quality tourism experience that can attract luxury travelers and enhance the destination's reputation and competitiveness.

5. **Model of cooperation between premium-class hotels and other key stakeholders in the destination:** The article provides a clear and structured approach to initiating a prudent and long-lasting cooperation between different stakeholders. The model that focuses on collaboration within a destination, specifically involving premium-class hotels, DMOs, and the local community is presented. The model highlights the joint efforts of these stakeholders in promoting sustainability and enhancing the overall visitor experience. The model presented in this paper showcases a comprehensive approach to nurturing collaboration and synergies among crucial stakeholders in destination development, emphasizing the significance of involving diverse stakeholders to elevate the overall destination experience. This model offers a practical framework for fostering effective cooperation and aligning collective efforts towards the shared objective of promoting premium-class experiences and fostering sustainable growth in the destination.

In conclusion, these contributions make the article a valuable resource for researchers, destination managers, and hotel managers seeking to understand and implement effective strategies for the "new luxury" tourism, destination cooperation, and collaborative partnerships.

Study limitations

Authors acknowledge the limitations of the current study. Firstly, subjectivity in responses: The data collection method involves directors providing their opinions in an online questionnaire. The subjective nature of opinions may introduce bias, as individual perceptions and attitudes can vary. Additionally, the encouragement for extensive comments may result in qualitative data that could be challenging to quantify and analyze objectively.

Secondly, lack of diverse perspectives: The study focuses primarily on the perspectives of directors, potentially overlooking the views of other key stakeholders such as customers, employees, or local communities. A more comprehensive understanding of the dynamics within the tourism ecosystem may require incorporating diverse perspectives.

Thirdly, reliance on self-reported data: The findings are based on self-reported data provided by directors in the survey. This introduces the possibility of response bias, where participants might provide answers they perceive as favorable or socially desirable, potentially affecting the accuracy of the results.

Qualitative Analysis Challenges are also worth mentioning. The qualitative analysis of open-ended questions involves categorizing and synthesizing responses. The subjective nature of this process may introduce interpretation bias, and different analysts might categorize responses differently, impacting the reliability and consistency of the analysis.

Assumption of homogeneity could be considered as another limitation. The study seems to assume homogeneity among directors and their perspectives. It may be valuable to explore potential variations within the director group, such as differences based on hotel size, ownership structure, or individual background and experiences.

Suggestions for future research

Authors propose further research directions. Specifically, it is suggested to conduct a study focusing on the local community, particularly in destinations with a high concentration of premium-class hotels. This research would aim to explore the community's perspectives on the development of premium-class offerings in the destination and their opinions on the impact of premium hotels on the local community. Furthermore, conducting interviews with directors of local and regional DMOs in Croatia would provide valuable insights into their views on the development of high-quality and slow tourism, as well as their collaborations with premium hotels in their respective destinations. Additionally, involving the national tourism board in the research would help to provide a comprehensive and holistic understanding of the topic.

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Željko Kukurin was born in 1974 in Zagreb. He earned a Master of Science degree in Marketing with a focus on digital marketing from the Faculty of Economics in Zagreb, and in 2010, he obtained an Executive Master of Business Administration (EMBA) from Bocconi University in Milan. In 2020, he completed his doctoral studies at the „Dr. Mijo Mirković“ Faculty of Economics and Tourism in Pula, specializing in investments in the hotel industry. His professional career began in 2000 as a trainee at Riviera Poreč, a member of the Valamar

group, where he undertook various managerial roles in sales and marketing, and was responsible for the development of strategic projects within the group. From 2010 to 2014, he served as the CEO of Istraturist d.d., owned by Zaba UniCredit group. In June 2015, he was appointed as the CEO of Valamar Riviera, leading a robust cycle of development and investment until 2019. In 2017, he was recognized as the Entrepreneur of the Year. Currently, he holds numerous key positions in Croatian tourism and he continues to serve as the CEO of Valamar Riviera.

Tea Golja was born in 1982 in Pula. In 2008, she earned a Master of Science degree in Hotel Management with a thesis on the implementation of sustainable development in tourism from the Faculty of Management in Tourism and Hospitality, University of Rijeka. In 2010, she obtained a Ph.D. in Economics at the "Dr. Mijo Mirković" Faculty of Economics in Pula, focusing on the impact of socially responsible business practices on economic growth. In 2021, she achieved an Executive Master of Business Administration (EMBA) from Cotrugli Business School in Zagreb. Her professional journey commenced immediately after graduation when she joined the tourist agency Kompas in Rabac, where she undertook various managerial roles and eventually became the company's director. In 2007, she initiated her academic career at the University of Pula. Over five years in academia, she served as dean and vice-dean of the faculty, led several strategic development projects in culture and tourism, collaborated on projects with professional

associations in tourism, and reviewed study programs in management and tourism. She is a regular professor and teaches various courses in the field of management in culture and tourism.

Denis Prevolšek was born in 1982 in Rijeka. He graduated from the Faculty of Tourism and Hospitality Management in 2006 and obtained a Master's degree in Hotel Management. His career began in 2007 at Riviera d.d., where, following a successful internship in all hotel departments, he progressed from a trainee to an assistant director at Valamar Diamant Hotel 4*, responsible for implementing quality assurance audits. Through exceptional work and dedicated effort, Denis soon assumed the role of director at Valamar Crystal Hotel 4* and later in several other establishments. Over the years, he distinguished himself in daily operational management, financial administration, and maintaining high service standards. Since 2016, Denis has held the position of regional director, strategically managing multiple high-category hotels. Currently, he is the Director of Operations for Collection properties in Poreč, simultaneously holding the position of Director of Product Development. In this capacity, Denis oversees various projects in Poreč and other destinations. He stands out as a tourism expert with extensive experience, focusing on operational management, financial planning, and the development and enhancement of service quality. Denis is a second-year doctoral student at the Faculty of Tourism and Hospitality Management in Ika, University of Rijeka.

Sodelovalne sinergije za povišane izkušnje destinacij: Model sodelovanja med hotelskimi podjetji, DMO in lokalnimi deležniki

Ozadje in namen: Kot je opredeljeno v Nacionalni strategiji razvoja turizma do leta 2030, si Hrvaška prizadeva ponuditi turistične izkušnje večje vrednosti, inovativne, trajnostne in avtentične. Potrebno je preučiti, kako lahko glavni deležniki v turizmu prispevajo k preoblikovanju tradicionalnih in komodificiranih turističnih izdelkov v ponudbe premium razreda, ki dodajajo vrednost po celotni vrednostni verigi. Pomembno je, da hoteli premium razreda sprejmejo dodatne korake pri izboljšanju svoje ponudbe, da pozitivno vplivajo na celotno destinacijo in izboljšajo kakovost storitev. Ta članek si prizadeva slednje: raziskati pobude za spodbujanje inovacij v premium razrednih izkušnjah znotraj destinacij s poudarkom na sodelovanju med hotelskimi podjetji in DMO; identificirati predvidene trende, ki vplivajo na prihodnost turistične industrije, in oceniti prihodnje možnosti hotelov premium razreda na Hrvaškem.

Oblikovanje/metodologija/pristop: Metodologija je vključevala tako kvantitativne kot kvalitativne pristope, ki jih je usmerjala strukturirana narava vprašanj v spletni anketi, ki cilja na direktorje prodaje in/ali trženja hotelskih podjetij, ki imajo v svojem portfelju hotele premium razreda. Za analizo kvantitativnega dela podatkov so bile uporabljene ustrezne statistične metode. Analiza vsebine je bila uporabljena za analizo odprtih vprašanj. Za ta namen je bil uporabljen program MAXQDA za kodiranje, kategoriziranje in raziskovanje vzorcev znotraj podatkov. Izvirnost/vrednost: Ta študija predstavlja eno izmed pionirskih raziskav o bistvenih pobudah, ki jih morajo hotelska podjetja sprejeti, da bi usklajevala razvoj destinacije, ki temelji na njenih izkušnjah premium razreda. Poleg tega študija preučuje vlogo podpornih institucij, kot so organizacije za upravljanje destinacij (DMO), pri olajšanju tega procesa. Predlagan je konceptualni model za izboljšanje razvoja segmenta premium hotelov in destinacije hkrati, ki ga zasledujejo odgovorne prakse in pobude hotelskih podjetij ter močna partnerstva z DMO in lokalno skupnostjo.

Ključne besede: *Gostoljubje premium razreda, Organizacije za upravljanje destinacij, Povišane izkušnje, Model sodelovanja, Turizem*

Creating Dynamic Learning Capability in Learning Framework through Strategic Alliance

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Background and Purpose: The changing ecosystem demands improvement in a company's capabilities through its learning framework and respective dimensions. Using empirical testing, the purpose of this research is to gain a better understanding of the creation of dynamic learning capability through strategic alliances in the learning framework.

Methodology: The data were collected via an online survey of 78 strategic alliances of a public institution. The structural equation model (SEM) was used to test the proposed model.

Finding: Dynamic learning capability positively and significantly affects strategic alliance performance in a learning framework that comprises relationship capital, surfacing, joint learning structure, and knowledge acquisition dimensions.

Conclusion: This research finds that all constructs in the learning framework (relationship capital, surfacing, joint learning structure, and knowledge acquisition) create dynamic learning capability, which has a significant effect on strategic alliance performance. Each construct within the learning framework (relationship capital, surfacing, joint learning structure, and knowledge acquisition) was empirically tested and can create the dynamic learning capability that contributes to the strategic alliance's performance, notably within the business learning domain.

Keywords: *Strategic alliances, Learning framework, Dynamic learning capabilities, Strategic alliance performance*

1 Introduction

One of the 10 most significant shifts facing organisations today is closing the capability chasm (McKinsey, 2023). In a survey of more than 2,500 business leaders around the world, only 5% of the respondents stated that their organisations had the capabilities they needed (McKinsey, 2023). Related to Ahmad, Omar, and Quoquab (2019), a company's sustainability depends on its corporate sustainable longevity, which in turn relates to the company's resources: financial strength, vision and strategy, customer orientation, internal capabilities, and learning

and growth. This condition indicates that most companies have some level of need to fulfil their company's capability to sustain the competitiveness of their business. According to Haapane, Hurmelinna-Laukkanen, and Puumalainen (2020), dynamic capability is an organisation's capacity to create, extend, or modify its resource base, directing managers with dynamic managerial capabilities. Dynamic capabilities are recognised as specialisation and rapid competitive responses through the maintenance of asset alignment capabilities. In this way, collaborating firms can combine assets to create and deliver value to customers, which can be regarded as action by the company to adapt

its process or acquire knowledge (Furnival, Boaden, & Walshe, 2019).

Gonzales-Perez and Ramirez-Montoya (2022) stated that three types of competencies are required in the modern-day workplace: learning skills, literacy skills, and life skills. Learning skills consist of creativity and innovation, critical thinking, problem-solving, communication, and collaboration. Pereira and Romero (2017) found that skill development is an essential key factor in adopting and implementing the Industry 4.0 framework. However, Industry 4.0 is often misinterpreted and focuses only on the technology perspective while in reality, companies must also change their organisational structures and cultures (Schuh, Dumitrescu, Kruger, & ten Hompel, 2020). This demonstrates that technology relates to technical capability and the variables impacted within its ecosystem. Therefore, Industry 4.0 will create automation tasks that will require professional employees to have the relevant capability to derive the maximum benefits from the new technology trends and business opportunities, including the need for suitable learning methods. Education 4.0 also differs from traditional education as it relies on digital strategies, digital security, and proper infrastructure (Gonzales-Perez & Ramirez-Montoya, 2022). Industry 5.0 focuses on concepts of sustainability, bioeconomy, and a collaborative environment of technology and human beings that can create a resilient industry and incorporate human social values (Frederico, 2021; Sindhvani et al., 2022). In Industry 5.0 (education and training research themes), universities must incorporate transdisciplinary education, cognitive skills, and social and environmental aspects, supported by digital technologies (Borchardt et al., 2022). Universities must therefore also have multi-education supported by digital technologies to support lifelong learning for employees.

Learning can be interpreted as a process of repetition and experimentation that improves task execution and enables the quicker identification and obtaining of new product opportunities from the organisational internal and external environment (Rashidirad & Salimian, 2020). Internal learning includes multifunctional employee training, knowledge database maintenance, and knowledge sharing, while external learning occurs mainly through relationships with customers and suppliers and international joint ventures that can modify the business direction (Rashidirad & Salimian, 2020). The internal or external learning environment can be represented as the learning framework, which in turn comprises four elements: relationship capital, surfacing, joint learning structures, and knowledge acquisition (Morrison & Mezentseff, 1997). Relationship capital concerns unique relationships on a personal or company level built by mutual trust, respect, and friendliness as well as closely interactive relationships characterised by mutual respect and trust between parties (Paul, Robert, Benn, & Kenneth, 2006). Surfacing con-

cerns how people learn to surface, challenge, and adapt mental models related to assumptions, images, and generalisations to understand the world and the actions they will take (Morrison & Mezentseff, 1997). A joint learning structure is a structure for sharing knowledge between the company and its strategic partner (Galeazzo, Furlan, & Vinelli, 2016). The final element is knowledge acquisition, in which external knowledge acquisition is incorporated into a direct market exchange and cooperation agreement or strategic alliance (Ortiz, Donate, & Guadamillas, 2018).

In the context of learning, collaborative learning is the process of sharing knowledge, information, and resources in supply chains (Rupčić, 2020). Cooperation agreements or strategic alliances are the methods used to acquire complex and specialised knowledge, frequently requiring learning development (Savino, Messeni Petruzzelli, & Albino, 2017). In other words, a company's capability can be developed with internal resources through their learning process and by external collaboration, such as strategic alliances, to obtain new and relevant knowledge. Many previous studies have discussed the definition of strategic alliances. Yoshino and Rangan (1995) explained that strategic alliances involve at least two partner firms and once the alliance is formed, it may constitute a separate legal entity. Types of alliances include joint ventures, joint research development, hierarchical relations, cooperatives, equity investments, subcontractor networks, consortia, strategic cooperative agreements, cartels, action sets, franchising, licensing, industry standards groups, and market relations. The cooperative agreements can help companies improve their learning frameworks efficiently (both financial and non-financial). Strategic alliances also include university partnerships, joint ventures (equity partnerships), and non-equity partnerships (Fey & Birkinshaw, 2005). In summary, strategic alliances in the learning environment can make continuing contributions to the performance of assigned tasks and can create dynamic capability.

All companies must improve their performance and innovate to remain competitive and sustainable (Hijal-Moghrabi, Sabharwal, & Ramanathan, 2020). This applies equally to public institutions. The public sector's competitive advantage lies in improving public services and eliminating inefficiencies and waste. Concerning innovation, it should also focus on increasing value for the public through widespread improvements in service performance and governance (Popa, Dobrin, Popescu, & Draghici, 2011). The public sector's innovation capacity thus lies in its ability to improve services that enhance the value of public institutions and differentiate them from others by adapting to social changes and the needs of citizens and stakeholders (Popa et al., 2011). Nevertheless, the adoption of technology to create a digital government poses certain challenges (Chen & Hsieh, 2014). These relate to three significant domain aspects: technology or technical, institution or organisation, and people. Regard-

ing the people aspect, the challenges are the culture of society, the digital divide, legal issues, the economy of society, human resources, public officials and citizens being slow to adapt, a lack of skill and expertise, leadership, and reliability (Arief, Wahab, & Muhammad, 2021). To summarise, the challenge in digital government concerns the need for technology-savvy talent created through development and human capital transformation. Furthermore, companies must consider reactions within the organisation, such as the organisational readiness for change and employee performance, including counterproductive work behaviour (Chrisanty, Gunawan, Wijayanti, & Soetjipto, 2021). Previous research has indicated that each construct in the learning framework can create dynamic capability. However, there has not been a complete learning framework comprising all the learning constructs (relationship capital, surfacing, joint learning structure, and knowledge acquisition) in the context of creating dynamic learning capability, especially in a learning area. This study therefore empirically examines the effect of a complete learning framework on dynamic learning capability and strategic alliance performances.

This study was conducted in public institutions in Indonesia. Public institutions must maintain their competitive advantage by protecting their good reputation, innovation capability, and efficiency. Many have already developed dynamic capabilities through domestic and international strategic alliances and implemented various learning and research area programmes as part of their strategic alliances with diverse organisations. However, the current priority is the on-point target accomplishment of the strategic alliance programme. Accordingly, this research attempts to answer a research question: How does dynamic learning capability affect the strategic alliance performance in a complete learning framework (relationship capital, surfacing, joint learning structure, knowledge acquisition)?

The study is divided into five sections. The first section presents the conceptual framework. The methodology is then described in the second section. The empirical results are explained in the third section. The fourth section discusses the research results. Finally, the research is concluded in the fifth section, alongside some managerial recommendations, limitations of the study, and potential future research avenues.

2 Dynamic Learning Capability in a Learning Framework

Relationship capital concerns the unique relationships on a personal or company level that are built on mutual trust, respect, and friendliness in addition to closely interactive relationships featuring mutual respect and trust between parties (Paul et al., 2006). The process of learning between alliances can indirectly influence alliance

performance through trust and relationship commitment (Shan, Dan, & Qiu, 2018). The relationship benefits involve reducing transaction and supervision costs through information and risk-sharing (Shan et al., 2018) and acquiring unique knowledge (Lenart-Gansiniec, 2016). The formal and informal socialisation mechanism impacts relational capital in a way that increases the supplier relationship outcomes (Cousin, Handfield, Lawson, & Petersen, 2006). Building a learning relationship concerns the management's ability to create a learning vision that can then be shared throughout the relationships. This ability derives from the formation of a new management style in which coordination is prioritised over a hierarchical approach. Previous research identified that commitment, coordination, trust, and interaction frequency have a significant impact on inter-organisational relationship performance (Nguyen, Mai, & Nguyen, 2021). The leader of a company acts as a coordinator (Osterberg, 1993). A strong management style within learning alliances is important as it extends across the relationship (Morrison & Mezentseff, 1997). This indicates that learning relationship capital depends on the management coordination role via the relationship with strategic alliances. Therefore, while relationship capital has an impact on dynamic learning capability and strategic alliance performance, it has never been empirically tested in conjunction with other constructs in the learning framework, namely surfacing, joint learning structure, and knowledge acquisition, especially in the learning area. Correspondingly, we propose that:

H1: Relationship capital is positively related to dynamic learning capability.

The most significant learning in an organisation involves changing mental models (Senge, 1992). Surfacing, meanwhile, relates to how people learn to surface, challenge, and adapt the mental models related to assumptions, images, and generalisations in order to understand the world and the actions they will take (Morrison & Mezentseff, 1997). Yue, Hua, and Quan (2018) defined the learning process of an alliance as the acquiring, encoding, sharing, and internalising of proprietary technology or information related to the alliance and alliance management. The translation of alliance managerial information or proprietary technology from individuals into implicit or explicit information refers to information acquisition (Yue, Hua, & Quan, 2018). Information acquisition will assist the company in retaining its knowledge and sharing it with the next manager. Information encoding refers to the creation and use of information objects or resources, such as alliance criteria, lists, or manuals, to take action or decisions regarding a future alliance (Yue et al., 2018). Meanwhile, the organisation's process of exchanging and sharing alliance management knowledge with individuals in related interior departments within the enterprise refers to information sharing (Yue et al., 2018). Thus, the sharing forum becomes a place where knowledge is accessible

and can be exchanged and disseminated through dialogue between a company and its strategic partner. Information internalisation refers to the organisation's process of expediting alliance proprietary technology owned by the organisation to become individual information (Yue et al., 2018). Therefore, surfacing has an impact on dynamic learning capability and strategic alliance performance. However, it has never been empirically tested alongside the other constructs in the learning framework, namely relationship capital, joint learning structure, and knowledge acquisition, particularly in the field of learning. Correspondingly, we propose that:

H2: Surfacing is positively related to dynamic learning capability.

A joint learning structure is an arrangement for sharing knowledge between the company and its strategic partner. Based on Galeazzo, Furlan, and Vinelli (2016), organisational learning infrastructure has three dimensions: strategic alignment, teamwork for problem-solving, and the goals management system. Strategic alignment, as the first dimension, improves the products and processes by enhancing the company's ability. It involves exploiting and synergising the company's competencies, technology, and innovation and continuously stimulating the new knowledge available to functions and cross-learning. As such, strategic alignment aims to create synergies between the company and its strategic partner by exploiting both resources and new knowledge. The second dimension is teamwork for problem-solving. This relates to employees working in teams to solve problems since they have a mutual understanding and a common language, and improve the organisational climate (Galeazzo et al., 2016). Teamwork will create the same objective and goal and make it easier for a company and its strategic partner to solve problems through collaboration. The third dimension is the goals management system. This relates to how the company shapes decisions and actions through rewards and incentives to achieve the organisation's goals (Galeazzo et al., 2016). The company must create a system that will result in the realisation of its goals by influencing the decisions and actions of its employees. Therefore, the joint learning structure has an impact on dynamic learning capability and strategic alliance performance but has never been empirically tested alongside the other constructs in the learning framework: relationship capital, surfacing, and knowledge acquisition, notably within the learning domain. Consequently, we propose that:

H3: Joint learning structure is positively related to dynamic learning capability.

Ortiz, Donate, and Guadamillas (2018) grouped external knowledge acquisition into direct market exchange and cooperation agreements or strategic alliances. These groups were developed in line with the characteristics and goals of knowledge acquisition. The quickest acquisition method is direct market exchange (contracting) through

external R&D and direct acquisition. Examples of direct acquisition include licensing and consulting, recruitment of staff with specific knowledge, and company acquisition (Davenport & Prusak, 1998). Cooperation agreements or strategic alliances are methods for the acquisition of complex and specialised knowledge, frequently requiring learning development (Savino et al., 2017). Specific examples of strategic alliances include university partnerships, joint ventures (equity partnerships), non-equity partnerships (Fey & Birkinshaw, 2005), and cooperation agreements with competitors, customers, and suppliers (Arvanitis, Lokshin, Mohnen, & Woerter, 2015). As such, knowledge acquisition has an impact on dynamic learning capability and strategic alliance performance, although it has never been empirically tested in connection with the other constructs in the learning framework, namely relationship capital, surfacing, and joint learning structures, particularly in the field of learning. As a result, we propose that:

H4: Knowledge acquisition is positively related to dynamic learning capability.

3 Dynamic Learning Capability Creating Strategic Alliance Performance

Dynamic learning capability concerns a company's ability to address opportunities by proposing new products or services (Matysiak, Rugman, & Bausch, 2018). Learning is interpreted as a process of repetition and experimentation that improves tasks and enables the quicker identification and obtaining of new product opportunities from the organisational internal (Teece, Pisano, & Shuen, 1997) and external environments (Lin & Wu, 2014). Internal learning includes multifunctional employee training, knowledge database maintenance, and knowledge sharing, while external learning is mainly conducted through relationships with customers, suppliers, and international joint ventures (Lin & Wu, 2014) that can modify the business direction (Lavie, 2006). A company becomes more competent in assimilating external knowledge in similar fields due to positive feedback between experience and learning (Zhou & Wu, 2010). The learning capability has a positive effect on the company's ability to create value (Rashidirad & Salimian, 2020). While all of the above-cited literature has included empirical studies on dynamic learning capability and strategic alliance performance alone, these have never been empirically tested alongside the other constructs in the learning framework, especially in the field of learning. As such, and to answer the research question "Does dynamic learning capability correlate to strategic alliance performance?", the following hypothesis is proposed:

H5: Dynamic learning capability is positively related to strategic alliance performance.

It is necessary to measure the performance of the strategic alliance as the company will need to evaluate the programme and improve the critical areas. Alliance performance can be measured using two methods. First, the objective method by analysing secondary data on the focal company over a period (Glaister & Buckley, 1998) and second, the subjective method, by asking the alliance manager or person directly involved in handling the day-to-day alliance matters (Dhaundiyal & Coughlan, 2020).

4 Method

4.1 Measures

Variable measurements were adapted from the literature on the respective variables. The measure for strategic alliance performance was adapted from Dhaundiyal and Coughlan (2020). The measure for dynamic learning capability was adapted from Rashidirad and Salimian (2020). The relationship capital measure was adapted from Nguyen, Mai, and Nguyen (2021), while that for surfacing was adapted from Yue et al. (2018). The measure for joint learning structure was adapted from Galeazzo et al. (2016), and the measure for knowledge acquisition was adapted from Ortiz et al. (2018). The response for each item was measured using a seven-point Likert scale ranging from (1) “strongly disagree” to (7) “strongly agree”. The questions were tailored to fit the research area, which is the public institution, and tested via a wording test by

three representative respondents and customised based on their inputs. After the customisation, the questions were tested via a pre-test with 35 respondents whose profiles matched that of the target unit analysis. The pre-test results confirmed the reliability and validity of the questions. No further changes were made to the questions after the pre-test was conducted; therefore, the final version, as presented in the appendix, was distributed to all respondents. Table 1 shows the constructs employed in this study.

4.2 Sample and Data Collection

Data were collected via an online survey of a total of 127 strategic alliances (90 domestic and 37 foreign) with 304 respondents. All of the respondents were individuals in charge of the strategic alliances list in a public institution that had active alliance activities and agreements (at least one joint strategic alliance activity). We followed up the online survey with email reminders to the respondents. From the total population of 127 strategic alliances, we received responses from 86, although 8 of these alliances were categorised as outliers (more than 10% incomplete data). As such, 78 strategic alliances were counted for this research, giving an effective response rate of 67%. Table 2 contains the respondent profile. The majority of the respondents were from organisations that had been established for more than 20 years, public institutions, which had already collaborated with an alliance institution more than three years ago, and had a term agreement of longer than five years.

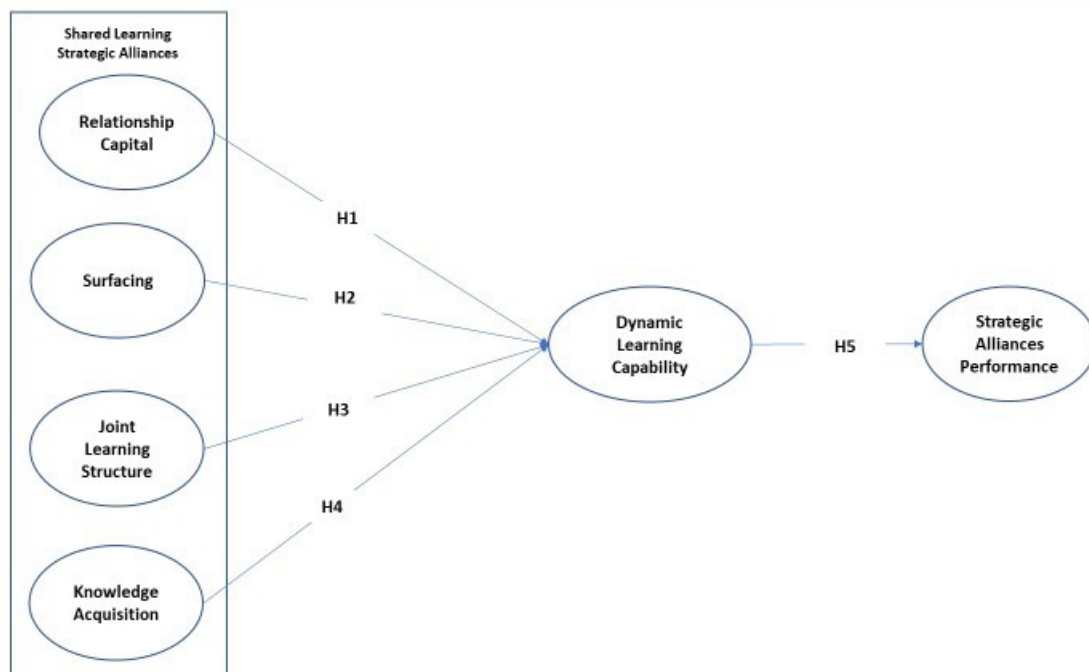


Figure 1: Research Model

Table 1: Research Constructs and Dimensions

No	Constructs	Dimensions
1.	Strategic Alliance Performance (SAP)	
2.	Dynamic Learning Capability (DLC)	
3.	Relationship Capital (RC)	Trust (T) Commitment (I)
4.	Surfacing (S)	Information Acquisition (SIA) Information Encoding (SIE) Information Sharing (SIS) Information Internalisation (SII)
5.	Joint Learning Structure (JLS)	Strategic Alignment (JLSSA) Teamwork for Problem Solving (JLSTS) Goals Management Systems (JLSGS)
6.	Knowledge Acquisition (KA)	Direct Exchange Acquisition (KAD) Alliances (KAA).

5 Analyses and Results

The data were analysed using measurement model and structural model analysis. The steps are elaborated in detail below.

5.1 Measurement Model Analysis

The first step in assessing measurement model validity is to examine the size and significance of the loadings, reliability, and convergent and discriminant validity. All of the latent variables or constructs met the existing reliability and validity threshold. All latent variables showed reliability as indicated by a Cronbach's alpha value ≥ 0.50 . This value represents "satisfactory to good" when interpreting internal consistency reliability since this study involves social science research (Hair, Black, Babin, & Anderson, 2019).

All of the constructs were valid and reliable as all of the Cronbach's alpha, reliability, and Average Variance Extracted (AVE) values were above their respective thresholds (Cronbach's alpha: ≥ 0.50 ; Reliability: ≥ 0.70 ; AVE ≥ 0.50). As such, each construct explained more than 50% of the variance of its indicators. Only one dimension under the knowledge acquisition construct had a validity

value below the threshold, namely direct exchange acquisition (Cronbach's alpha: 0.597; AVE: 0.420), although its reliability value (0.750) above the threshold (≥ 0.5) meant it could still be included.

After calculating the PLS algorithm from the initial 59 indicators, the outer loading results showed that most indicators were above the threshold (≥ 0.708 ; Hair et al., 2019), except for four: SAP5 (0.073), DLC6 (0.064), JLS-SA9 (-0.023), and KAD4 (0.039). Those four indicators were far below the threshold as a result of the reverse questions. Some of the respondents were unaware of these and submitted answers mistakenly. Reliable and valid results were subsequently obtained after deleting those four indicators and recalculating the PLS algorithm for the remaining 55 indicators. All of the latent variables or constructs thus met the reliability and validity threshold. Meanwhile, all variables showed reliability based on their threshold Cronbach's alpha value ≥ 0.7 while all outer loading values were already above the threshold ≥ 0.5 (Hair et al., 2019).

The next step was to assess the discriminant validity to determine how uniquely the indicators of a construct represented that construct versus the extent to which it was correlated with all other constructs in the model (Hair et al., 2019). The AVEs of two constructs were compared directly to the shared variance between the two constructs,

with a guidance threshold value >0.7 (Hair et al., 2019). Based on the Fornell–Larcker criterion, five indicators were deleted to meet the requirements – JLST1, JLST2, JLST3, JLSSA2 and KAD1 – to give a total of nine deleted indicators. After deleting those five indicators, each construct had a value above the other constructs. For example, strategic alliance performance had the highest value (Fornell–Larcker: 0.851) for its correlation with strategic alliance performance compared to the correlation value with other constructs. Based on the cross-loadings in the discriminant validity assessment, each indicator in the construct represents the highest value compared to the correlation value with other constructs. For example, strategic alliance performance (cross-loading) had the highest value on indicators SAP1 (0.875), SAP2 (0.891), SAP3 (0.793), SAP4 (0.924), and SAP6 (0.760) for its correlation with strategic alliance performance compared to the correlation values with other constructs (dynamic learning capabili-

ty, relationship capital, surfacing, joint learning structure, and knowledge acquisition). The heterotrait–monotrait ratio (HTMT) criterion in discriminant validity assessment is defined as the mean value of the indicator correlations across constructs relative to the mean of the average correlations of indicators measuring the same construct (Hair et al., 2019). Henseler et al., in Hair, Black, Babin, and Anderson (2019), recommended a value of ≤ 0.90 . After using the bootstrapping procedure with a basic setting of 500 subsamples, most of the indicators were found to be below the HTMT ratio threshold (≤ 0.9), except for knowledge acquisition (0.907). However, the knowledge acquisition indicators were already below the threshold (0.767) in the previous Fornell–Larcker discriminant validity assessment; as such, all of the latent constructs explained more of the variance in their item measures than they shared with another construct.

Table 2: Respondent Profile

Profile	Number	Percentage
1. Establishment		
> 20 years	63	80.77
6–20 years	13	16.67
< 5 years	0	0
Not Available	2	2.56
2. Type of Ownership		
Public Institution	42	53.85
Private Organisation	26	33.33
Other	8	10.26
Not Available	2	2.56
3. Collaboration Timeframe		
From year to now (2021–2022)	19	24.36
3 years ago (2018–2020)	14	17.95
> 3 years ago (before 2018)	43	55.13
Not Available	2	2.56
4. Term of Agreement Period		
> 5 years	38	48.72
2–5 years	25	32.05
< 2 years	13	16.67
Not Available	2	2.56
Total	78	

Table 3: Discriminant Validity: Heterotrait–Monotrait Ratio (HTMT)

No	Variables	Strategic Alliance Performance	Dynamic Learning Capability	Relationship Capital	Surfacing	Joint Learning Structure	Knowledge Acquisition
1.	Strategic Alliance Performance	1					
2.	Dynamic Learning Capability	0.808					
3.	Relationship Capital	0.726	0.783				
4.	Surfacing	0.867	0.876	0.766			
5.	Joint Learning Structure	0.809	0.809	0.609	0.838		

Table 4: Structural Model Analysis

Assessment	Threshold	Value
1. Collinearity – Variance Inflation Factor (VIF)	A value above 3 is likely to indicate a problem; high collinearity is defined as a value above 5.	Most of the indicators < 3, except for Surfacing (3.339) and Knowledge Acquisition (3.047); however, these were still acceptable as the values were far below 5 (Hair et al., 2019).
2. Size and significance of the structural path relationship – R^2 – assess (R^2)	The R^2 value is between 0 and 1. Since 0 indicates no relationship and 1 is a perfect relationship, the higher the value the greater the explanatory power of the structural model. R^2 values of 0.75, 0.50, and 0.25 can be considered substantial, moderate, and weak, respectively.	All of the R^2 values were above the threshold (>0.05). All of the endogenous constructs had a moderate value of between 0.50 and 0.75. R^2 of Strategic Alliance Performance: 0.571 (57.1%); Dynamic Learning Capability: 0.768 (76.8%).
3. The effect size – (f^2)	Effect size is assessed to determine whether the removal of a predictor construct from the structural model has a substantive impact on the endogenous construct. Based on guidelines from Cohen (Hair et al., 2019), f^2 values of 0.02, 0.15, and 0.35, respectively, represent small, medium, and large effects of an exogenous construct, while an effect size < 0.02 indicates no effect.	All the endogenous constructs had small and medium effects based on the threshold (≥ 0.02). (f^2) values: Dynamic Learning Capability (1.360), Relationship Capital (0.061), Surfacing (0.075), Joint Learning Structure (0.099), Knowledge Acquisition (0.134).
4. Predictive relevance based on Q^2	A value > 0 indicates that the predictive accuracy of the path model is acceptable for that construct.	All of the endogenous constructs had a Q^2 value > 0, thus indicating that the path model's predictive accuracy was acceptable. The Q^2 value assessment for all endogenous constructs is above 0: Strategic Alliance Performance (0.366), Dynamic Learning Capability (0.499).

5.2 Structural Model Analysis

We performed structural model analysis using Smart-PLS. Based on Hair et al. (2019), there are five steps in assessing a structural model: assessing collinearity, evaluating the size and significance of the structural path relationship, assessing R^2 , assessing the f^2 effect size, and evaluating the predictive relevance based on Q^2 .

We first assessed collinearity, which involved computing the Variance Inflation Factor (VIF) for each indicator. All of the inner VIF values were below the threshold of 3 except for surfacing and knowledge acquisition, although this was still acceptable since the value was far below 5 (Hair et al., 2019). The second step was to conduct bootstrapping to evaluate the size and significance of the structural path relationship. The result showed that all the R^2 values were above the threshold (>0.05). The third step was to assess R^2 ; here, the result showed that all the endogenous constructs had a moderate value of between 0.50 and 0.75. The fourth step was to assess the f^2 effect size,

which involved determining whether the removal of a predictor construct from the structural model had a substantive impact on the endogenous construct. All of the endogenous constructs had small and medium effects. The fifth step involved assessing the predictive relevance based on Q^2 . The blindfolding procedure was conducted to obtain the Q^2 value. All of the endogenous constructs had a Q^2 value greater than zero, which indicates that the path model's predictive accuracy is acceptable. The Q^2 value assessment for all endogenous constructs is above zero. Table 4 contains a detailed breakdown of the results.

A path coefficient value of +1 indicates a perfect positive relationship, 0 indicates no relationship, and a value of -1 indicates a perfect negative relationship (Hair et al., 2019). All of the path coefficient values were positive since they were between -1 and 1. All of the correlations were significant, as indicated by the T statistic ≥ 1.96 (Hair et al., 2019). All of the correlations were connected since the P-values were below the threshold of ≤ 0.05 (Hair et al., 2019).

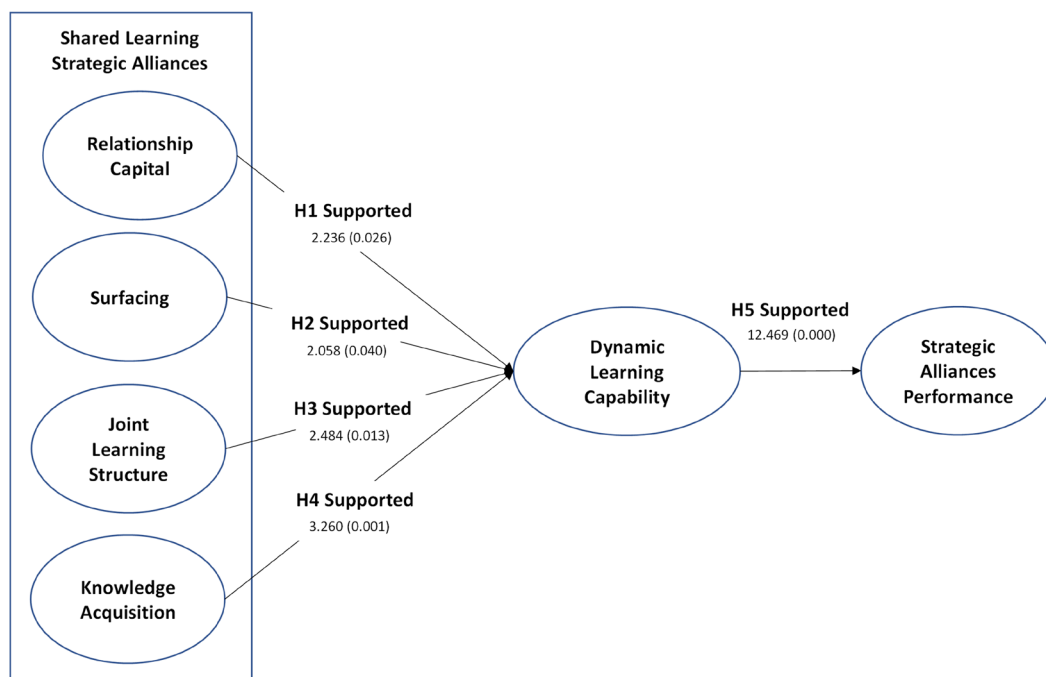


Figure 2: Path Diagram

The results for all hypotheses in the research model are summarised in Table 5 below:

Table 5: Hypotheses Result

No	Hypothesis	t-Value	P-Value	Remark	Summary
H1	Relationship Capital is positively related to dynamic learning capability.	2.236	0.026	Positive Significant	H1 Accepted
H2	Surfacing is positively related to dynamic learning capability.	2.058	0.040	Positive Significant	H2 Accepted
H3	Joint Learning Structure is positively related to dynamic learning capability.	2.484	0.013	Positive Significant	H3 Accepted
H4	Knowledge Acquisition is positively related to dynamic learning capability.	3.260	0.001	Positive Significant	H4 Accepted
H5	Dynamic Learning Capability is positively related to strategic alliance performance.	12.469	0.000	Positive Significant	H5 Accepted

6 Conclusion, Implication, and Future Studies

Several conclusions can be drawn from the above findings. First, all of the hypotheses examined in this research are accepted. This signifies that all constructs from a complete learning framework affect dynamic learning capability, while dynamic learning capability also affects strategic alliance performance.

Knowledge acquisition (t-value: 3.260; p-value: 0.001) has the greatest impact on creating dynamic learning capability. The strongest effect derives from the construct of alliances with the question: KAA_3 In alliance with the alliance institution, we develop alliances and cooperation with participants in the development of joint research projects. This supports previous research by Ortiz et al. (2018) on how external knowledge acquisition formed by two dimensions, direct market exchange and cooperation agreement or strategic alliances, can affect strategic alliance performance through dynamic learning capability. It

indicates that the public institution and its alliances already conduct routine activities within a joint research project, as shown by how these activities provided the most support to the success of the strategic alliance performance.

Meanwhile, surfacing, notably from information internalisation, has the lowest impact on the creation of dynamic learning capability that leads to strategic alliance performance, with the question: SII_3 In alliance with the alliance institution, employees participating in the alliance are entitled to use all the alliance information of our organisation. This finding implies a process of information internalisation, which refers to the organisation's process of expediting the alliance's proprietary technology under its ownership to become individual information (Yue et al., 2018). As such, there is scope for improvement within the information internalisation activities. This can be conducted by alliance institutions through socialisation on the availability of the alliance information result given the potential for a lack of awareness concerning its availability.

In the area of relationship capital, other improvement activities for the alliance institution and its wider strate-

gic alliances centre on the lowest impact on creating a dynamic capability that led to strategic alliance performance, with the question RCC_4 We will definitely continue the relationships with the alliance institution. This emphasises the process of learning between alliances that can influence alliance performance through trust and relationship commitment (Shan et al., 2018). Improvement can involve a process of review and discussion among the alliance institutions to update the objective of forming strategic alliances and the aspects requiring improvement within both parties for the strategic alliances to continue.

Improvement in the area of joint learning structure is based on the lowest impact in creating a dynamic capability that led to strategic alliance performance with the question JLSSA_8 In alliance with the alliance institution, we emphasise the importance of good organisational inter-functional relationships. This finding implies strategic alignment in which products and processes are improved and where the company's competencies, technology, and innovation are exploited and synergised while continuously stimulating the new knowledge available to functions in addition to cross-learning by enhancing the company's ability (Galeazzo et al., 2016). Alliance institutions can conduct this type of improvement by emphasising the importance of good organisational inter-functional relationships and through socialisation to build awareness in this area.

Improvement in dynamic capability can increase the performance of the collaboration and engender improvement in dynamic learning capability, as based on the lowest impact in creating strategic alliance performance with the question DLC_1 In alliance with the alliance institution, we have routines to identify, value, and import new information and knowledge. This finding implies a positive effect of dynamic learning capability on the company's ability to create value (Rashidirad & Salimian, 2020). The improvement can be effected by the alliance institutions through routine gatherings, workshops, or group forum discussions to identify, value, and import new information and knowledge.

This research has certain limitations. First, it relies on limited data due to the availability of the respondents since they could only be reached by email. The limited volume of data can also be attributed to how only specific individuals, that is, those in charge, were eligible to respond. The restriction regulation from the international respondents served as a further constraint during the data collection process. Second, the types of strategic alliances established by the alliance institution were specific to the learning area in only certain topics related to the government, institution, or private organisation.

Future research may be warranted in organisations other than public institutions that have different characteristics and also to consider whether the constructs in a complete learning framework impact the creation of dynamic learning capability in supporting the objective of strate-

gic alliance performance. Furthermore, the scope of strategic alliance collaboration can be expanded beyond the learning area to include, for example, the manufacturing industry, export-oriented products, or digital services that require knowledge related to technology development. Future research may also comprise longitudinal studies to identify the data result trend, including the impact of the learning framework in areas other than dynamic learning capability, for example, dynamic integration and dynamic reconfiguration capability (Abbas, Raza, Nurunnabi, Minai, & Bano, 2019), to obtain a complete understanding.

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Ustvarjanje dinamične učne sposobnosti v okviru učenja prek strateškega zaveznitva

Ozadje in namen: Spreminjajoče se poslovno okolje zahteva izboljšanje zmogljivosti podjetja prek njegovega učnega okvira in ustreznih dimenzij. Namen te raziskave je z empiričnim testiranjem pridobiti boljše razumevanje ustvarjanja dinamične učne sposobnosti s strateškimi povezavami v učnem okviru.

Metodologija: Podatki so bili zbrani s spletno anketo 78 strateških povezav javnih zavodov. Za testiranje predlaganega modela je bil uporabljen model strukturnih enačb (SEM).

Rezultati: Zmožnost dinamičnega učenja pozitivno in pomembno vpliva na uspešnost strateškega zaveznitva v učnem okviru, ki vključuje kapital odnosov, odkrivanje (surfacing), strukturo skupnega učenja in dimenzije pridobivanja znanja.

Zaključek: Raziskava ugotavlja, da vsi konstrukti v učnem okviru (kapital odnosov, odkrivanje, skupna učna struktura in pridobivanje znanja) ustvarjajo dinamično učno sposobnost, ki pomembno vpliva na uspešnost strateškega zaveznitva. Vsak konstrukt znotraj učnega okvira (kapital odnosov, odkrivanje, skupna učna struktura in pridobivanje znanja) je bil empirično preizkušen in lahko ustvari dinamično učno sposobnost, ki prispeva k uspešnosti strateškega zaveznitva, zlasti v domeni poslovnega učenja.

Ključne besede: *Strateška zaveznitva, Učni okvir, Zmožnosti dinamičnega učenja, Uspešnost strateškega zaveznitva*

Appendix: List of Questionnaires

No	Code	Questionnaires	SLF
1.	Relationship Capital		
1.1		Trust	
	RCT_1	We trust that the alliance institution's decisions are beneficial for both parties.	0.912
	RCT_2	We trust the alliance institution's professional competence and abilities.	0.899
	RCT_3	We trust the alliance institution's ability to implement the objectives.	0.897
	RCT_4	We highly trust the alliance institution through the formal contracts.	0.908
1.2		Commitments	
	RCC_1	We have a strong sense of loyalty to the relationships with the alliance institution.	0.900
	RCC_2	We dedicate enough resources to maintain the relationships with the alliance institution.	0.938
	RCC_3	We always try to improve the management of the relationships with the alliance institution.	0.901
	RCC_4	We will definitely continue the relationships with the alliance institution.	0.891
2.	Surfacing		
2.1		Information Acquisition	
	SIA_1	In alliance with the alliance institution, we archived all the history and information of the alliance.	0.897
	SIA_2	In alliance with the alliance institution, we record all important results and problems in the alliance in text or other forms (e.g. manually recorded, dashboard system).	0.880
	SIA_3	In alliance with the alliance institution, we regularly report major events to the organisation management team.	0.837
2.2		Information Encoding	
	SIE_1	In alliance with the alliance institution, we form and gradually improve our organisation's method of managing the alliance.	0.917
	SIE_2	In alliance with the alliance institution, we have an alliance manual and other documents to guide decision-making during the alliance period.	0.896
	SIE_3	In alliance with the alliance institution, we summarised the experience of the alliance that spreads to all other alliances	0.903
2.3		Information Sharing	
	SIS_1	In alliance with the alliance institution, we regularly exchange alliance information and experiences (e.g. webinars, policy news, workshops) with other colleagues of our organisation.	0.914
	SIS_2	In alliance with the alliance institution, we often exchange information and experience from the alliance (such as through webinars, policy news, and workshops) with the managerial staff of our organisation's other alliances via an informal process.	0.910
	SIS_3	In alliance with the alliance institution, our organisation encourages us to share alliance management experience (such as through webinars, policy news, and workshops) with other managerial staff in our organisation.	0.886

No	Code	Questionnaires	SLF
2.4		Information Internalisation	
	SII_1	In alliance with the alliance institution, we provide information on training and research programmes for employees participating in the alliance.	0.907
	SII_2	In alliance with the alliance institution, we provide external training for employees participating in the alliance.	0.883
	SII_3	In alliance with the alliance institution, employees participating in the alliance are entitled to use all the alliance information of our organisation.	0.789
3.		Joint Learning Structure	
3.1		Strategic Alignment	
	JLSSA_1	In alliance with the alliance institution, in our organisation, the goals, objectives, and strategies of the alliance are communicated to us.	0.816
	JLSSA_2	In alliance with the alliance institution, potential alliance objectives are screened for consistency with our business strategy.	NA
	JLSSA_3	In alliance with the alliance institution, at our organisation, the alliance process is kept in step with our business strategy.	0.842
	JLSSA_4	In alliance with the alliance institution, we believe that focusing on the long-term alliance will lead to better overall performance than focusing exclusively on short-term goals.	0.776
	JLSSA_5	In alliance with the alliance institution, we routinely review and update a long-range strategic plan for alignment with the alliance.	0.845
	JLSSA_6	In alliance with the alliance institution, our organisation's functions work interactively.	0.893
	JLSSA_7	In alliance with the alliance institution, the functions in our organisation cooperate to resolve conflicts between them when they arise.	0.824
	JLSSA_8	In alliance with the alliance institution, we emphasise the importance of good organisational inter-functional relationships.	0.770
	JLSSA_9	In alliance with the alliance institution, we are not encouraged to communicate well with different functions in the organisation. (Reverse Question)	NA
3.2		Teamwork for Problem Solving	
	JLSTS_1	In alliance with the alliance institution, we encourage employees to work together to achieve alliance common goals, rather than encourage competition among individuals.	NA
	JLSTS_2	In alliance with the alliance institution, we form teams to solve alliance problems.	NA
	JLSTS_3	In alliance with the alliance institution, employee teams are encouraged to try and solve alliance problems independently as much as possible.	NA
	JLSTS_4	In alliance with the alliance institution, we are encouraged to make suggestions related to the alliance on improving performance at this organisation.	0.803
	JLSTS_5	In alliance with the alliance institution, we encourage employees to exchange opinions and ideas related to the alliance.	0.894
	JLSTS_6	In alliance with the alliance institution, we encourage employees to work as a team related to this alliance.	0.869

No	Code	Questionnaires	SLF
3.3		Goals Management Systems	
	JLSGS_1	In alliance with the alliance institution, our reward system truly recognises the people who contribute the most to our organisation related to the alliance.	0.880
	JLSGS_2	In alliance with the alliance institution, the incentive system at this organisation is fair at rewarding people who accomplish company objectives through the alliance.	0.930
	JLSGS_3	In alliance with the alliance institution, the incentive system at this organisation encourages us to reach the organisation's goals through the alliance.	0.949
	JLSGS_4	In alliance with the alliance institution, our incentive system encourages us to pursue the organisation's objectives vigorously through the alliance.	0.905
4.		Knowledge Acquisition	
4.1		Direct Exchange Acquisition	
	KAD_1	In alliance with the alliance institution, we get the exquisites n the technological development organisation.	NA
	KAD_2	In alliance with the alliance institution, we obtain knowledge of the alliance institution's professional experience.	0.864
	KAD_3	In alliance with the alliance institution, we obtain knowledge from the external consultants or the alliance institution.	0.897
	KAD_4	In alliance with the alliance institution, we do not usually acquire technological licences. (Reverse Question)	NA
	KAD_5	In alliance with the alliance institution, we acquire complex technology or knowledge and incorporate it into equipment, specialised machinery, or systems.	0.551
4.2		Alliances	
	KAA_1	In alliance with the alliance institution, we develop alliances and cooperation with other organisations.	0.860
	KAA_2	In alliance with the alliance institution, we develop alliances and cooperation with the organisation's supply chain function.	0.910
	KAA_3	In alliance with the alliance institution, we develop alliances and cooperation with participants in the development of joint research projects.	0.914
5.		Dynamic Learning Capability	
	DLC_1	In alliance with the alliance institution, we have routines to identify, value, and import new information and knowledge.	0.833
	DLC_2	In alliance with the alliance institution, we have routines to assimilate new information and knowledge.	0.842
	DLC_3	In alliance with the alliance institution, we have transformed existing information into new knowledge.	0.852
	DLC_4	In alliance with the alliance institution, we use knowledge in value creation effectively.	0.877
	DLC_5	In alliance with the alliance institution, we develop new knowledge effectively.	0.863
	DLC_6	In alliance with the alliance institution, we do not learn new things within the organisation. (Reverse Question)	NA

No	Code	Questionnaires	SLF
6.	Strategic Alliances Performance		
	SAP_1	The objectives for which this partnership with the alliance institution was established are being met.	0.875
	SAP_2	We are satisfied with the strategic alliance performance of the alliance with the alliance institution.	0.891
	SAP_3	The alliance institution appears to be satisfied with the performance of the alliance.	0.793
	SAP_4	We are satisfied with the overall performance of the alliance with the alliance institution.	0.924
	SAP_5	The alliance institution does not appear satisfied with the overall performance of the alliance. (Reverse Question)	NA
	SAP_6	Our organisation's capabilities have been greatly enhanced due to the alliance with the alliance institution.	0.760

The Mediating Role of Innovation Capabilities on the Relationship between Dynamic Capabilities and Firm Competitive Performance

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Purpose: The purpose of the study is to better understand the relationship between dynamic capabilities and firm competitive performance, and how innovation capabilities, specifically (a) product capability and (b) process capability, may play a mediating role in this relationship.

Design/Methodology/Approach: Simple Random Sampling technique was adopted to choose SMEs to collect data based on information obtained from Hungarian SMEs associations. A total of 565 completed questionnaires were obtained, with response rate of 65.50%. Confirmatory factor analysis (CFA) was used with AMOS 24 to assess the reliability and validity; and Cronbach's alpha coefficient was additionally used to assess the dependability of the scales. The proposed model was put to the test using structured equation modelling (SEM).

Results: The study results show that dynamic capacities have a significant direct effect on innovation capabilities: product capability and process capability. The study also proves that both product capability and process capability have a significant impact on a firm's competitive performance.

Conclusion: The study concludes that the relationship between dynamic capabilities and competitive firm performance is partially mediated by innovation capabilities. The study suggests that before enhancing product innovation capability, entrepreneurs should consider reorganizing and reallocating resources into process innovation capability. This study contributes to our understanding of the mediating mechanism of innovation capabilities through which dynamic capabilities enhance firm competitiveness performance.

Keywords: *Innovation capabilities, Dynamic capabilities, Competitive firm performance, Technological innovations*

1 Introduction

In today's rapidly advancing technological landscape, the market environment is growing increasingly complex, where customer expectations are continuously changing, and product life cycles are becoming shorter. To compete in such a changing global market, organizations must innovate by developing new products and services to stay

competitive (Hwang et al., 2019). Owing to these radical and unavoidable changes, firms are compelled to adapt to dynamic market structures and produce innovative products to maintain a competitive advantage and long-term sustainability. Under these conditions, scholars believe that 'innovativeness' is vital for any firm to compete in a competitive market environment (Huseyine et al. 2016). Innovation is believed to have a significant impact on a company's business success, productivity, job creation,

and drive economic growth and success (Abuhashesh et al., 2019a).

It is argued that possessing the ability to innovate is crucial for achieving long-term competitive performance in today's extremely competitive business environment (Zehir et al., 2015). Before delving into innovation capabilities, it is pertinent to grasp the concept of capabilities. Capabilities refer to a firm's skills and abilities to exploit its resources in a most productive way (Wheelen et al., 2018; Robbins and Coulter, 2016). Innovation aptitude, on the other hand, encompasses the abilities and expertise required to advance and develop new technologies (Romijn and Albaladejo, 2002). In other words, successful technological innovation demands critical capabilities, especially in areas such as manufacturing, marketing, organization, strategy, planning, learning, and resource allocation (Yam et al. 2004). In this context, Wheelen et al., (2018) introduced a new dimension by noting that capabilities can become 'dynamic' when they are modified and reconfigured, making them more adaptable to face uncertain conditions in organizations. To understand the synergies between dynamic capabilities and gaining a competitive advantage, it is believed to be of paramount importance for any organization to develop dynamic capabilities aligned with market expectations. This enables organizations to acquire a competitive edge.

Given this context, the purpose of the study is to gain a deeper understanding of the relationship between dynamic capabilities and firm competitive performance as well as how innovation capabilities, in particular (a) product capability and (b) process capability, may act as a mediating factor in this relationship. Thus, the context of the study assumed significance due to technological advancements and a rapidly changing competitive market environment. Because of these factors, there is a growing interest in researching organizations' capabilities and how these can promote competitiveness, business practice and performance of any firm (Hwang et al., 2019). Previous research on organizational performance primarily focused on organizational resources, demonstrating their role in innovation, competitive advantage, and overall organizational growth (e.g. Penrose, 1959; Wernerfelt, 1984; Barney, 1991). However, recent research on organizational growth and performance has shifted to empirically investigate how innovation capabilities facilitate dynamic capabilities to enhance competitive firm performance (Helfat & Martin, 2015; Mostafiz et al., 2019a; Tasheva & Nielsen, 2020). Preliminary studies have explored the relationship between dynamic capabilities and organization's competitive advantage (e.g., Chaharmahali & Siadat, 2010; Krzakiewicz, 2013). However, the existing research has also shown a lack of adequate scientific studies addressing why firms still fail despite the potential synergy between dynamic capabilities and firm competitive performance. Given this context, the present study aims to fill the knowledge

gap by addressing the following research questions: How significant is the role of innovation capabilities in influencing dynamic capabilities to achieve a better competitive advantage for a firm? In doing so, the present study focuses on three aspects: first, analysing the role of dynamic capabilities such as (a) Sensing capability (b) Learning capability (c) Integration capability and (d) Reconfiguration capability on product and process capabilities. Secondly, the study examines the mediating role of innovation capabilities, specifically (a) product capability and (b) process capability on competitive firm performance. The present study draws upon Teece (2007), and Teece et al, (2018) to address the research questions and fill the knowledge gap.

Organization of the Study:

This paper is organized into seven parts. The first part serves as the introduction, establishing the context and significance of the study while emphasizing the role of dynamic capabilities in ensuring firm competitive performance. The second part represents the literature review, from which hypotheses are derived. The third part outlines the study's objectives. The fourth part delves into the research methodology. The fifth part presents the results, and the sixth part provides the discussion and conclusion. The final part encompasses theoretical and managerial contributions and offers insights into future directions for the study.

2 Literature review and development of hypotheses

2.1 Understanding Dynamic Capabilities and Innovation Capabilities

Innovation capabilities and dynamic capabilities are often used interchangeably while discussing the competitive advantage of any organization (Breznik and Hisrich, 2014). To start with dynamic capabilities, these are defined as the capacities of a firm to combine, develop and rearrange internal and external skills to address a rapidly changing market environment (Teece et al., 1997, p.516). Eisenhardt and Martin (2000) add that product development, strategic decision-making, and alliance-building are also included in the list of dynamic capabilities. Dynamic capabilities aim to achieve competitive advantage through combining and effectively utilizing all resources of a firm (Arranz et al., 2020). It is argued that these capabilities are capable enough in any competitive environment to solve an organization's problems by using sensing opportunities and taking market-oriented decisions timely (Teece et al., 1997). However, innovation refers to the capacity to introduce a new product or service or bring innovative changes in the organizational structure and administrative system (Damanpour, 1991). Under innovation, firms frequently

implement new behaviours or procedures, as well as new programmes, policies or ideas (Mothe & Uyen, 2010). Thus, the aptitude for innovation refers to the abilities and expertise required to advance and develop new technologies (Romijn and Albaladejo, 2002).

Thus, the goal of innovation capabilities is to provide stakeholders with new processes, products and services that have greater value. In order to improve the existing processes and produce better services or goods, these capabilities also put a strong emphasis on implementing radical organizational changes (O' Sullivan and Dooley, 2008). It is to mention that owing to the market's short product life cycles and high rates of new product manufacturing, innovation capability is crucial for superior innovation performance.

2.2 The impact of Dynamic capabilities on Product capability

Teece (2007) states in an organization, dynamic capabilities play a pivotal role in identifying and seizing opportunities while also equipping the firm to address threats. Moreover, these capabilities enhance competitiveness and contribute to the firm's long-term sustainability. In particular, one of the dynamic capabilities, that is, sensing capability, helps in gathering relevant market information (Teece, 2018), which is critical for any firm or company. It is imperative because predicting market trends and customer orientation assist firms in recognizing customer needs and wants. In particular, with reference to the service sector, sensing capabilities play a critical role in targeting customers and serving their needs. Thus, sensing capabilities are concerned with understanding and identifying the customer needs and changing the dynamics of

the market environment (Teece, 2014; Zitkiene, Kazlauskienė, Deksnys, 2015). Sensing capabilities also facilitate a firm's required resources and capture value.

As far as the learning capabilities are concerned, Collis (1994) posits that organizational learning capabilities present a pivotal component of an organization's dynamic capabilities, with the potential to transform the organization into a dynamic firm. It is believed that organizational learning can shape the behaviour of an enterprise by expanding knowledge and instilling new perspectives (Olavarrieta & Friedmann, 2008). The process of organizational learning encompasses a firm's capacity to perceive the market, get new information, distribute, and interpret it (Day, 1994). It is asserted that learning capabilities, particularly market sensing, can enhance a company's performance (Day, 1994, 2002; Tseng & Lee, 2014).

Adding another dimension of dynamic capabilities, Teece, Pisano, and Shuen (1997) assert that dynamic capabilities also signify an organization's ability to cope with the rapidly changing market environment by integrating, developing and reconfiguring the internal and external competencies. This argument highlights the necessity to examine how integration capabilities can influence the product capability of an organization. Referring to reconfiguring capabilities, it is said that these capabilities have the capacity to create value, which has a direct impact on the firm's operational capabilities (Wilden et al., 2016). The present study also examines whether or not reconfiguration capability positively impacts product capability. Given these arguments, the present study examines the role of dynamic capabilities on product development in a firm. Thus, the study framed the following research hypothesis.

H1a: Sensing capability has a positive impact on Product capability

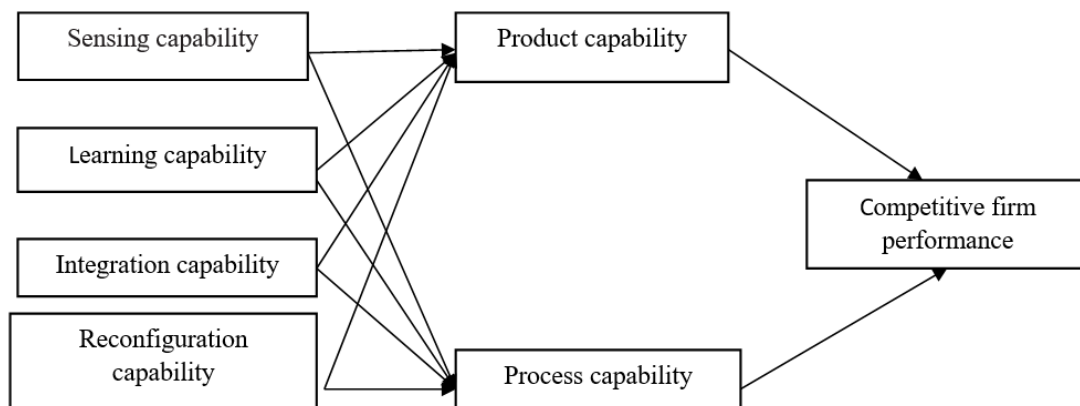


Figure 1: Conceptual framework of the Study

H1b: Learning capability has a positive impact on Product capability

H1c: Integration capability has a positive impact on Product capability

H1d: Reconfiguration capability has a positive impact on Product capability

2.3 The impact of dynamic capabilities on Process capability

Sensing capability is a critical and indispensable component of dynamic capabilities (Teece, 2018; Froehlich and Bitencourt, 2019), known for its positive influence on firm performance (Kihara, Ngugi, and Ogallah, 2016). Sensing capabilities not only facilitate generating and disseminating market intelligence in a firm but is also responsive to changing market conditions (Pavlou and El Sawy, 2011; Teece, 2018). Thus, these capabilities positively impact the innovation of products and services (Al-Madadha et al., 2023). Further, it is argued that sensing capabilities enable firms to monitor the market continuously, find market opportunities accurately, and understand market threats (Fang et al., 2014). Given this context, the study framed the following hypotheses:

H2a: Sensing capability has a positive impact on Process capability

H2b: Learning capability has a positive impact on Process capability

H2c: Integration capability has a positive impact on Process capability

H2d: Reconfiguration capability has a positive impact on Process capability

2.4 The impact of Innovation capabilities on firm competitive performance

Innovation capabilities become more crucial to a firm's competitive performance. The ability to innovate can be described as enhancing and managing the knowledge and technology already in existence and also to create new ones. Owing to the rapid technological advancements and knowledge creation, it is pertinent for any firm to develop and adopt innovation capabilities that, in turn, achieve dynamic competitive advantage (Romijn and Albaladejo, 2022). Innovation capabilities, according to Alder and Shenbar (1990), can also be defined and understood in many aspects such as: (i) these capabilities can manufacture new products and services according to the market demands, (ii) while producing the new products and delivering new services, innovation capabilities can apply required technological assistance that not only addresses the present needs of the customers but also satisfy the future demands, and (iii) these capabilities can also have the

capacity to receive and face the unexpected opportunities and threats created by the competitors. Further, innovation capabilities can provide insights for firms so that the management of firms can identify the strongest and weakest points, where a firm should develop. Due to these reasons, it is emphasized that innovation capabilities are the critical components to developing effective, innovative outcomes within a firm. This process ensures the generation and transformation of knowledge and skills into products, processes and systems, which is beneficial for both firms and stakeholders (Rajapathirana, Jayani, R.P., and Yan Hui, 2017). Thus, firms with innovation capabilities may be able to successfully combine the essential skills and resources to foster innovation (Lawson and Samson, 2001). To put it in simple terms, innovation capabilities can be understood as the ability to bring innovations in the areas of technology and knowledge continuously as a response to rapidly changing market environment (Saunila et al. 2014). Referring to achieving competitive advantage, Tidd (2006) asserts that innovation can promote a positive impact between manufacturing new products and competing with the market performance. It has the ability to replace outmoded products with new ones, which ensures new product development relative to competitors. In light of this, the ensuing hypotheses have been developed.

H3a: Product capability has a positive impact on Competitive firm performance

H3b: Process capability has a positive impact on Competitive firm performance

2.5 Mediating effects of Product capability on firm competitive performance

One of the key areas that the study attempts to probe is the mediating effects of innovation capabilities on firm competitive performance. It is evident from the existing literature that innovation capabilities are considered to be the key assets of a firm and have the potential to implement the entire strategy and sustain the competitive advantage (Lawson & Samson, 2001). As a mediating role, innovation capabilities facilitate firms to quickly introduce new products according to the needs of the changing market and challenge the ongoing competition. Thus, innovation capabilities can be comprised of assets and resources which are necessary for the firm competitive performance. Shou et al., (2018) argue that up-to-date information and knowledge are seen as a source of innovation for any firm, and the firms must look into opportunities in market and technologies. In this context, sensing capabilities play an important role in dealing with the situation. Interestingly, it is highlighted that sensing capabilities should be mediated by innovation capabilities to have an effect on a firm's

financial performance. It is highlighted that if any firm's sensing capabilities are strong, it leads to higher technological innovations (Zhou et al., 2017). With these arguments, the study framed the following hypotheses:

H4a: Product capability mediates the positive effect of Sensing capability on Competitive firm performance

H4b: Product capability mediates the positive effect of learning on Competitive firm performance

H4c: Product capability mediates the positive effect of Integration capability on Competitive firm performance

H4d: Product capability mediates the positive effect of Reconfiguration capability on Competitive firm performance

2.6 Mediating effect of the process capability on firm competitive performance

Concerning an organization's competitive performance, Martin-de Castro et al., (2013) state that creating and maintaining a competitive advantage for an organization depends on developing and implementing the necessary technological innovations. In other words, firm's propensity for promoting innovative approaches is more crucial in the market environment to gain a greater competitive advantage (McAdam and Keogh, 2004). In today's dynamic and competitive business environment, innovation capability within these organizational capabilities is essential for achieving a sustainable competitive advantage (Zehir et al., 2015). Scholars also conceptualized that innovation capabilities are the combination of product innovation and process innovation (Camison & Vilar-Lopez, 2014; Nwachukwu, Chladkova & Oltatunji, 2018), which has a more significant impact on the process capability that, in turn, influences the firm performance. Innovation capability in terms of process capability can be understood from Akman and Yilmaz (2008) who believe that the qualities of internal promotional activities and the capacity to comprehend and effectively respond to the external environment are all important factors that facilitates an innovative organizational culture. In light of this, the study put forth the following hypotheses:

H5a: Process capability mediates the positive effect of Sensing capability on Competitive firm performance

H5b: Process capability mediates the positive effect of learning on Competitive firm performance

H5c: Process capability mediates the positive effect of Integration capability on Competitive firm performance

H5d: Process capability mediates the positive effect of Reconfiguration capability on Competitive firm performance

3 Methodology

3.1 Questionnaire Design and Measurements

The survey questionnaire designed by using Google forms tool. It contains three sections, First section contains respondents and SMEs profile, second and third section contain product capabilities and process capabilities of competitive firm performance. This study measurements developed based on pre-existing studies. The dynamic capabilities were implemented in four-dimensional variables: sensing capability, learning capability, integration capability, reconfiguration capability with four items were designed for each construct. The innovation capabilities were implemented in two-dimensional variables: product capability and process capability, in total ten items were designed to measure the innovation capabilities. Regarding competitive firm performance, it is a single variable, and 10 items were designed to measure it. These measurements were adopted from existing studies Teece, (2018), Kareem and Kummitha,(2020), Calantone et al.(2002), Tohidi and Mandegari (2012), Zehir et al. (2015), Shou et al. (2018), Al-Madadha et al., (2023). (List of Items see in appendix 1). All the questions were designed on seven-point Likert scale ranging from 1- strongly disagree to 7- strongly agree.

3.2 Sample and Data collection

There are several reasons to investigate SMEs in this study. First, SMEs being are closer to the market, have flexible systems to adopted to changes occurring in the external market, which contributes to the growth of firm performance (Zehir et al., 2015). Second, SMEs play a vital role in Hungarian economic growth as they bridge the gap between MNCs and customers (Nyikos et al., 2021). Therefore, we have chosen Hungarian SMEs to validate our research model. The Sampling of SMEs for our research was purposeful and based on the OPTEN databased, which includes all the present and former businesses registered in Hungarian business registry (OPTEN,2022). SMEs were selected using random sample drawn from three different firm size strata (two to nine employees, 10 to 49 employees and 50-200 employees), with additional controls to ensure the sample represented various regions and sectors. The sample was very well distributed within Hungarian SMEs. For example. 56 percent of respondents were from capital city Budapest region compared with 44 percentage of respondents from different parts of the country. The selected SMEs are mainly classified as Technical SMEs, Wholesale and retail trade SMEs, Information and communication. This selected SMEs deal with wide range of product development activities such as new technology

Table 1: Demographic characteristics

Variables	characteristics	N	Percentage
Firm age (year)	Less than 10 years	280	50%
	11-20 years	190	34%
	More than 21 years	90	16%
Firm size (number of employees)	Less than 10	120	21%
	10-30	130	23%
	31-50	230	41%
	51-100	80	14%
	More than 100	230	41%
Industry	Manufacturing	244	44%
	Wholesale and retail trade	122	22%
	Information and communication	80	14%
	technical activities	114	20%

Table 2: Descriptive statistics

Constructs	Mean	SD	Sensing capability	Learning Capabilities	Integration Capabilities	Reconfiguration Capabilities	Process innovation capability	Product innovation capability	Competitive firm performance
Sensing capability	4.573	0.460	1						
Learning Capabilities	4.517	0.434	.668**	1					
Integration Capabilities	4.692	0.407	0.589**	.589**	1				
Reconfiguration Capabilities	4.694	0.402	0.534**	.596**	.583**	1			
Process innovation capability	4.459	0.463	0.659**	.547**	.216**	.542**	1		
Product innovation capability	4.129	0.674	.298**	.598**	.198**	.763	.591**	1	
Competitive firm performance	4.114	0.677	.232**	.347**	.442**	.216**	.442**	.763**	1

** Correlation is significant at the 0.01 level (2-tailed).

creation, pharmaceutical distribution, technical activities and information technologies.

After initial information gathered from targeted SMEs, One of the authors make telephone call for approval, a questionnaire email was sent to either one of the owners, who were part of the top management (Where the SME had less than 25 employees), or one of the top executive

(Not necessary having the ownership of the SMEs (In case of larger SMEs) and ask them fill and distribute questionnaire among the top level management in SMEs . Out of 500 selected SMEs 800 email questionnaires are sent to CEOs, managers, top level employees, and senior executives. At the same time, one of the authors visited some of the SMEs to collected 100 face to face questionnaire

data between September to December 2022. A total of 565 completed questionnaires were obtained. The sample included 250 micro firms, 180 small firms and 70 medium sized firms, with a response rate of 65.50%. We chose to collect more than one questionnaire from the same SMEs. Thus, (Kareem and Kummitha,2020; Chavez et al.,2017) suggest that competitive firm performance achieved in SMEs not only from top level CEOs or managing directors of the SMEs but also from production and operational managers of the firm. This approach has provided to understand the overall prospect from top level executives to middle and low-level managers functional area of competitive firm performance. The table 1 presents the demo-

graphic characteristics of sample. The results show that half of the enterprises (50%) had age less than 10 years. The majority of the enterprises (41%) had firm size (31-50 employees). Most of the enterprises (44%) belonged to the manufacturing industry.

3.3 Data analysis and results

3.3.1 Descriptive statistics

Table 2 shows the descriptive statistics. The results indicate that the means values for all the variables ranges

Table 3: Reliability and validity

Constructs	Measurement Items	Factor Loading	A	CR	AVE	PValue
Sensing capability	SC1	0.798	0.849	0.851	0.590	0.000
	SC2	0.702				0.000
	SC3	0.848				0.000
	SC4	0.716				0.000
Learning Capabilities	LC1	0.723	0.778	0.790	0.510	0.000
	LC2	0.766				0.000
	LC3	0.742				0.000
	LC4	0.717				0.000
Integration Capabilities	IC1	0.642	0.765	0.781	0.501	0.000
	IC2	0.770				0.000
	IC3	0.730				0.000
	IC4	0.596				0.000
Reconfiguration Capabilities	RC1	0.730	0.846	0.854	0.594	0.000
	RC2	0.770				0.000
	RC3	0.642				0.000
	RC4	0.697				0.000
Process innovation capability	Proc_IC1	0.692	0.810	0.840	0.569	0.000
	Proc_IC2	0.814				0.000
	Proc_IC3	0.705				0.000
	Proc_IC4	0.697				
	Proc_IC5	0.751				0.000
Product innovation capability	Prod_IC1	0.866	0.898	0.902	0.651	0.000
	Prod_IC2	0.851				0.000
	Prod_IC3	0.820				0.000
	Prod_IC4	0.669				
	Prod_IC5	0.811				0.000
Competitive firm performance	CFP1	0.781	0.940	0.938	0.595	0.000
	CFP2	0.809				0.000
	CFP3	0.860				0.000
	CFP4	0.896				0.000
	CFP5	0.821				0.000
	CFP7	0.839				0.000
	CFP8	0.855				0.000
	CFP9	0.880				0.000
	CFP10	0.532				0.000

A= Cronbach's alpha, CR =Composite Reliability and Average, AVE=Variance Extracted

between (4.459-4.694) with a standard deviation (0.402-0.463) which means that respondents positively agreed with questionnaire statements. Also, the results revealed that all constructs are significantly associated with each other.

3.3.2 CFA results: reliability and validity

The reliability and validity of measurement items were tested by performing confirmatory factor analysis (CFA), buy using AMOS 24. Discriminant validity and convergent validity were utilized to estimate the validity of measurement items. The reliability of the scales was assessed by using Cronbach’s alpha coefficient as seen in (Table 3). The results show that Cronbach’s alpha coefficient for all constructs ranges between 0.765 and 0.940 which are higher cut-off value 0.50. This emphasizes that all the measurement items are internally consistent (Hair et al., 2010). The convergent validity was measured in three important indicators, which are factor loadings, Average Variance Ex-tracted (AVE), and Composite Reliability (CR). This study establishes 24 items (see in Table 3). Hair et al., (2006) suggests that the items with factor load-ings

greater than .50 can be maintained. This study reveals that the item loadings all exceeded the cut-off value and statistically significant ($p < 0.05$) (see table 4). In terms of composite reliability (CR) , the results show that CR for all constructs ranges between 0.781-0.938 which are above 0.50, demonstrating that all the constructs have adequate level of composite reliability (CR) as suggested by Hair et al. (2012). Concerning the average variance extracted (AVE) value, the results report that AVE for all the constructs is located be-tween 0.501-0.651 which is higher threshold (.50) which is suggested by Hair et al., (2010). Based on the mentioned above, this study demonstrates a good reliability and validity of measurement items.

Discriminant validity also was used to measure whether the variables that theoretically should not be highly corrected to each other (Fornell & Larcker, 1981) . In this study used (Fornell & Larcker, 1981) they suggested that if the square root of the AVE for a construct is higher than the correla-tion values among all the constructs then discriminant validity is confirmed. Table (4) presents that the square root of the AVE scores of all the variables is higher than the inter-construct correlations which confirms the discriminant validity of the constructs.

Table 4: Discriminant validity

	Sensing capability	Learning Capabilities	Integration Capabilities	Reconfiguration Capabilities	Process innovation capability	Product innovation capability	Competitive firm performance
Sensing Capability	0.768						
Learning Capabilities	0.730**	0.699					
Integration Capabilities	0.734**	0.674**	0.688				
Reconfiguration Capabilities	0.653**	0.687**	0.672**	0.771			
Process innovation capability	0.668**	0.612**	0.677**	0.637**	0.754		
Product	0.421**	0.336**	0.139**	0.262**	0.458**	0.807	
innovation capability	0.226**	0.176**	0.16**	0.154**	0.324**	0.766**	0.771

Notes: Bold values in diagonal represent the squared root estimate of AVE. AVE= Average Variance Extracted

The goodness-of-fit measures were performed to assess the quality of fitness of the measurement model. The results demonstrate a good model fit (CMIN/df= 1.321, GFI=0.901, TLI= 0.910, CFI=0.921 RMSEA=0.051). Therefore, the measurement model shows good construct validity and reliability.

3.3.3 Common method bias Checks

This research is used a cross-sectional data with a single-report questionnaire, therefore common method variance (CMV) may affect the quality of the measurements (Podsakoff and Organ, 1986). Harman's single-factor test was applied to solve this issue by performing exploratory factor analysis (EFA). The results reveal that the total variance for a single factor, is less than 50% indicating that common method bias does not affect the interpretations of the results.

4 Results

Structured equation, modelling (SEM) was performed to examine the hypothesized model. The study tests direct and indirect effects. First, this study investigates the direct effect of dynamic capabilities on innovation capabilities, also the effect of innovation capabilities on competitive firm performance as shown in table 5 and figure 1. The SEM results show that all four constructs of dynamic capabilities: sensing capability ($\beta=0.176$, $p < 0.001$), learning capability ($\beta=0.416$, $p < 0.001$), integration capability ($\beta=0.215$, $p < 0.001$), and reconfiguration capability ($\beta=0.268$, $p < 0.001$) all have a positive and significant impact on product capability, thereby H1a, H1b, H1c, and H1d are supported. It seems the learning capability has the largest impact on product capability. Likewise, the results reveal that sensing capability ($\beta=0.310$, $p < 0.001$), learn-

ing capability ($\beta=0.160$, $p < 0.001$), integration capability ($\beta=0.179$, $p < 0.001$), and reconfiguration capability ($\beta=0.263$, $p < 0.001$) all have a positive and significant impact on process capability, therefore H2a, H2b, H2c, and H2d are supported. The results showed that sensing capability was more likely enhance to process capability in comparison with other dynamic capabilities. Moreover, the SEM results show that the two constructs of innovation capabilities: product capability ($\beta=0.330$, $p < 0.001$), and process capability ($\beta=0.755$, $p < 0.001$) all have a positive and significant impact on competitive firm performance, thus H3a and H3b are supported. In addition, process capability was more associated with competitive firm performance.

Second, this study investigates the indirect effect of dynamic capabilities on competitive firm performance by mediating role of innovation capabilities as shown in table 6. The bootstrapping was applied to estimate the 95% confidence interval of the indirect effect. The results show that the product capability ($\beta=0.755$, $p < 0.05$) positivity and significantly mediates the relationship between learning capability and competitive firm performance. Also, product capability ($\beta=0.150$, $p < 0.01$) positivity and significantly mediates the relationship between reconfiguration capability and competitive firm performance. Thus, H4a and H4d are supported. Which means the product capability explains well the linkage between learning capability, reconfiguration capability and competitive firm performance. However, the results shown that product capability doesn't mediate the relationship between sensing capability and competitive firm performance ($\beta=0.080$, $p > 0.5$) as well as the the relationship between integration capability and competitive firm performance ($\beta=0.012$, $p > 0.5$), thereby H4a and H4c are not supported.

Furthermore, the results reveal that process capability ($\beta=0.341$, $p < 0.05$) positivity and significantly mediates the relationship between sensing capability and competi-

Table 5: SEM results of direct effect

No	Paths	Beta Coefficient	P value	Results
H1a	Sensing capability → Product capability	0.176	0.000	Supported
H1b	learning capability → Product capability	0.416	0.000	Supported
H1c	Integration capability → Product capability	0.215	0.000	Supported
H1d	Reconfiguration capability → Product capability	0.268	0.000	Supported
H2a	Sensing capability → Process capability	0.310	0.000	Supported
H2b	learning capability → Process capability	0.160	0.000	Supported
H3c	Integration capability → Process capability	0.179	0.000	Supported
H4d	Reconfiguration capability → Process capability	0.263	0.000	Supported
H3a	Product capability → Competitive firm performance	0.330	0.000	Supported
H3b	Process capability → Competitive firm performance	0.755	0.000	Supported

tive firm performance, relationship between learning capability and competitive firm performance ($\beta=0.187$, $p < 0.01$), and the relationship between integration capability and competitive firm performance ($\beta=0.223$, $p < 0.01$). Therefore, H5a, H5b, and H5c are supported. But the results show that process capability has no mediation effect on the relationship between reconfiguration capability and competitive firm performance ($\beta=0.079$, $p > 0.05$). Thus, H5d is not supported. In conclusion, process capability plays a key role rather than product capability in the association between dynamic capabilities and competitive firm performance.

5 Discussions and Conclusions

This paper investigates the impact of dynamic capacities on competitive firm performance, assuming that in-

novation capabilities mediate this relationship. This study found that dynamic capacities, such as sensing capability, learning capability, integration capability, and reconfiguration capability have a significant direct effect on innovation capabilities: product capability and process capability. These findings are in line with (Pundziene et al., 2021; Froehlich and Bitencourt, 2019) who found that dynamic capabilities are key elements for the development of innovation capability and drive and enrich the firm's innovation of products and processes.

Moreover, this study demonstrates that both product capability and process capability significantly impact competitive firm performance. Notably, process capability exhibits the strongest effect on competitive firm performance. Continuous development of processes may lead to reduced production costs and manufacturing waste, thereby enhancing competitive firm performance. This finding is consistent with (Ferreira et al., 2018) who argue that

Table 6: SEM results of indirect effect

No	Paths	Beta Coefficient	P value	95%LL	95%UL	Results
H4a	Sensing capability → Product capability → Competitive firm performance.	0.080	0.238	-0.004	0.029	Not supported
H4b	learning capability → Product capability → Competitive firm performance.	0.210	0.031	0.130	0.620	Supported
H4c	Integration capability → Product capability → Competitive firm performance.	0.012	0.247	-0.040	0.046	Not supported
H4d	Reconfiguration capability → Product capability → Competitive firm performance	0.150	0.007	0.180	0.440	Supported
H5a	Sensing capability → Process capability → Competitive firm performance	0.341	0.001	0.196	0.501	Supported
H5b	learning capability → Process capability → Competitive firm performance.	0.187	0.011	0.071	0.301	Supported
H5c	Integration capability → Process capability → Competitive, firm performance	0.223	0.007	0.354	0.90	Supported
H5d	Reconfiguration capability → Process capability → Competitive firm performance	0.079	0.236	-0.038	0.204	Not supported

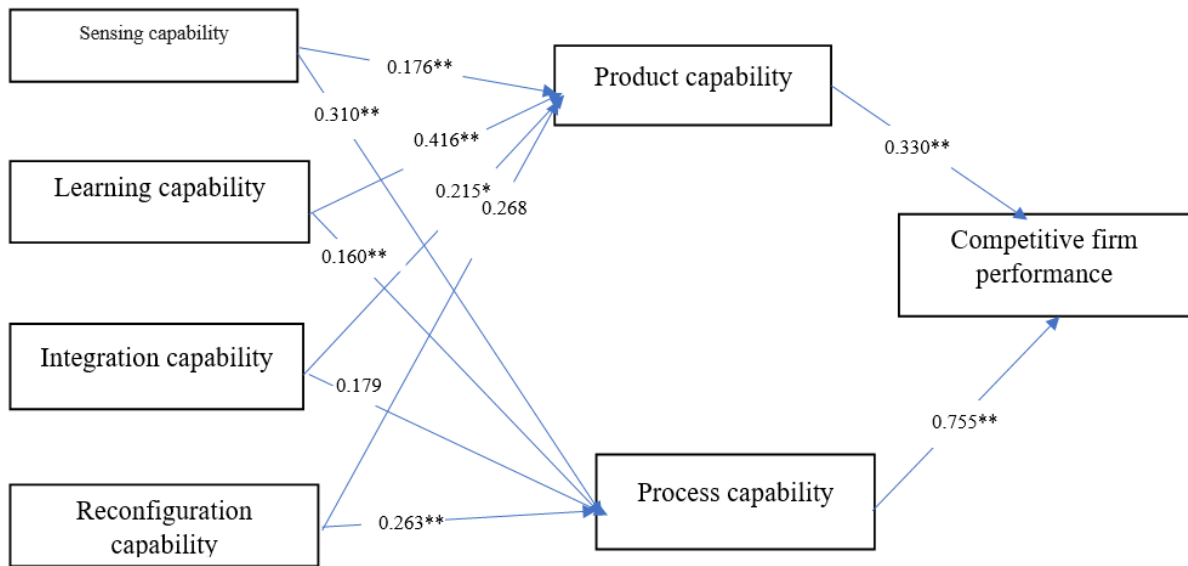


Figure 2: The SEM model analysis

innovation capabilities are a fundamental asset of a firm, as well as a positive, and key driver of competitive firm performance. Whereas this finding is significantly different from some prior studies. For example, Ferreira et al., (2019) found that innovation capabilities didn't have a significant impact on competitive firm performance.

This study confirms that innovation capabilities construct product capability and process capability that partially mediated the association between dynamic capabilities and competitive firm performance. These findings are in agreement with previous studies for instance (Pundziene et al., 2021; Mostafiz et al., 2021) who found that innovation capabilities partially mediated the relationship between dynamic capabilities and competitive firm performance. Furthermore, the results reveal that product capability doesn't mediate the relationship between sensing capability, integrating capability and competitive firm performance. While process capability doesn't mediate the relationship between reconfiguration capability and competitive firm performance. This indicates that process capability has a stronger mediating role in the relationship between dynamic capabilities and competitive firm performance. The results of this study also support the ideology of (Mostafiz et al., 2021; Teece, 2018) who argue that in the manufacturing industry, it is fundamental to improve the process innovation capability (e.g. reduce production costs; create and manage a portfolio of interrelated technologies), followed by product innovation capability (e.g. expand the range of products). Thus, entrepreneurs should reconfigure and locate resources into process innovation capability before enhancing product innovation capability. In conclusion, this study contributes to understanding the

mediating mechanism of innovation capabilities through which dynamic capabilities improve firm competitiveness and performance.

6 Theoretical and managerial contributions

This paper makes several contributions to the literature on dynamic capabilities and innovation capabilities. This study confirms that dynamic capabilities can shape and drive innovation capabilities (e.g. product and process capabilities). Furthermore, the results address a theoretical and practical gap by confirming the indirect impact of dynamic capabilities on competitive, firm performance, mediated through innovation capabilities.

In terms of managerial contributions, the paper offers the following contributions. Our results demonstrate that innovation capabilities can be cultivated through dynamic capabilities, helping companies enhance their competitiveness. In addition, the study reveals that both process and product innovation capabilities lead to improved competitive firm performance. Furthermore, our results show that dynamic capabilities such as sensing capability, learning capability, integration capability, and reconfiguration capability are important for firms' scale-up processes. Thus, managers should strive to link firms' dynamic capabilities to the practical build-up of innovation capabilities, which could enhance sustainable competitive advantage. However, the study confirms that process innovation capability has the strongest mediating impact on the relationship between dynamic capabilities and competitive firm performance.

mance. Thus, we suggest managers should pay more attention to innovation processes.

6.1 Limitations and future research

First, this study did not examine any moderation effects between dynamic capabilities and innovation capabilities. Firm's age and size could be a significant moderator between dynamic capabilities and their innovation capabilities. Second, this study investigated SMEs in the manufacturing industry in a single country and conducted a cross-sectional study. So, the generalizability of the research results is limited. It will be more interesting if future research applies to samples from multiple industries and carry out a comparative study between economies.

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Posredovalna vloga inovacijskih zmogljivosti pri razmerju med dinamičnimi zmogljivostmi in konkurenčno uspešnostjo podjetja

Namen: Namen študije je bolje razumeti odnos med dinamičnimi zmogljivostmi in konkurenčno uspešnostjo podjetja ter kako lahko inovacijske zmožnosti, zlasti (a) zmožnost izdelka in (b) zmožnost procesa, igrajo posredniško vlogo v tem odnosu.

Zasnova/metodologija/pristop: Izbrali smo tehniko preprostega naključnega vzorčenja za izbiro malih in srednjih podjetij (MSP) za zbiranje podatkov na podlagi informacij, pridobljenih od madžarskih združenj MSP. Pridobljenih je bilo 565 izpolnjenih vprašalnikov, odzivnost pa je bila 65,50 %. Za oceno zanesljivosti in veljavnosti je bila z AMOS 24 uporabljena potrditvena faktorska analiza (CFA); Cronbachov koeficient alfa pa je bil dodatno uporabljen za oceno zanesljivosti lestvic. Predlagani model je bil testiran z modeliranjem strukturiranih enačb (SEM).

Rezultati: Rezultati študije kažejo, da imajo dinamične zmogljivosti pomemben neposreden učinek na inovacijske zmogljivosti: zmogljivost izdelka in zmogljivost procesa. Študija tudi dokazuje, da tako zmogljivost izdelka kot zmogljivost procesa pomembno vplivata na konkurenčno uspešnost podjetja.

Zaključek: Študija zaključuje, da je razmerje med dinamičnimi sposobnostmi in konkurenčno uspešnostjo podjetja delno posredovano z inovacijskimi sposobnostmi. Nadalje nakazuje, da bi morali podjetniki pred izboljšanjem zmogljivosti za inovacije izdelkov razmisliti o reorganizaciji in prerazporeditvi virov v zmogljivosti za inovacije procesov. Ta študija prispeva k našemu razumevanju mehanizma posredovanja inovacijskih zmožnosti, prek katerega dinamične zmožnosti povečujejo konkurenčnost podjetja.

Ključne besede: *Inovacijske zmožnosti, Dinamične zmožnosti, Konkurenčna uspešnost podjetja, Tehnološke inovacije*

Appendix 1: List of Items see in

Sensing capability

1. Our firm conducts environmental assessment to identify new job opportunities.
2. Our firm ensures the performance assessment.
3. Our firm encourages the collaboration readiness.
4. Our firm encourages the changing and renewal.

Learning Capabilities

1. Frequent industry knowledge learning program.
2. Frequent internal educational training.
3. Frequent knowledge sharing and establishment of learning groups.
4. Frequent internal cross-department learning program.

Integration Capabilities

1. Focus on customer information collection and potential market exploration.
2. Employ specialized firms to collect industry information for managerial decisions.
3. Focus on integrating industry-related technologies to develop new products.
4. Record and integrate historical methods and experiences in handling firm issues.

Reconfiguration Capabilities

1. Clear human resource reallocation procedure
2. Fast organizational response to market changes
3. Fast organizational response to competitor's actions
4. Efficient and effective communication with cooperative organization

Process innovation capability

1. Our firm continuously develops processes to reduce production costs.
2. Our firm has valuable knowledge for innovating manufacturing and technological processes.
3. Our firm is able to create and manage a portfolio of interrelated technologies.
4. Our firm assigns resources to the production department efficiently
5. Our firm is able to offer environmentally friendly processes

Product innovation capability

1. Our firm is able to replace existing products .
2. Our firm is able to expand the range of products .
3. Our firm considers emerging trends in designing new products.
4. Our firm is able to develop innovative products.
5. Our firm is able to reduce the time to develop a new product.

Competitive firm performance

1. We offer competitive prices
2. We are able to compete based on quality
3. We offer high quality products to our customers
4. We deliver customer orders on time

5. We provide dependable delivery
6. We provide customized products
7. We alter our product offerings to meet client needs
8. We cater to customer needs for “new” features
9. We are first in the market in introducing new products
10. We have time-to-market lower than industry average.

An Examination of Work Conditions and Well-Being of Slovene Train Drivers

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Background and purpose: While the occupation of a train driver can be likened to other transportation professions like truck or bus drivers, it is essential to note that there are distinct hazards exclusive to this role that have a notable impact on the mental and physical well-being of train drivers. The study aims to define personal characteristics, work organisation and work characteristics, professional development and work in general in connection with risk factors among employees who perform the work tasks of train drivers in railway transport.

Methodology: The study on train drivers in Slovenia was conducted with 179 participants, representing 13.3% of the total population of train drivers. The sample was predominantly male and varied in age, most hailing from the Podravska region. The OPSA digital tool was used to analyse risk factors and gauge psychosocial stress across 17 areas, using a questionnaire split into two sections. Data was collected through online and physical surveys, with voluntary and anonymous participation.

Results: The study found that the personal characteristics of train drivers do not significantly impact their perception of workplace workload. While professional development factors negatively influenced workload perception, the impact was not statistically significant. However, general work characteristics strongly impact how train drivers perceive their workload. These findings suggest that interventions should focus on modifying general work characteristics to improve train drivers' work conditions.

Conclusions: These findings have important implications for the railway industry. They suggest that interventions aimed at improving the work conditions of train drivers should focus on modifying general work characteristics rather than targeting personal characteristics or professional development factors. Future research should explore these relationships and develop strategies to mitigate the identified risk factors.

Keywords: *Work conditions, Well-being, Train drivers, Psychosocial risk factors*

1 Introduction

Human error has been identified as the primary cause of traffic accidents in studies (e.g., Edkins & Pollock, 1997; Wilde & Stinson, 1983; Chang & Ju, 2008). This is also true for railway traffic. Train drivers operate in a demanding environment requiring high concentration, skill, and resilience. Their work conditions can significantly im-

act safety, stress levels, and sleep patterns. For instance, the work hours and physical work environment have been identified as significant contributors to workload (Kecklund et al., 1999). Moreover, the profession often involves shift work and long hours, leading to sleep disorders and fatigue (Samerei et al., 2020). In addition to the physical demands, train drivers also face psychological challenges. The responsibility for the safety of passengers and goods can lead to high stress levels (Kecklund et al., 1999). Fur-

thermore, the solitary nature of the job can contribute to feelings of isolation and impact mental health (Samerei et al., 2020). Professional development is another crucial aspect of a train driver's work life. The rapidly evolving technology in the railway industry necessitates continuous learning and adaptation. However, the high-stress environment and demanding work schedules can make it challenging for drivers to pursue further training and development (Olsson, Lidestam & Thorslund, 2021). The physical work environment of train drivers is also unique and can significantly impact their performance. For example, the cab environment is crucial. Ergonomic facilities that reduce strain and stress are essential, especially considering drivers tend to work long hours in the same position. The design of the cab and drivers' attitudes towards it have been assessed in various studies. System design-related factors such as the position of running signals, visibility of different signal types, and platform location about the travelling direction can influence the propagation of driver-related incidents. Train drivers often work full-time; some work more than 40 hours per week. This can lead to fatigue and stress, impacting their performance and health. Railroad workers typically need several months of on-the-job training. This training often includes understanding and adapting to the physical work environment (Rjabovs et al., 2015). Understanding these aspects is crucial for improving the work conditions of train drivers and enhancing their overall well-being. However, there is no consensual agreement around a single definition of well-being (Qureshi et al., 2022). Generally, well-being can be defined as considering life positively and feeling good (Diener, Suh & Oishi, 1997; Veenhoven, 2008). Well-being, a vital construct expounded in positive psychology, is a state of overall mental and physical health, strength, resilience and fitness to function well at work and personally (Qureshi et al., 2022; NHS, 2023). Personal well-being, life satisfaction, and overall health are vital for work (Sokić, Qureshi & Khawaja, 2021).

Risk factors contributing to health issues among train drivers are multifaceted. They include long working hours, shift work, exposure to traumatic incidents, and workplace violence (Carnall et al., 2022). Specific to train drivers, factors such as rest and sleep schedules, workload, automation levels, and use of mobile devices can lead to central nervous fatigue and cognitive distraction. These factors can result in loss of concentration, slow reaction times, and dangerous driving behaviour (Sajid et al., 2008).

Train driving, being a safety-critical job as defined in relevant regional legislation, requires the driver to work calmly, rested, and adequately trained, as outlined in the Rulebook on special health conditions for obtaining and maintaining the validity of a train driver's license. Peters and O'Conner (1988) emphasise specific skills required of train drivers, including remembering and summarising information, anticipating and assessing the influence of

various factors affecting train operation, reacting quickly, controlling events, and maintaining concentration. Train drivers are exposed to specific psychosocial risks. Risks include both those arising from the nature of the job: train drivers' work is primarily sedentary, and electromagnetic waves and vibrations from the locomotive running on tracks negatively impact their health and well-being, as well as personal risks: stress, illnesses, psychological consequences of traumatic events, private life, and more (Wilson et al., 2017). An important component of the psychosocial work environment is influencing and controlling one's work environment. The work of a train driver, i.e., train management and related activities, is strictly regulated and governed by several regulations and is also conditioned by technical conditions and instructions (Doroga & Baban, 2013).

In recent years, there has been an increase in research aimed at understanding the factors that influence the health of train drivers. The initial studies on risk factors can be traced back to the 1970s (Sussman & Ofsevit, 1976). It is worth noting that research focusing on the unique aspects of the train driver profession experienced a slowdown during the 1980s and early 1990s. However, new technical and system discoveries, operational reorganisations, efficiency enhancement efforts, and the need for reliable and safe railway traffic development, particularly post-2000, have spurred various research programs. These programs delve into the factors affecting train drivers' work and deepen the understanding of human factors, their interrelationships, and their specificities in railway transport. Behavioural observation research involving train drivers began in the early 1970s. Sussman and Ofsevit (1976) observed that train drivers process a substantial amount of diverse information while operating a train, a finding that was corroborated by later studies (Naweed et al., 2018; Hamilton & Clarke, 2005). This information processing was found to be significantly more extensive than previously thought. Other studies have also explored specific risk factors (Wang et al., 2021; Wickens, 2002).

Recent research has made several significant findings regarding the health of train drivers. A study by Olsson, Lidestam, and Thorslund (2021) found that many exceptional cases are generally insufficiently practised during the internship of train drivers and, therefore, should be practised in simulators. The study also found that experienced and novice drivers prioritise safety over efficiency. Research by Naweed (2014) showed positive reductions in some coronary heart disease indicators, such as systolic blood pressure, total cholesterol, and smoking levels, in train drivers over several years. However, the proportions of drivers who are obese or have diabetes or pre-diabetes have all increased significantly over time. Naweed et al. (2017, pp. 264-273) state that "sleep patterns, diet, occupational stress, workplace ergonomics, fitness motivation, and family or social life conflicts influence the health of

train drivers.” This study, conducted in Australia, concludes, “In the field of occupational health, the organisation of work, the ergonomics of workplaces must be adequately addressed, and employees must be guided towards healthy lifestyle behaviour”. The study highlights issues in organisational culture, such as communication, inadequate organisational support, and existing social norms. Barriers to work planning included fatigue, stimulant dependence, and unsettled family life. Regulatory frameworks of a healthy lifestyle included the study participants’ eating and exercise habits or patterns. Other studies (Lavrič, 2017) identify the significant impact of traumatic events on train drivers’ psychological health and the potential for developing cancer due to pathogens (Verma et al., 2003) among the more common risks associated with this profession. According to Doroga and Baban (2013), the driver’s job also includes gastrointestinal problems, stress-related cardiological problems, musculoskeletal pain due to forced posture, hearing damage, and degenerative diseases of the spine caused by train vibrations. Zoer, Sluiter, and Frings-Dresen (2014) note that the job demands for train drivers include high emotional and mental stress, limited autonomy, and prudence.

Given the necessity for complete concentration in train driving and related tasks, it is understandable that mental and physical health issues can pose significant risks in such an environment. The increasing capacity of traction means and the growing complexity of railway systems add to the tasks performed by train drivers. Cognitive and perceptual abilities are dominant, as noted by Tichon (2007). Even a minor error by a train driver, potentially caused by poor health or lack of concentration, can have severe consequences, endangering lives and health and causing substantial material damage. For this reason, in this study, we define personal characteristics, work organisation and work characteristics, professional development and work in general in connection with risk factors among employees who perform the work tasks of train drivers in railway transport. We also pinpoint crucial risk factors for developing health issues among train drivers.

Methodology

Sample

Data for the study was gathered from respondents who were invited to participate with assistance from the Human Resources Department of Slovene Railways, the Representative Trade Union of Train Drivers, and the Service for Sustainable Mobility and Transport Policy at the Ministry of Infrastructure. These organisations provided the email addresses, and we sent a link to the online survey.

The total number of train drivers in the Republic of Slovenia is 1,341. We received 179 completed survey questionnaires, representing 13.3% of the total population

of train drivers.

All 179 participants who completed the questionnaire are part of the occupational group of train drivers. The sample is predominantly male, with 99.4% male and 0.6% female participants.

The age distribution of the survey participants is as follows: 39.7% are between 41 and 50 years old, 25.7% are between 51 and 65 years old, 24.0% are between 31 and 40 years old, and 10.1% are between 18 and 30 years old. There were no respondents older than 65 years.

In terms of regional residence, the most significant number of participants hail from the Podravska region (20.7%), followed by the Primorsko-notranjska region (13.4%), and then the Savinjska (10.6%), Gorenjska (10.6%), and Obalno-kraška regions (10.1%). The Pomurska (0.6%), Goriška (1.7%), and Zasavska (5.0%) regions have the most miniature representation in the sample.

Two-thirds of the participants (67.4%) are employed in the region where they reside, while 32.6% are employed outside their region of residence.

Instrument

Risk factors are analysed using the OPSA digital tool for managing psychosocial risks and absenteeism, with the approval of the Research Centre of the Slovenian Academy of Sciences and Arts (ZRC SAZU). This self-assessment questionnaire is a validated instrument that gauges the psychosocial stress of employees across 17 distinct areas. The analysis allows for developing specific, targeted strategies for managing psychosocial risks based on the measured situation (Šprah & Dolenc, 2014).

The questionnaire was split into two sections. The first, or fundamental section, contained questions about the respondents’ socio-demographic characteristics and health status. The second section comprised a self-assessment questionnaire with 130 statements about the respondent’s work and organisational characteristics.

Respondents evaluated the degree to which individual statements and descriptions applied to them using a five-point scale, where 1 signifies ‘I do not agree at all/does not apply to me’ and 5 signifies ‘I strongly agree/applies to me’.

Procedure

We employed two data collection methods. We gathered data via an online questionnaire and physical surveys handed to respondents, which were later manually converted to electronic format.

We electronically collected the data using the 1.ka application. We designed an online questionnaire identical in content to the physical questionnaire filled out by the respondents. We emailed the link to the online questionnaire to 73.2% of the respondents, while the remainder received

paper-and-pen versions. Participation in the research was voluntary and anonymous for all participants.

Results

In the beginning, we checked the reliability of the measuring instrument using the Cronbach alpha coefficient, which checks the internal consistency of the measuring instrument. Reliability means that we would get similar results if we measured again. We can discuss sufficient reliability when the coefficient value exceeds $\alpha = 0.7$ (Field, 2009).

Based on the results, we find that almost all sets of indicators, based on which the merging into standard variables took place, are appropriately reliable. The Cronbach coefficient exceeds the recommended value $\alpha = 0.7$.

In constructing the risk factor model emphasising managing the psychosocial risks of train drivers, we used two multivariate statistical methods - the structural equation model and regression analysis (Appendix 1).

We initially constructed an SEM model using AMOS 26. This model included all variable relationships, such as correlations, influences, and errors. The model's general assumptions included sufficient sample size, numerical and normally distributed variables, complete data or appropriate handling of missing data, and a theoretical model that served as the foundation for the baseline model. We substituted missing values in the model with average values, ensuring that each variable had at most 5 per cent missing values. The imputation process was conducted using IBM SPSS 27. We examined the recommended modifications for the model to fit the data optimally; following these recommendations (termed "modification indices" - free instead of constrained), we fine-tuned the model to align the parameters as closely as possible with the suggested values. The factor weight with the strongest association with the latent variable was fixed and assigned a value of 1.

Table 1: Reliability of the measuring instrument

	Theoretical constructs	Cronbach Alpha
OPSA profile	Employee's family circumstances (5 statements)	0,783
	Interpersonal relationships at work (7 statements)	0,802
	Strains as a result of socio-demographic circumstances (8 statements)	0,824
	Personality characteristics (10 statements)	0,824
	Career development (10 statements)	0.837
	Organisational culture (11 statements)	0.914
	Organisational structure (7 statements)	0.733
	Attitude to work (9 statements)	0.744
	Content of work (6 statements)	0.660
	Supervision (4 statements)	0.542
	Care for oneself (8 statements)	0.776
	Psychophysical health status (5 statements)	0.733
	Separation of private life and work (9 statements)	0.716
	Workload, speed of work (9 statements)	0.712
	Working environment and work equipment, physical strains (11 statements)	0.745
	Role and responsibility in the organisation (8 statements)	0.589
Work schedule (6 statements)	0.721	

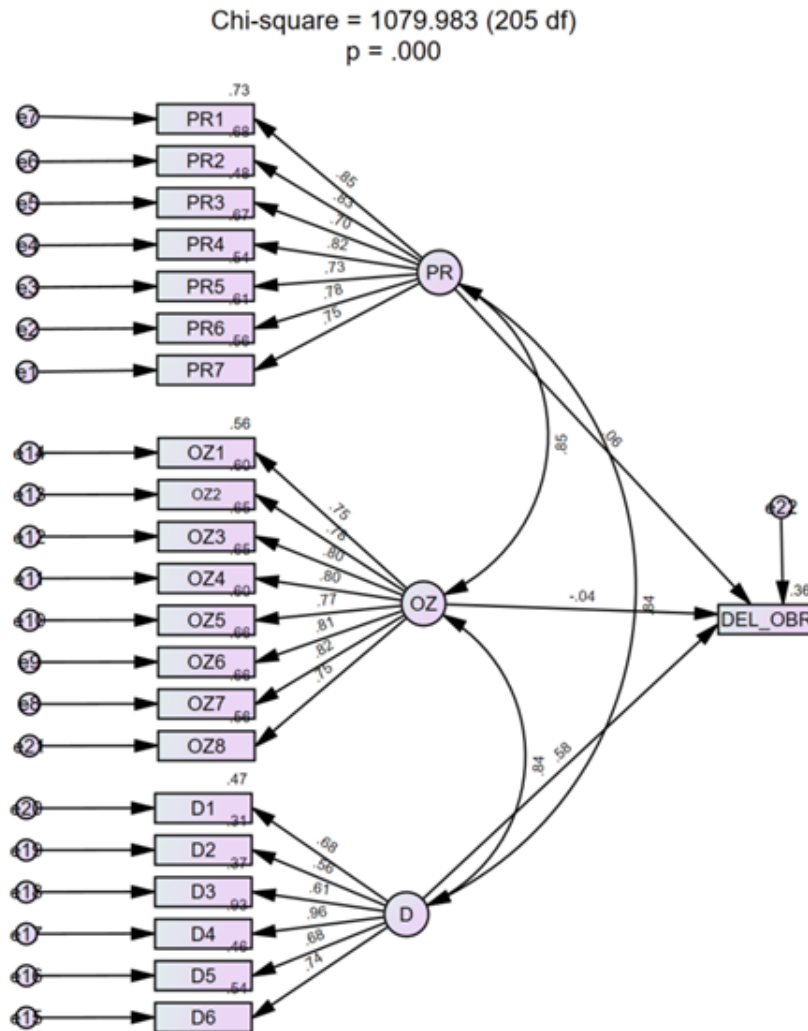


Figure 1: Standardised structural model without considering modifications

We formulated and tested the following hypotheses:

H1: The personal characteristics of train drivers (OZ) exert a statistically significant positive impact on the perception of workplace workload (DEL_OBR). This hypothesis was evaluated using a linear structural model. The independent variable in the model is a latent variable gauged through statements associated with the personal attributes of train drivers. The dependent variable is the directly measured variable of workload/workflow speed. The structural model results indicate no statistically significant influence of the independent variable on the dependent. This leads us to reject the hypothesis that train drivers’ personal characteristics positively affect workplace workload perception (beta = -0.05, p = 0.759).

H2: Factors related to professional development (PR) have a statistically significant positive impact on the perception of workplace workload (DEL_OBR). This hypothesis was also evaluated using a linear structural model. The

independent variable is a latent variable measured through statements associated with the professional development factors of train drivers. The dependent variable is the directly measured variable of workload/workflow speed. The hypothesis posited that professional development factors have a statistically significant positive effect on workplace workload perception, which was found to be marginally statistically significant. The structural model demonstrated a weak positive influence of this independent variable on the dependent (beta = 0.282, p = 0.077). However, we reject the hypothesis as the risk exceeds 5%.

H3: General work characteristics (D) have a statistically significant positive impact on workplace workload perception (DEL_OBR). This hypothesis was evaluated using a linear structural model. The independent variable is a latent variable measured through statements related to the general work characteristics of train drivers. The dependent variable is the directly measured variable of

workload/workflow speed. We confirmed the hypothesis that general work characteristics have a statistically significant positive impact on workplace workload perception. Statistical analysis revealed a strong positive influence of this independent variable on the dependent (beta = 0.865, $p < 0.05$).

Discussion

This study has significantly contributed to understanding the workload of train drivers, focusing on the influence of personal characteristics, career development, and work in general. The findings suggest that the factor of work, which includes self-assessment of the work environment and physical burdens, has the most statistically significant

influence on the perception of workload. Compared to recent studies by Balfe et al. (2017), who presented a method to extract train driver task loads from downloads of on-train-data records, our approach aligns with their study’s focus on the work environment and physical burdens as significant factors influencing workload. However, our study extends this by integrating personality characteristics and career development constructs, providing a more comprehensive understanding of the factors influencing train driver workload. Another study conducted an in-depth analysis of job satisfaction and perceived workload among subway train conductors. While this study focused on a different subset of railway workers, it underscores the importance of understanding workload and its impact on job satisfaction, a relevant aspect to consider in future research (Gottwald & Lejsková, 2023).

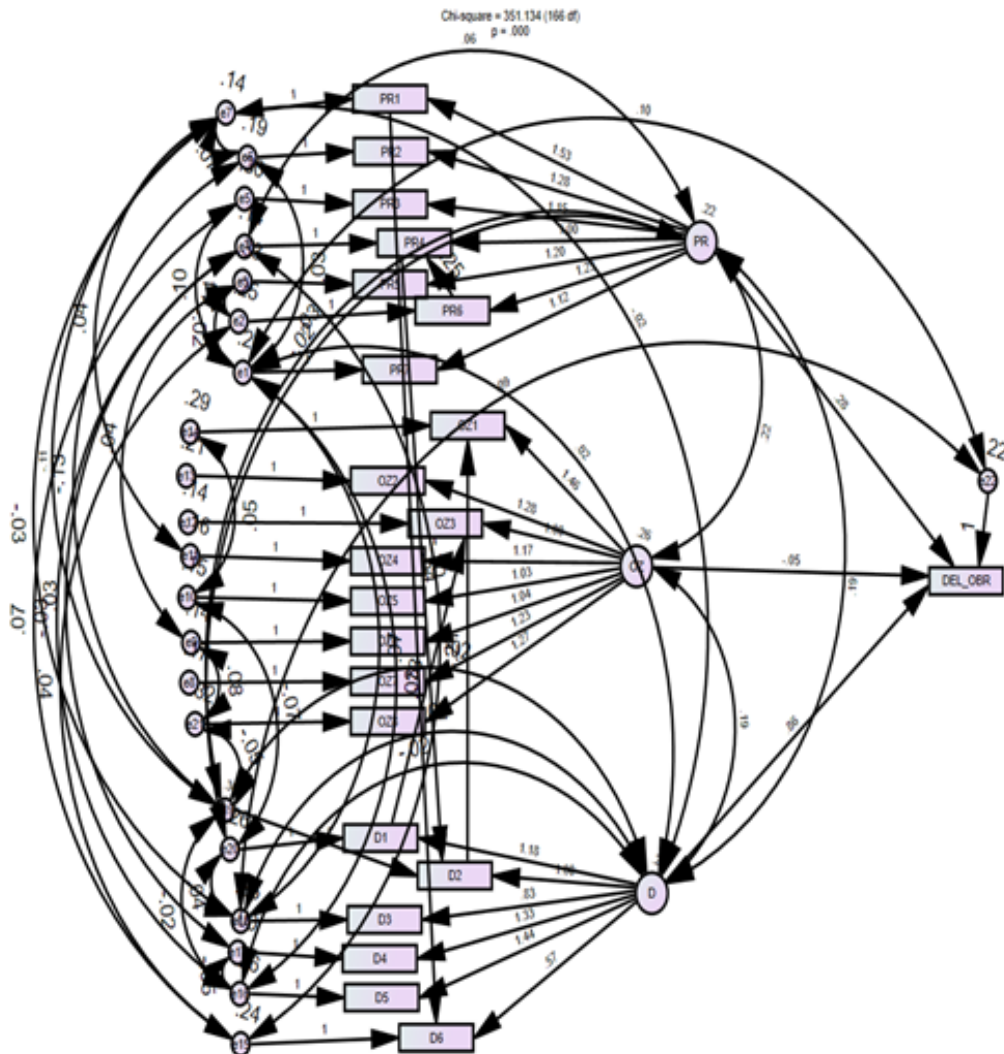


Figure 2: A standardised structural model with modifications taken into account

Human factors are essential in the safe and orderly conduct of railway traffic. Employees must be professionally trained, especially those whose jobs directly affect safe, orderly, and economical railway traffic. The main factors of railway traffic safety and quality of railway services are technical means with their functional characteristics and workers who directly participate in the operation of railway traffic and railway services (Balfe et al., 2017). Changing technology in railway traffic significantly affects the technology change, which is changing with new knowledge and staff. Safe railway traffic and quality of railway services require new techniques, technology, and knowledge, for which modern forms of education are needed. The conceptual model of risk factor integration in train drivers and the “evaluated model” represents a new version of the model of integration of constructs “personality characteristics”, “career development”, and “work in general”, which influence the perception of “workload”. In studying the choice of model for a specific organisation, we found that the degree of knowledge of the organisation as a business system also strongly influences the prevalence of the model, depending on its activity, which certainly applies to the system of organisation, such as Slovenian Railways. This research underscores the importance of focusing on general work characteristics to improve train drivers’ work conditions and manage individual risk factors effectively.

Conclusions

The study provides valuable insights into the workload of train drivers, highlighting the importance of general work characteristics over personal characteristics and professional development factors. However, it is important to acknowledge the limitations of this research. Firstly, the study was conducted in Slovenia with a sample representing 13.3% of the total population of train drivers. While this provides a good starting point, the findings may not be generalisable to train drivers in other countries or regions due to cultural, infrastructural, and regulatory differences. Secondly, the study utilised the OPSA digital tool to analyse risk factors and gauge psychosocial stress. While this tool is effective, the reliance on self-reported data may introduce bias. Future studies could consider incorporating objective measures or observational data to complement self-reported data. Looking ahead, future research should continue to explore the relationships identified in this study. Specifically, more in-depth studies could be conducted to understand how different aspects of general work characteristics impact the workload of train drivers. Research could also investigate effective strategies for modifying these work characteristics to improve conditions for train drivers. Furthermore, longitudinal studies could provide insights into the long-term effects of these work characteristics on train drivers’ mental and physical well-being. This could guide the development of preventa-

tive measures and early intervention strategies. In conclusion, this study underscores the importance of focusing on general work characteristics to improve train drivers’ work conditions and manage individual risk factors effectively. It serves as a stepping stone for future research in this field, with the potential to significantly enhance the safety and well-being of train drivers.

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Pregled delovnih pogojev in dobrega počutja slovenskih strojevodij

Ozadje in namen: Poklic strojevodje se lahko primerja z drugimi poklici v prevozništvu, kot so vozniki tovornjakov ali avtobusov, vendar je pomembno opozoriti, da obstajajo posebna tveganja, ki so značilna za poklic strojevodje in imajo vpliv na njihovo duševno in fizično dobro počutje. Namen študije je opredeliti osebne značilnosti, organizacijo dela in značilnosti dela, profesionalni razvoj in delo na splošno, v povezavi z dejavniki tveganja med strojevodji.

Metodologija: Študija o strojevodjih v Sloveniji je bila izvedena na 179 udeležencih, kar predstavlja 13,3% celotne populacije strojevodij. V vzorcu so bili večinoma moški različnih starosti, večina pa izhaja iz Podravske regije. Za namen raziskave je bil uporabljen OPSA vprašalnik za analizo dejavnikov tveganja in merjenje psihosocialnega stresa na 17 področjih. Podatki so bili zbrani prek spletnega in fizično razdeljenega vprašalnika, udeležba pa je bila prostovoljna in anonimna.

Rezultati: S pomočjo raziskave smo ugotovili, da osebne značilnosti strojevodij ne vplivajo bistveno na njihovo zaznavanje obremenitve na delovnem mestu. Medtem ko so dejavniki profesionalnega razvoja pokazali šibek pozitiven vpliv na zaznavanje obremenitve, vpliv ni bil statistično pomemben. Splošne značilnosti imajo močan pozitiven vpliv na to, kako strojevodje zaznavajo svojo obremenitev. Rezultati nakazujejo, da bi morale intervencije osredotočiti na spreminjanje splošnih značilnosti dela za izboljšanje delovnih pogojev strojevodij.

Zaključki: Rezultati imajo pomembne izsledke za železniško industrijo. Nakazujejo, da bi morale intervencije, namenjene izboljšanju delovnih pogojev strojevodij, osredotočiti na spreminjanje splošnih značilnosti dela, namesto da bi ciljale na osebne značilnosti ali dejavnike profesionalnega razvoja. Prihodnje raziskave bi morale nadalje raziskovati te odnose in razvijati strategije za zmanjšanje identificiranih dejavnikov tveganja.

Ključne besede: *Delovni pogoji, Dobro počutje, Strojvodje, Psihosocialni dejavniki tveganja*

Appendix 1

SEM MODEL

Computation of degrees of freedom (Default model)

Number of distinct sample moments: 253

Number of distinct parameters to be estimated: 87

Degrees of freedom (253–87): 166

Result (Default model)

Minimum was achieved

Chi-square = 351.134

Degrees of freedom = 166

Probability level = 0,000

Estimates (Group number 1 – Default model)

Scalar Estimates (Group number 1 – Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 – Default model)

			Estimate	S.E.	C.R.	P	Label
PR6	<—	PR	1.226	.099	12.361	***	W2
PR4	<—	PR	1.000				
PR4	<—	PR6	.250	.054	4.597	***	
PR1	<—	PR	1.533	.107	14.316	***	W6
D2	<—	D	1.000				
D1	<—	D	1.176	.215	5.470	***	W17
D2	<—	PR4	-.098	.091	-1.086	.278	
PR7	<—	PR	1.122	.096	11.722	***	W1
PR5	<—	PR	1.197	.109	10.957	***	W3
PR3	<—	PR	1.153	.109	10.611	***	W4
PR2	<—	PR	1.276	.101	12.671	***	W5
OZ7	<—	OZ	1.229	.112	10.950	***	W7
OZ6	<—	OZ	1.037	.098	10.613	***	W8
OZ5	<—	OZ	1.025	.097	10.575	***	W9
OZ4	<—	OZ	1.169	.107	10.917	***	W10
OZ3	<—	OZ	1.000				
OZ2	<—	OZ	1.280	.120	10.657	***	W11
OZ1	<—	OZ	1.465	.144	10.177	***	W12
D6	<—	D	.575	.154	3.735	***	W13
D5	<—	D	1.439	.268	5.367	***	W14
D4	<—	D	1.331	.224	5.937	***	W15
D3	<—	D	.829	.173	4.795	***	W16
OZ8	<—	OZ	1.274	.129	9.868	***	W18
DEL_OBR	<—	PR	.282	.159	1.771	.077	W19
DEL_OBR	<—	OZ	-.050	.162	-.306	.759	W20
DEL_OBR	<—	D	.865	.227	3.818	***	W21
OZ1	<—	D2	-.214	.061	-3.486	***	
OZ3	<—	D1	.126	.053	2.354	.019	
D6	<—	PR1	.636	.061	10.345	***	

Standardised Regression Weights: (Group number 1 – Default model)

			Estimate
PR6	<—	PR	.752
PR4	<—	PR	.566
PR4	<—	PR6	.230
PR1	<—	PR	.886
D2	<—	D	.601
D1	<—	D	.719
D2	<—	PR4	-.110
PR7	<—	PR	.762
PR5	<—	PR	.698
PR3	<—	PR	.705
PR2	<—	PR	.810
OZ7	<—	OZ	.838
OZ6	<—	OZ	.812
OZ5	<—	OZ	.808
OZ4	<—	OZ	.834
OZ3	<—	OZ	.744
OZ2	<—	OZ	.816
OZ1	<—	OZ	.853
D6	<—	D	.294
D5	<—	D	.814
D4	<—	D	1.001
D3	<—	D	.568
OZ8	<—	OZ	.757
DEL_OBR	<—	PR	.196
DEL_OBR	<—	OZ	-.038
DEL_OBR	<—	D	.571
OZ1	<—	D2	-.180
OZ3	<—	D1	.134
D6	<—	PR1	.592

Covariances: (Group number 1 – Default model)

			Estimate	S.E.	C.R.	P	Label
OZ	<—>	D	.192	.041	4.746	***	C1
PR	<—>	OZ	.217	.025	8.806	***	C2
PR	<—>	D	.186	.035	5.250	***	C3
e4	<—>	PR	.061	.010	6.308	***	
e7	<—>	D	-.025	.007	-3.302	***	
e20	<—>	PR	-.024	.009	-2.797	.005	
e19	<—>	D	.017	.012	1.365	.172	
e19	<—>	PR	.028	.017	1.703	.088	
e7	<—>	e19	-.109	.022	-4.877	***	
e10	<—>	e20	-.074	.015	-4.987	***	
e1	<—>	e5	.098	.016	6.121	***	
e18	<—>	e7	-.035	.011	-3.111	.002	
e11	<—>	e7	.040	.011	3.541	***	
e9	<—>	e21	.077	.018	4.147	***	
e6	<—>	e7	.065	.015	4.491	***	
e3	<—>	e2	.139	.024	5.691	***	
e1	<—>	D	.022	.008	2.705	.007	

Continues

			Estimate	S.E.	C.R.	P	Label
e1	<-->	e22	.102	.014	7.059	***	
e1	<-->	e18	.068	.015	4.482	***	
e18	<-->	D	.022	.010	2.125	.034	
e18	<-->	e22	.089	.018	4.940	***	
e16	<-->	D	-.018	.018	-1.009	.313	
e16	<-->	e17	-.050	.016	-3.124	.002	
e10	<-->	e14	.047	.017	2.779	.005	
e6	<-->	e19	-.126	.023	-5.408	***	
e5	<-->	e15	.067	.017	4.041	***	
e17	<-->	e4	.032	.007	4.424	***	
e16	<-->	e19	-.020	.027	-.739	.460	
e16	<-->	e4	-.035	.016	-2.211	.027	
e1	<-->	e16	.026	.016	1.649	.099	
e1	<-->	e3	-.023	.011	-2.072	.038	
e3	<-->	e9	.045	.014	3.272	.001	
e21	<-->	e19	-.046	.021	-2.136	.033	
e18	<-->	e20	.040	.016	2.468	.014	
e15	<-->	e2	.040	.015	2.632	.008	
e1	<-->	e6	.032	.009	3.527	***	
e15	<-->	e4	.095	.015	6.555	***	

Correlations: (Group number 1 – Default model)

			Estimate
OZ	<-->	D	.847
PR	<-->	OZ	.908
PR	<-->	D	.892
e4	<-->	PR	.356
e7	<-->	D	-.147
e20	<-->	PR	-.103
e19	<-->	D	.063
e19	<-->	PR	.100
e7	<-->	e19	-.481
e10	<-->	e20	-.384
e1	<-->	e5	.401
e18	<-->	e7	-.186
e11	<-->	e7	.271
e9	<-->	e21	.358
e6	<-->	e7	.401
e3	<-->	e2	.478
e1	<-->	D	.110
e1	<-->	e22	.486
e1	<-->	e18	.304
e18	<-->	D	.097
e18	<-->	e22	.380
e16	<-->	D	-.081
e10	<-->	e14	.231
e6	<-->	e19	-.482

Continues

			Estimate
e5	<-->	e15	.252
e16	<-->	e19	-.065
e16	<-->	e4	-.185
e1	<-->	e16	.112
e1	<-->	e3	-.090
e3	<-->	e9	.205
e21	<-->	e19	-.134
e18	<-->	e20	.156
e15	<-->	e2	.162
e1	<-->	e6	.168
e15	<-->	e4	.532

Variances: (Group number 1 – Default model)

	Estimate	S.E.	C.R.	P	Label
PR	.220	.022	10.160	***	V1
OZ	.260	.047	5.506	***	V2
D	.198	.069	2.867	.004	V3
e2	.254	.028	9.021	***	
e4	.135	.018	7.572	***	
e7	.142	.019	7.551	***	
e19	.364	.039	9.460	***	
e20	.257	.027	9.454	***	
e22	.220	.022	10.160	***	V1
e1	.200	.020	10.043	***	
e3	.332	.035	9.584	***	
e5	.296	.032	9.391	***	
e6	.188	.021	9.159	***	
e8	.166	.020	8.212	***	
e9	.145	.017	8.499	***	
e10	.146	.017	8.492	***	
e11	.156	.019	8.238	***	
e12	.145	.017	8.480	***	
e13	.214	.025	8.408	***	
e14	.287	.034	8.333	***	
e15	.237	.025	9.652	***	
e16	.262	.044	5.907	***	
e17	-.001	.009	-.075	.941	
e18	.251	.026	9.477	***	
e21	.315	.036	8.737	***	

Squared Multiple Correlations: (Group number 1 – Default model)

	Estimate
PR6	.565
PR4	.803
D1	.516
D2	.335
PR1	.785
DEL_OBR	.516
OZ8	.573
D3	.407
D4	1.002
D5	.578
D6	.688
OZ1	.626
OZ2	.666
OZ3	.692
OZ4	.695
OZ5	.652
OZ6	.659
OZ7	.703
PR2	.656
PR3	.497
PR5	.487
PR7	.581

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	87	351.134	166	.000	2.115
Saturated model	253	.000	0		
Independence model	22	4380.793	231	.000	18.964

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.065	.849	.769	.557
Saturated model	.000	1.000		
Independence model	.360	.115	.031	.105

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.920	.888	.956	.938	.955
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.719	.661	.687
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	185.134	135.101	242.924
Saturated model	.000	.000	.000
Independence model	4149.793	3938.498	4368.363

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1.973	1.040	.759	1.365
Saturated model	.000	.000	.000	.000
Independence model	24.611	23.313	22.126	24.541

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.079	.068	.091	.000
Independence model	.318	.309	.326	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	525.134	550.953	802.437	889.437
Saturated model	506.000	581.084	1312.409	1565.409
Independence model	4424.793	4431.322	4494.915	4516.915

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	2.950	2.669	3.275	3.095
Saturated model	2.843	2.843	2.843	3.265
Independence model	24.858	23.671	26.086	24.895

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	100	108
Independence model	11	12

Having Each Other's Back: The Mediating Role of Supportive Behaviours in the Relationship Between Team Autonomy and Team Effectiveness

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Background and Purpose: Incorporating autonomy in teams has been an increasingly popular practice, but the mechanisms that make autonomous teams effective still need to be completely understood. Adopting a multidimensional approach to team effectiveness, the aim of this study was to analyse the mediating role of team members' supportive behaviours in the relationship between team autonomy and team effectiveness (team performance, team viability, quality of group experience and team process improvement).

Methods: This research adopts a group-level analysis with a sample of 90 teams of 40 organisations from different sectors. Regression analysis was used to analyse the data, namely the product of the coefficients method.

Results: A positive relationship between team autonomy and supportive behaviours, which, in turn, is positively related to the four criteria of team effectiveness, was found, suggesting that supportive behaviours are a team process that explains the relationship between team autonomy and team effectiveness.

Conclusion: This research enriches our knowledge of the antecedents of team effectiveness and explains the mechanisms through which team autonomy relates to team effectiveness, encouraging organisations to incorporate autonomy into teams' design to enhance supportive behaviours and team effectiveness.

Keywords: *Work teams, Team autonomy, Team effectiveness, Supportive behaviours, Quality of group experience, Team performance*

1 Introduction

Teams have become crucial for almost everything we do in modern life, particularly in organisations (Kozlowski & Ilgen, 2006). Cohen and Bailey (1997) define

work teams as groups of at least three members who are perceived by themselves and others as a team and who interact regularly and interdependently to achieve a common goal. As a system of organising and managing the work, using teams became one of the answers to the complex and uncertain environment we live in nowadays by fos-

tering innovation in organisations (Rico et al., 2011) and maximising the value of their human capital. Teams can provide diversity in knowledge, attitudes, abilities, skills and experience, and their integration makes it possible to offer rapid, flexible, and innovative responses to the problems and challenges organisations face nowadays. Teams can be seen as a key element for the success of organisations; however, this success depends on the effectiveness of teams (Rico et al., 2011).

Team effectiveness is the core focus of much of the research on teams. However, there is still much to uncover regarding modern-day teams' arrangement and effectiveness. Team autonomy, conceived as the control that the team has over task-related decisions (Haas, 2010), was identified as one of the primary characteristics that influence team effectiveness (Cohen & Bailey, 1997; van Zijl et al., 2019). Incorporating autonomy in team design has become an organisation's new guiding star, promising increased creativity, innovation, and productivity (Hoegl & Parboteeah, 2006). However, what exactly are the mechanisms that make autonomous teams effective? We intend to shed some light on this issue.

Our study is grounded on the I-P-O model (McGrath, 1984), which suggests that different team interaction processes influence team results, such as team efficiency and team performance (Wang, 2018). In this model, different inputs (individual, team and organisational factors) directly affect team interaction processes, affecting the team outputs. Considering the I-P-O framework in this study, we intend to test a mediation model where team autonomy will be considered an input of team functioning, supportive behaviours (a team process) will be the mediator and team effectiveness will be the output variable.

Several authors agree that team autonomy can be seen as an input of team functioning (Cohen & Bailey, 1997; van Zijl et al., 2019). Autonomy in teams focuses the team member's attention on the team as a unit, increasing the perceived group identity and the team members' commitment to the team and their goals. Team autonomy motivates helping behaviours among team members in order to accomplish the task and overcome difficulties (Langfred, 2000). Therefore, supportive behaviours between team members are expected to increase in autonomous teams. Supportive behaviours, a team process defined as the extent to which team members voluntarily provide assistance to each other when needed during the task accomplishment (Aubé & Rousseau, 2005), were found to mediate the relationship between several variables and team effectiveness, like leadership (Pessoa et al., 2018) or team goal commitment (Aubé & Rousseau, 2005).

Moreover, Campion et al. (1993) found that cooperation and social support are related to the functioning of effective work groups. Therefore, helping behaviours and positive social interactions, called supportive behaviours in this study, may enhance team effectiveness. Relying

on the premise that effectiveness depends heavily on team members' interpersonal competence and their ability to maintain healthy working relationships (Medsker & Campion, 1998 cit. in Leach, 2005) and considering that supportive behaviours can contribute to increasing team effectiveness, we can assume that this variable may act as a mediator in the relationship between team autonomy and team effectiveness.

This research brings several contributions to the literature. First, focusing on the relationship between team autonomy and team effectiveness, considering the role of supportive behaviours contributes to explaining how team design characteristics may affect team effectiveness. Furthermore, as far as we know, no studies investigate the relationship between team autonomy and team effectiveness with supportive behaviours as mediators. Second, when it comes to supportive behaviours, the literature mainly focuses on the supportive actions of the team leader (Pessoa et al., 2018), and there needs to be more studies that rely on team members' supportive behaviours. The present study also adds knowledge to help fill this gap. Third, our research studies how these characteristics relate to team effectiveness criteria in a field setting with organisational work groups. Focusing on real groups as productive units in organisations is also an added value of this study. Finally, this research contributes to the research line, which adopts a multidimensional team effectiveness approach, including four different team effectiveness criteria.

At the intervention level, our research contributes to helping managers and team leaders understand better how they can increase the effectiveness of their teams based on a team design characterised by team autonomy.

2 Literature Review

2.1 The mediating role of team supportive behaviours in the relationship between team autonomy and team effectiveness

With the increasing need for more flexible, innovative, and agile organisational structures, companies have found new ways of distributing authority between those who do the work and those who are in managerial positions, raising the popularity of concepts such as autonomous and empowered teams (Moe et al., 2021). Team autonomy can be defined as the extent to which a team has considerable discretion and freedom in deciding how to carry out tasks (Langfred, 2005). Autonomy in teams gives the employees the responsibility to make decisions related to task assignments, methods for carrying out their work and scheduling activities (Cohen & Ledford, 1994).

Autonomy has shown many positive outcomes for groups and organisations, influencing team effectiveness in

different dimensions. Cohen and Ledford (1994) and Langfred (2005) showed that by allowing employee self-regulation or self-control over changing conditions facing the group, team autonomy contributes to increasing team performance, which can be defined overall as the extent to which a team accomplishes its goal or mission (Devine & Philips, 2001). Cohen and Ledford (1994) also showed the influence of team autonomy on employees' quality of work life. Hackman and Oldham (1976) stressed the importance of team autonomy as one of the characteristics of job design responsible for motivation and satisfaction at work. Therefore, beyond team performance, team autonomy is related to the quality of group experience, which is the extent to which the relationships between team members are positive and promote their professional and personal development (Aubé et al., 2011). As it allows flexible information processing, team autonomy also enhances the sense of responsibility and self-determination, improving team creativity and the team's ability to manage the work and adapt to change (Chen et al., 2015). In autonomous teams, a decrease in shirking is also to be expected because employees will tend to have greater commitment and feelings of belonging to the group, which will improve the ability of the team to adapt and function effectively over time (Pearce & Ravlin, 1987). Therefore, we can state that team autonomy has an impact on team process improvement, the team's ability to enhance task outputs by innovation and by the introduction of new or refined practices (Rousseau & Aubé, 2010), and on team viability, which can be defined as the team's ability to adapt to changes and deal with the challenges of a dynamic environment (Aubé & Rousseau, 2005). To sum up, previous research points to a positive relationship between team autonomy and different criteria of team effectiveness, namely team performance, team viability, quality of group experience and team process improvement.

Supportive behaviours in teams can be defined as the extent to which team members voluntarily provide assistance to each other when needed during the task accomplishment, considering that these behaviours reflect the support that team members provide to each other (Aubé & Rousseau, 2005). Over the years, different scholars have found evidence of the positive relationship between team autonomy and supportive behaviours. Langfred (2000) pointed out that autonomy at the team level focuses the team member's attention on the team as a unit, increasing group identity and members' commitment to the team and motivating helping behaviours between team members to accomplish the task and overcome difficulties. Better ways of conflict handling, non-evaluative listening, use of active listening techniques, and managing work in an effective and timely way can also be effects of team autonomy (Leach, 2005). Choi and Cho (2019) found that teams with more autonomy have greater trust and collaboration, even in virtual teams. Thus, we can state that team autonomy is

an antecedent of supportive behaviours among team members.

Supportive behaviours allow team members to deal efficiently with different events or situations that could decrease their will to contribute to task accomplishment, enabling team members to complete a task in situations where they would have difficulty doing it individually. Supportive behaviours improve the social climate in work teams, boosting self-esteem, strengthening morale and providing a sense of affiliation (Aubé & Rousseau, 2005). Team members committed to the team goals are likely to adopt more supportive behaviours, increasing team performance and the quality of group experience (Aubé & Rousseau, 2005). Support between team members helps individuals become more productive (Janz et al., 1997). Also, it helps the team to cope with internal and external changes that may occur, improving team viability (Aubé & Rousseau, 2005). Jassawalla and Sashittal (2006) also found that different dimensions of collaboration in teams are associated with learning increasingly more complex ways of thinking and behaving and with higher levels of efficiency and effectiveness in product innovation processes. In this way, we can state that collaboration and support between team members are related to the capacity of teams to enhance existing processes and find innovative ways to improve team outcomes, defined as team process improvement (Kirkman et al., 2004). Considering the previous findings, we can argue that supportive behaviours improve team effectiveness in different dimensions.

Since team autonomy is related to team effectiveness (Langfred, 2005; Haas, 2010) and to higher levels of supportive behaviours, and, in turn, supportive behaviours lead to higher team effectiveness (Aubé & Rousseau, 2005; Janz et al., 1997), we can hypothesise that supportive behaviours can play a mediating role in the relationship between team autonomy and team effectiveness. Therefore, in this study, based on the I-P-O model, we will test a mediation model including team autonomy as the input variable, supportive behaviours as the mediator and team effectiveness (measured by team performance, team viability, quality of group experience and team process improvement) as the output (Fig. 1)

Accordingly, we formulate the following hypothesis:

H1: Supportive behaviours mediate the relationship between team autonomy and team effectiveness, namely quality of group experience (H1a), team viability (H1b), team performance (H1c) and team process improvement (H1d).

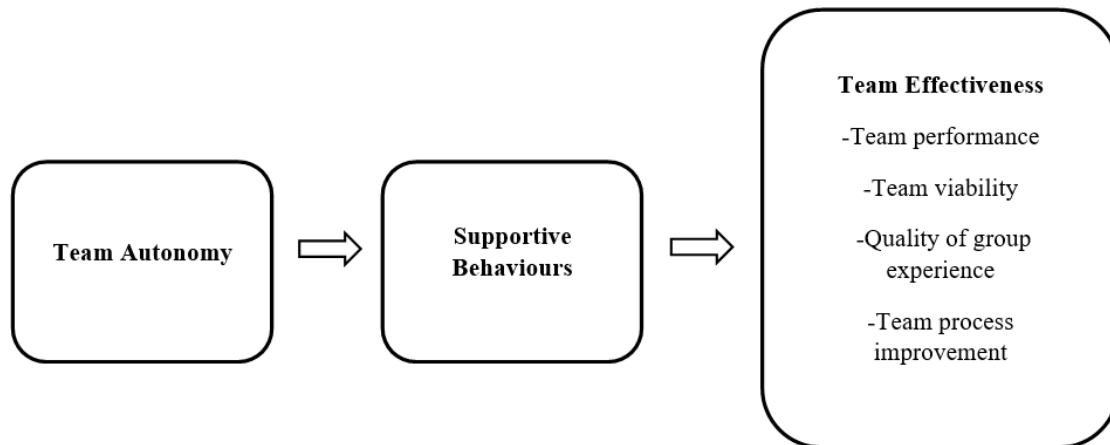


Figure 1: Model under analysis (Based on (Ilgen et al., 2005; Kozlowski & Ilgen, 2006))

3 Method

3.1 Sample

This research adopts a group-level analysis. Following Cohen and Bailey (1997), the criteria for considering and selecting teams for this research were: teams should be constituted at least by three members (1) who perceive themselves and others as a team (2) and who interact regularly, in an interdependent way, to accomplish a common goal (3). The sample was constituted by convenience sampling method within a personal network of formal and/or informal contacts.

The sample was composed of 90 teams (comprising 445 team members and 90 team leaders) working in 40 Portuguese organisations. The organisations vary in size, with the sample being composed of medium-sized organisations (42.20%), large and small-sized organisations (each corresponding to 16.70%) and micro-sized organisations (14.40%).

Teams comprise three to 27 members, with an average of approximately seven members per team ($M = 6.66$, $SD = 5.16$). The average team tenure was 9.22 years (min = 0.50; max = 26.00; $SD = 6.78$). The age of team members ranges from 18 to 67 years old ($M = 35.49$; $SD = 10.03$), 226 being female (50.80%) and 201 male (45.20%). The age of team leaders ranges from 18 to 67 years old ($M = 39.38$; $SD = 9.91$), 28 being female (31.10%) and 55 male (61.10%). It should be noted that 4% of team members and 7.80% of team leaders did not give information regarding their gender. All leaders were direct supervisors of the teams, responsible for team management and not performing the team's daily tasks.

3.2 Data collection procedures

Several companies were contacted by phone or e-mail, explaining the research and asking for participation. The data was collected with online and paper questionnaires using convenience sampling combined with a snowball effect. Participation in the study was voluntary, and the research team followed the ethical research principles. All participants provided their informed consent and had the right to desist; confidentiality and anonymity were guaranteed, and the research team assumed the commitment to use the data only for scientific purposes.

A multisource approach was implemented in data collection to reduce the risk of common method variance (Podsakoff et al., 2012). The data was collected from team leaders and team members. Team leaders answered the scales measuring team performance, process improvement, and viability. The scales measuring team autonomy, supportive behaviours and quality of group experience were applied to the team members.

3.3 Measures

Team autonomy.

The instrument used to measure this construct was the Portuguese version of the Team-Level Autonomy Scale (TLA), developed by Langfred (2005) and adapted by van Beveren et al. (2017). This unidimensional scale evaluates team members' perceptions regarding the amount of autonomy the team has in several aspects of their work. For our sample, Cronbach's alpha is .90. The Portuguese version of TLA consists of seven items (e.g., "the team is free to decide on how to carry out tasks"). These items are

answered on a Likert-type scale in which the lowest value (1) corresponds to “almost not applicable” and the highest value (5) corresponds to “applies almost completely”.

Supportive behaviours.

This construct was measured using a scale that Aubé and Rousseau (2005) developed that evaluates both instrumental and emotional dimensions of supportive behaviours in a one-dimensional structure. Its Portuguese version was used by Pessoa et al. (2018). For our sample, Cronbach's alpha is .93. The scale is composed of five items (e.g., “we help each other when someone is behind on their work”), answered on a Likert-type scale in which the lowest value (1) corresponds to “almost not applicable” and the highest value (5) corresponds to “applies almost completely”.

Team effectiveness.

To measure this construct, the following instruments were used:

Quality of group experience: The Portuguese version of the Quality Experience Scale, developed by Aubé and Rousseau (2005) and used by Paolucci et al. (2018). This scale evaluates the interpersonal/relational climate within the team. Cronbach's alpha for our sample is .94. The scale is composed of three items (e.g., “within our team, the work climate is good”). These items are responded on a Likert scale in which the lowest value (1) corresponds to “I strongly disagree”, and the highest value (5) corresponds to “I strongly agree”.

Team performance scale: a scale developed by Rousseau and Aubé (2010) and used by Paolucci et al. (2018). This scale assesses the team's performance through objective achievement, productivity, quality of work and fulfilment of deadlines and costs. For our sample, Cronbach's alpha is .84. The scale is composed of five items (e.g., “achievement of performance goals”) and answer on a Likert-type scale in which the lowest value (1) corresponds to “very low” and the highest value (5) corresponds to “very high”.

Team process improvement scale: scale also developed by Rousseau and Aubé (2010) and used by Paolucci et al. (2018) that evaluates the use of new ways of working by the team and its effects concerning issues such as the team goals, productivity, quality of the work, accomplishment of deadlines and reduce of costs. In our sample, Cronbach's alpha is .85. The scale is composed of five items (e.g., new ways of working have helped to achieve performance goals), which is responded on a Likert-type scale in which the lowest value (1) corresponds to “almost not applicable” and the highest level (5) corresponds to “applies almost completely”.

Team viability scale: scale developed by Aubé and Rousseau (2005) and also used by Paolucci et al. (2018) measures the team's ability to adapt to changes, solve problems, integrate new members and remain together in the future. For our sample, the Cronbach's alpha is .75. The scale is composed of four items (e.g., “team mem-

bers adapt themselves to changes in the workplace...”). The items are answered on a Likert-type scale in which the lowest value (1) corresponds to “almost not applicable” and the highest level (5) corresponds to “applies almost completely”.

4 Results

4.1 Statistical procedures

The software used for statistical procedures was IBM SPSS Statistics 22. Firstly, missing values from the data collected were analysed. This procedure was only conducted for the team members' responses since no missing values regarding the scales answered by team leaders were detected. The highest percentage of missing values per case found in the team members' database was 1.10%. Therefore, no cases were eliminated because, according to Bryman and Cramer (2004), only cases with more than 10% should be discarded.

To analyse the distribution pattern of non-answers and verify the hypothesis of the missing values being random, Little's MCAR test was used. In all the scales, the p-value is below the .05 significance level, so we rejected the hypothesis that the missing values are randomly distributed. Hereupon, to replace missing values, the expectation-maximisation (EM) technique was used.

Since the analysis is focused on the team level, but the data were collected at the individual level, the data from team members were aggregated to the teams by calculating the average scores obtained for each scale. The average deviation index (ADM), developed by Burke et al. (1999), was used to justify this procedure and ensure the average scores could be safely used. Table 1 shows that the mean for team autonomy ($M = 0.53$), supportive behaviours ($M = 0.48$) and quality of team experience ($M = 0.40$) are below the cut-off value of 0.83 (the cut-off value regarding scales with five points proposed by the authors). Thus, following authors such as Gamero et al. (2008), we can conclude that data aggregation from individual to team level is viable.

Additionally, to justify data aggregation, the intra-class coefficient correlation ICC (1) and ICC (2) (Bliese, 2000) were calculated. The ICC (1) values for team autonomy, supportive behaviours, and quality of group experience were .26, .23 and .23, respectively. For ICC (2), the values were .65, .60 and .59, respectively. All the values are near the values considered acceptable (Bliese, 2000), which supports the data aggregation at the team level.

Table 1: Average deviation index (ADM) for team autonomy, supportive behaviours and quality of team experience

Scales	N	Minimum	Maximum	Mean	SD	Cut-off
Team Autonomy	90	0.00	1.36	0.53	0.23	0.83
Supportive Behaviours	90	0.00	1.35	0.48	0.26	0.83
Quality of Group Experience	90	0.00	1.33	0.40	0.27	0.83

Table 2: Correlations, means and standard deviations of variables under study

Constructs	N	M	SD	1	2	3	4	5	6	7
1. Team Autonomy	90	3.48	0.56	-						
2. Team Performance	90	4.05	0.58	.42***	-					
3. Team Viability	90	4.05	0.57	.33**	.61***	-				
4. Quality of Group Experience	90	4.06	0.56	.52***	.37***	.35**	-			
5. Team Process Improvement	90	3.88	0.63	.30**	.66***	.56***	.39***	-		
6. Supportive Behaviours	90	3.94	0.59	.61***	.50***	.42***	.85***	.47***	-	
7. Team Size	90	6.46	5.00	-.40**	-.06	-.08	-.32**	-.13	-.24*	-

Note: * $p < .05$ ** $p < .01$ *** $p < .001$

Table 3: Hierarchical regression analysis of team autonomy as a predictor of supportive behaviours

Constructs	B	SEB	β	R ²	ΔR^2
Step 1				.06*	
Team Size	-.03	.01	-.24*		
Step 2				.37***	.31***
Team Size	.00	.01	.01		
Team Autonomy	.64	.10	.61***		

Note: * $p < .05$ ** $p < .01$ *** $p < .001$

4.2 Hypothesis testing

Previously to the hypothesis test, the correlations between the variables included in the model were analysed. The variable "team size" was also included as a control variable since the literature shows that team size can influence teams' functioning and outputs (Hülsheger et al., 2009). Team size was operationalised as the number of team members obtained from team leaders.

The mediation model was tested using multiple regression analysis following the procedure proposed by the product of coefficients method of MacKinnon et al. (2002). According to this method, a mediation exists if (1) the predictor variable (X) is significantly associated with the mediator (M) (α being statistically significant); (2) the mediator is significantly associated with the criterion variable (Y), after controlling for X (β is statistically significant); and (3) the mediating effect is statistically significant.

cant (product of $\alpha\beta$ is significant).

Table 2 presents the correlations between the variables of the study, including the control variable. We can see significant correlations between team autonomy, supportive behaviours and all the team effectiveness criteria variables. Team size (control variable) correlates significantly (and

negatively) with team autonomy, quality of group experience and supportive behaviours, which means that, in order to control its effect, team size will also be included in the regression analyses with supportive behaviours and the quality of group experience as a criterion.

Table 4: Hierarchical regression analysis of supportive behaviours as a predictor of quality of group experience

Constructs	B	SEB	β	R ²	ΔR^2
Step 1				.10**	
Team Size	-.04	.01	-.32**		
Step 2				.73***	.63***
Team Size	-.02	.01	-.13*		
Supportive Behaviours	.80	.07	.84***		
Team Autonomy	-.04	.07	-.04		

Note: *p < .05 **p < .01 ***p < .001

Table 5: Regression analysis of the mediating role of supportive behaviours

Model	B	SEB	β	R ²
Dependent Variable: Team Performance				.27***
Team Autonomy	.19		.18	
Supportive Behaviours	.38	.12	.39**	
		.11		
Dependent Variable: Team Viability				.19***
Team Autonomy	.13		.13	
Supportive Behaviours	.33	.12	.34**	
		.12		
Dependent Variable: Team Process Improvement				.22***
Team Autonomy	.04		.04	
Supportive Behaviours	.48	.13	.44***	
		.13		

Note: *p < .05 **p < .01 ***p < .001

To test our hypothesis, two regression models were used: one where supportive behaviours are regressed to team autonomy, and the second where team effectiveness criteria were regressed to supportive behaviours after controlling for team autonomy. In the first regression model, hierarchical regression analysis was used with a two-step process since team size correlates with supportive behaviours. The control variable was included in the first step, and team autonomy was included in the second one. Table 3 shows a positive and significant relationship between team autonomy and supportive behaviours ($\alpha = .61$, $p < .001$).

For the second regression model, the four criteria of team effectiveness were regressed to supportive behaviours after controlling for team autonomy. Since team size correlates with the quality of group experience, in order to test H1a, a hierarchical regression analysis was conducted. A significant and positive relationship was found between supportive behaviours and quality of group experience ($\beta = .84$, $p < .001$). Therefore, considering that team autonomy showed a significant positive relationship with supportive behaviours, and supportive behaviours showed a significant positive relationship with quality of group experience after controlling for team autonomy, H1a was empirically supported (Table 4).

From this point, the control variable was dropped since it does not correlate with the other effectiveness criteria, namely team performance, team viability and team process improvement. To test H1b, H1c and H1d, standard regression analyses were conducted. Table 5 shows a significant relationship between supportive behaviours and team viability ($\beta = .34$, $p = .006$), team performance ($\beta = .39$, $p = .001$), and team process improvement ($\beta = .44$, $p < .001$) after controlling for team autonomy. Therefore, considering that team autonomy showed a significant positive relationship with supportive behaviours, and supportive behaviours showed a significant positive relationship with each one of the team effectiveness criteria, the hypotheses H1b, H1c and H1d were supported.

The estimated mediating effect for quality of group experience ($\alpha\beta = .51$), team performance ($\alpha\beta = .24$), team viability ($\alpha\beta = .21$) and team process improvement ($\alpha\beta = .27$) was statistically significant ($P = Z\alpha \times Z\beta = 78.67$, $p < .05$; $P = Z\alpha \times Z\beta = 21.11$, $p < .05$; $P = Z\alpha \times Z\beta = 18.01$, $p < .05$; $P = Z\alpha \times Z\beta = 21.48$, $p < .05$, respectively).

Considering that the relationship of team autonomy with team effectiveness dimensions was not statistically significant when supportive behaviours entered into the equations (Table 5), we can state that supportive behaviours fully mediate the relationship between team autonomy and team effectiveness (quality of group experience: $\tau = -.04$, $p = .603$; team performance: $\tau = .18$, $p = .112$; team viability: $\tau = .13$, $p = .302$; team process improvement: $\tau = .06$, $p = .771$).

5 Discussion

This study examined the mediating role of supportive behaviours in the relationship between team autonomy and team effectiveness. To this end, we hypothesised that supportive behaviours would mediate the relationship between team autonomy and four different team effectiveness criteria: team viability, team performance, quality of group experience and team process improvement.

Considering our mediation model, firstly, the relationship between team autonomy and supportive behaviours was analysed. Evidence was found that team autonomy predicts supportive behaviours among team members. Although there is not much research regarding the relationship between these two variables, the literature points to a positive relationship between them (Choi & Cho, 2019; Langfred, 2000; Leach, 2005). Therefore, as expected, our results suggesting that team autonomy stimulates supportive behaviours add more evidence to this relationship. When team members are left to work independently, their perception of responsibility for the team results increases, making team members work more cohesively and collaboratively to accomplish the goals for which the team is responsible.

Our hypothesis (H1) was supported. Hüffmeier and Hertel (2011) claim that social support within the team might be the most crucial explanation as well as a precondition for the success of self-managed and autonomous teams. Manz and Sims (1987) also state that when giving a team autonomy, a team climate that encourages the expression of feelings and ideas characterised by supportive internal communications tends to emerge, promoting team effectiveness. Previous research has already shown some evidence that team autonomy is related to team effectiveness and its different dimensions (e.g., Cohen & Baley, 1997; Cohen & Ledford, 1994; Langfred, 2005); however, this study goes further, showing that supportive behaviours are one of the team processes by which that relationship happens. Indeed, our findings reveal that supportive behaviours fully mediate the relationship between team autonomy and team effectiveness. This means that team autonomy has an indirect effect on team effectiveness. This effect occurs through supportive behaviours. In other words, team autonomy increases team supportive behaviours among team members, which, in turn, increases quality of group experience (H1a), team viability (H1b), team performance (H1c) and team process improvement (H1d).

This reveals the power that supportive behaviours have in the team's functioning. Team autonomy triggers the need in the team members to engage in behaviours that help the team to cope with problems and obstacles, that is, supportive behaviours, leading to team effectiveness.

This study takes a step forward in understanding team mechanisms that promote effectiveness in autonomous

teams and brings attention to a construct that has not been greatly explored in research – supportive behaviours between team members – showing its strong relationship with team functioning.

6 Conclusions

Research on team effectiveness has been the focus of the investigation of teams. Due to its complexity, the number of variables and different interactions we can combine might always be present. Autonomous teams are a current trend popularised by technological organisations that tend to incorporate agile and flexible work methods into their teams (Annosi & Brunetta, 2018; Moe et al., 2021). The need to respond to unexpected hazards, find innovative solutions, and build resilience also makes organisations explore new team designs and management methods, such as autonomous teams (Poth et al., 2020). Considering this, studying the mechanisms that make autonomous teams a valuable solution for organisations is of great interest.

Supportive behaviours were chosen as a mediator variable to uncover the potential of a variable that has not been fully explored in the literature. Although Tardy (1985) introduced this concept a few decades ago, it has yet to be very present in research; our results support its potential. These findings, presenting team autonomy as a relevant predictor of supportive behaviours, draw attention to the benefits of this construct and the importance of implementing autonomy in team design to make teams more effective.

7 Implications for research

This study includes a construct that has not been greatly explored in the literature – supportive behaviours from peers. The support given by the supervisors and its relationship to team performance has been a focus of attention in research (e.g., Dimas et al., 2018; Manz & Sims, 1987), so shifting the focus from the leader's role to the relationships between team members and how they influence team effectiveness is a major contribution for research. In the same way, regarding measuring team effectiveness, this research goes further since a focus on team performance was not the only effectiveness criterion. Instead, three other criteria were added (team viability, quality of group experience and team process improvement) to explore different facets of effectiveness and have a more holistic and comprehensive model. Additionally, the fact that the research results regarding the relationship between team autonomy and supportive behaviours are convergent with previous studies is also a contribution since it reinforces the literature, adding more evidence about this relationship.

8 Implications for practice

This study can help organisations, managers and team leaders to manage their teams better and optimise their full potential to respond to current organisational challenges. Providing more autonomy to the team by allowing team members to decide how to carry out their work or letting the team make work-related decisions autonomously are simple strategies that can be implemented. However, providing autonomy is insufficient to guarantee effectiveness because several factors can interfere with the team's functioning, such as team members' personality traits or cultural differences (Gonzalez-Mulé et al., 2019; Stel, 2017). Considering that supportive behaviours make autonomous teams more effective, investing in team-building activities and fostering healthy and cohesive relationships among team members might be valuable strategies to potentiate good team functioning.

9 Limitations and directions for future research

Despite the insights this research offers, it also has some limitations. Given the cross-sectional nature of this study, the possibility of inferring empirical causality is compromised. Future research should adopt a longitudinal design to explore the causality between the variables more accurately. Another limitation of this study is the convenience sampling, which limits the generalisation of results. The sample was composed only of Portuguese teams, and since the results might be different if subjects from other cultures were included, further research should focus on this issue. Thus, including other variables such as personality traits or cultural differences as moderators/mediators in the model analysed could also bring valuable insights for further research on this topic. The questionnaires based on the individuals' perceptions may lead to social desirability bias since individuals may distort their answers to give a more favourable opinion about the group to which they belong. However, evaluating the responses at the group level mitigates the social desirability bias since several people assessed the same phenomenon (Podsakoff et al., 2012). Two sources of evaluation were used (team members and supervisors), which may attenuate the negative impacts of this limitation and also contribute to minimising the problem of common method bias (Podsakoff et al., 2012). Different procedures were also implemented to reduce common method bias: the anonymity of respondents was ensured to reduce apprehension over the evaluation; previously validated scales were used, constituted by concise, simple, and specific items (i.e., items are not ambiguous and have no overlap for the different constructs) and the scales were separated with specific instructions provided for each scale (Podsakoff et al., 2012).

Our study only focused on team autonomy and did not consider the level of freedom and independence of the individuals in the team to conduct their tasks. Future research should analyse the role of individual autonomy among the team members. Indeed, in autonomous teams with high levels of individual autonomy, the emergence of supportive behaviours might be different from the findings stated here. The variety of skills among the team members also plays a role in the team functioning (Moe et al., 2021). Analysing how this diversity of skills interferes with team autonomy and supportive behaviours would also be of great interest to better understand how to select individuals for effective teams. Replicating this study with virtual teams might also be a valuable contribution to a better understanding how team dynamics change in a remote work setting and how we can better manage these teams. Although the results of this study cannot be generalised for virtual working settings, some researchers have pointed out that team autonomy can also benefit virtual teams. Robert and You (2018) found that autonomy can facilitate satisfaction and boost performance in virtual teams. Choi and Cho (2019) state that team autonomy in virtual teams will promote trust and collaboration among team members, leading to improved performance. Considering the current organisational challenges, mainly dominated by remote working practices, incorporating autonomy in teams might also help them cope with the challenges of the virtual working setting.

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Imeti drug drugega v mislih: posredovalna vloga podpornih vedenj v odnosu med avtonomijo in učinkovitostjo tima

Ozadje in namen: Vključevanje avtonomije v time je vse bolj priljubljena praksa, vendar je treba še popolnoma razumeti mehanizme, ki naredijo avtonomne time učinkovite. Z uporabo večdimenzionalnega pristopa k učinkovitosti timov je bil cilj te študije analizirati posredovalno vlogo podpornih vedenj članov timov v odnosu med avtonomijo in učinkovitostjo timov (učinkovitost timov, sposobnost preživetja timov, kakovost skupinske izkušnje in izboljšanje procesa timov).

Metoda: V vzorec je bilo vzetih 90 timov iz 40 organizacij iz različnih sektorjev. Za analizo podatkov je bila uporabljena regresijska analiza, in sicer metoda produkta koeficientov.

Rezultati: Ugotovljena je bila pozitivna povezava med avtonomijo timov in podpornimi vedenji, ki so po drugi strani pozitivno povezani s štirimi merili učinkovitosti timov, kar nakazuje, da so podporna vedenja proces ekipe, ki pojasnjuje razmerje med avtonomijo in učinkovitostjo timov.

Zaključek: Raziskava obogati naše znanje o učinkovitosti timov in pojasnjuje mehanizme, preko katerih se avtonomija timov nanaša na njihovo učinkovitost, kar spodbuja organizacije, da vključijo avtonomijo v oblikovanje ekip, da bi izboljšale podporna vedenja in učinkovitost ekipe.

Gljučne besede: *Delovni timi, Avtonomija timov, Učinkovitost timov, Podporna vedenja, Kakovost skupinske izkušnje, Uspešnost timov*

Muckraking Through the Novel: Upton Sinclair's *The Jungle* and the Early History of Human Resources Management

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Background and Purpose: This study is based on the assumption that the novel, which is a modern narrative form, reflects the canon of the period in which it was written. In this context, the study tries to show how human resources management practices were carried out in large-scale industrial units in a period when the human resources management function was not specialized, with *The Jungle* novel by Upton Sinclair.

Design/Methodology/Approach: The study is based on a typology that Bruce E. Kaufman used while describing the early history of US HRM. Kaufman lists fourteen factors that characterize early HRM. One of them is the revealing activities of the Progressive movement. Therefore, the novel is considered here as a means of disclosure. Designed on this basis, the study analyses *The Jungle* novel around the following themes: the foreman's empire, child labour, occupational health and safety, wages, job insecurity, career, and the blue-collar/white-collar divide.

Results: The novel shows that although the scale of manufacturing units grew in the early 1900s, human management practices were not yet institutionalized and specialized. Therefore, HRM routines are carried out with the arbitrary attitude of foremen, wages are below the natural wage level, child labour is widely used, and there is a working life full of risks in terms of occupational health and safety.

Conclusion: When the narrative of the novel about human management is read in parallel with the academic studies describing the period, the parallelism between the two narratives shows why the novels can be used as material for academic studies.

Keywords: *Human resources management practices, Early history of human resources management, Upton Sinclair's The Jungle*

1 Introduction: How to Approach the Impact of a Novel?

There is a phrase attributed to Karl Marx: "I am not a Marxist" (Fulcher & Scott, 2007: 30). If Marx uttered this sentence, he used it as a response to accusations of determinism. In other words, if Marxism implies econom-

ic reductionism, then I am not a Marxist! In fact, this reductionism expresses both an obstacle to grasping reality and a situation that inevitably imposes itself on analysing it. This is because reality, or in the perspective of a social scientist, social reality, is highly intricate. Numerous antecedents can lead to a given situation, but when dealing with that situation, not all these antecedents might be

known, and generally, focusing on one of them simplifies analysis. Sometimes, to specifically observe the impact of a single independent variable, others are held constant or placed in parentheses. Therefore, economists employ the concept of *ceteris paribus*; physicists use the concept of normal conditions.

Let's illustrate with an example. On paper, when you demonstrate that independent variable X yields result Y, it's easy to say that X causes Y. However, if this cause-effect relationship isn't occurring in the controlled environment of a laboratory, identifying X as the cause isn't always straightforward. For instance, consider a skills training provided to address performance gaps within an organization. When measuring the outcomes of this training six and twelve months later, could there not be other antecedents (causes) affecting performance at the time of measurement? The literature on training and development seeks to "isolate the effects of other factors" to solve this issue (Phillips, 2003).

Reductionism and dualities (Layder, 2005) are subjects of extensive debate in the social sciences. Recently, the approaches of social scientists such as Pierre Bourdieu or Norbert Elias have gained prominence due to their ability to address the social world with concepts that transcend or surpass these debates. In short, in the social world, there are very few instances that can be represented by the concise formula "Y is caused by X." Reading this introduction, one might think that the article pertains to macro indicators or phenomena (such as power, class struggles, distribution, equality, etc.), yet we will be discussing the impact of a book written by a very young author. Upton Sinclair's (1906) *The Jungle*, written in the early 1900s, is the subject of our investigation. After its publication, the novel had a significant impact in the United States and is claimed to have triggered certain legislative changes. The fame of the book largely rests on the discourse that canters around this claim. However, as previously stated, attributing an outcome solely to a single novel, especially in complex (developed) industrial societies, can lead to reductionism.

Therefore, it is necessary to state that the "triggered" outcomes of the book cannot be attributed solely to it, and isolating other factors (i.e., applying *ceteris paribus*) does not seem feasible. Nonetheless, there are evident indicators, such as the meeting between the author and the U.S. President of the time and subsequent regulations, that undoubtedly demonstrate the book's impact.

In this study, I will approach the cause-and-effect relationship within the historical context of human resource management in the United States. To achieve this, I will employ a conceptualization of "causes or effects" that Bruce E. Kaufman (2008) used when discussing the history of HR in early American business. Kaufman speaks of fourteen factors, centered around the "labour problem," that shaped HR practices in the United States. One of these

factors can be linked to the activities of "progressive era reformers" and their exposure efforts. Here, *The Jungle* occupies a significant place as an exposure narrative shaping HR development. In other words, I will discuss the relevant book in this context. Therefore, this study emphasizes that the book is a narrative that shows the periodic character of HRM practices, based on the assumption that the novel in question conveys important details from the period in which it was written.

Below, I will first provide a summary of Bruce E. Kaufman's framework. Then, I will evaluate *The Jungle* book under some headings in the context of early HRM practices.

2 The Early History of HRM: The U.S. Context and the "Labour Problem"

When discussing the history of a phenomenon, it's essential to first establish what that phenomenon signifies or how it's used. However, defining human resource management (HRM) in a universally accepted manner is not an easy task. Examining the literature in this field will reveal numerous definitions of HRM. It is possible to encounter a large number of definitions when the HRM literature is scanned (Armstrong, 2009; Beaumont, 1993; Ferris et al. 1995; Kaufman, 2004; Wilkinson et al. 2010).

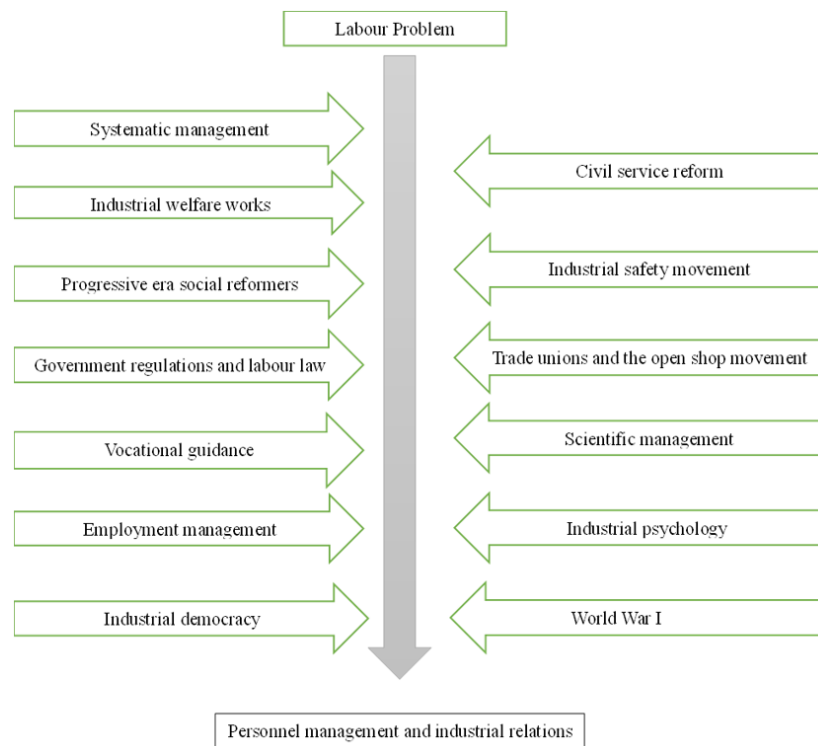
If we consider HRM as simply utilizing the human factor to achieve the goals of an organization, institution, or structure, then we must look back across an extensive history. For instance, throughout history, individuals employed in public bureaucracies or the human element composing large armies provide prominent examples within this framework. However, if we approach the issue as the utilization of the human element within commercial establishments and the subsequent emergence of a "distinct management practice" then a view into the post-Industrial Revolution world is necessary. In short, the formation of a paid working class and the emergence of HRM are interconnected. In simpler terms, an employer (master, shop owner, etc.) with a few workers (apprentices and journeymen, for instance) in their workshop or store would not require a personnel department or a HR specialist. In such a case, this master or employer would carry out all functions of contemporary HRM (e.g., recruitment, planning, compensation, etc.) and would not necessitate specialization. Indeed, after the Industrial Revolution, the scale of production units did not suddenly reach immense proportions. In other words, even up until the mid-19th century, neither factory workers nor large-scale factories predominated among laborers or manufacturing establishments in centres that had experienced the Industrial Revolution (Thompson, 1966). This situation largely persisted in the United States context until the end of the century. However, in the early 20th century, the U.S. industrial sector

experienced rapid growth. In terms of our subject, the number of operations employing thousands of workers increased significantly. Daniel Nelson (1979: 8–9), who examined the period around the 1900s, lists the largest manufacturing plants in the U.S. in the year 1900. The list includes nearly seventy factories employing between two thousand and ten thousand workers. Within the next 20-30 years, factories of much larger scales emerged, far exceeding these numbers. Nelson mentions some of these, with Ford's River Rouge factory being the most widely known; it would employ 68,000 workers (Nelson, 1979: 7). By the 1930s, at the peak of its employment, this number would surpass 100,000 (THF-TheHenryFord.Org, 2023).

In short, when considered within the context of U.S. history, the scale of firms increased dramatically in a relatively short period (roughly spanning from the last quarter of the 19th century to the first quarter of the 20th century). Such rapid changes brought about significant challenges. First of all, these scale-ups occurred during the lifetime of a single generation, in most cases in terms of human lifespan. In other words, an individual who initiated their manufacturing life with a simple endeavour, such as a workshop, transitioned to factories employing thousands of workers in a very short time. The clearest example of this narrative is embodied in the person of Henry Ford (Sinclair, 1987). The importance of this situation in the

management of human resources is that HRM, as a specialized field of activity, emerged as a need in the later stages of this process. As the scale grows, in the initial stages, our simple entrepreneur continues to manage human resources in a familiar or improvised manner. However, employment has grown so extensively that dealing with HR activities for a workforce of this size becomes practically impossible. During this period, one common method founders frequently resorted to was delegating certain HR practices to foremen. Predictably, this situation led to the creation of another form of arbitrary focus. The focus shifted partially from the owner to foremen. Although this topic deserves a standalone analysis, for it is not directly related to the main theme of this study, we'll simply mention it as one of the many factors deepening the labour problem that will be discussed later.

The labour problem, often referenced in the history of U.S. labour relations, points to harsh outcomes that emerged for all workers in industrializing centres following the Industrial Revolution. For example, practices such as long working hours (examples in the U.S. reached 84 hours per week in the 1910s), low wages, practices implying high risks for worker health and safety due to unhealthy and hazardous work environments, and so forth (Budd, 2005: 102), led to issues of productivity in labour relations and organizations. Bruce E. Kaufman extensively address-



Source: (Kaufman, 2008: 56)

Figure 1: Factors Contributing to the Development of HR in Early U.S. Business Management

es the labour problem. In the context that concerns us, the key point is to demonstrate which factors, in addition to the labour problem, influenced the development of HRM. Kaufman (2008) discusses fourteen major factors, with the labour problem at its centre. According to him, these factors played a primary role in shaping the development of HR as a specialized function in early U.S. business.

The title we will delve into from this list pertains to the progressive era's social reformers. Below I will provide brief details on what the progressive era meant and one of the activities of the social reformers of this era, muckraking activities. I will also address *The Jungle* within the context of these revealing activities.

3 The Progressive Era and Muckraking Activities

Many of the problems briefly discussed above within the axis of the "labour problem" can be seen as a recognizable manifestation of unregulated capitalism, as is the case in many parts of the world, including the United States. In this context, extreme imbalances or contradictions shaped by market dynamics on one hand, and actors striving to address these contradictions on the other hand, have emerged. Roughly the first two decades of the 1900s are referred to as the Progressive Era in U.S. history. The progressive movement did not deny the blessings of industrial progress, but called for utilizing these blessings with an emphasis on human values and social justice. According to the representatives of this movement, social problems could be addressed through political reforms and public education. Progressives were united in the belief that the economic and social problems of unregulated capitalism could not be resolved "spontaneously" (Kaufman, 2008; Nugent, 2010).

The progressive movement consisted of a diverse range of individuals from Democrats to Republicans, journalists to academics, all of whom were concerned about the injustices and contradictions of the status quo (Milkis, 2023). Progressives skilfully utilized journalism and scholarly documentation as a form of exposure weapon to draw attention to the necessity of a more institutionalized, professional, and humane management of human resources. Kaufman provides examples of scientific work in this regard, mentioning John Fitch's work "The Steelworkers", as well as Upton Sinclair's novel *The Jungle* (Kaufman, 2008). Focusing on Sinclair's role within this exposure movement, we find that in the early 1900s he was a member of the investigative journalism known as "muckrakers". The muckrakers were mass media representatives of the progressive movement who published extensive and detailed articles on topics such as corruption in public administration, child labour, poverty, and working conditions (Stoklasová, 2016, p. 29). *The Jungle* emerged as one of

the most impactful results of these exposure activities. The book was rapidly translated into nearly twenty languages. Winston Churchill provided an assessment of the book in England; U.S. President Theodore Roosevelt wrote a critical letter to Sinclair and invited him to the White House (Valiunas, 2008). Subsequent investigations led to the enactment of two laws related to food inspection and hygiene in 1906 and 1907 (Stoklasová, 2016: 36).

Since the main interest of this study is on labour management, I will highlight Sinclair's emphasis on this subject below. Although our inferences here are not based on the assumption that the book is made up of one-to-one observations, it implies that what is written has a general view of the human resource management of the period. I will discuss this in more detail in the discussion section.

4 On the Meaning of Novel

"Romance" and "novel" are representing two distinct narrative genres. Etymologically, "romance" signifies "in the language of the Romans." This narrative genre describes a desired world rather than the existing one. In this sense, romance lacks complete reality; it lacks causal connections between events, is not constrained by time, and is vague in terms of location. As Aksoy also notes, such a genre could not have survived during the Enlightenment era. Novel, on the other hand, represents a narrative genre more suited to the spirit of the Enlightenment. It is fundamentally based on realism and credibility. The characters in this genre are ordinary individuals like us, rather than being endowed with extraordinary qualities as in romance (Aksoy, 2022: 275–276; Online Etymology Dictionary, 2023). Therefore, these characters correspond to the average of the societal types mentioned below.

A meaningful explanation that highlights the connection between the novel and real life comes from Turkish sociologist Besim F. Dellaloğlu (2020: 239–240). In response to an objection along the lines of "Well, novels aren't real; they're products of imagination," this explanation argues that the power of the novel lies in its characters being an average of certain societal types within a society. "The average age of students in a class being twenty-one and a half does not necessarily mean that there is someone in the class who is exactly twenty-one and a half years old. If there is, it's called a coincidence!" Another illustrative example of this "average" analogy appears in the latter part of Turkish novelist İhsan Oktay Anar's *Galiz Kahraman* [Vulgar Hero]. In this book, the main character, an anti-hero, engages in all sorts of indecent acts throughout the novel. At the end of the book, while he is being transferred to another place by train after being arrested, he happens to share the same train car with an anthropologist. The anthropologist has spent years collecting pictures of human faces. When he stacks all these pictures together

and takes the “average”, the image of the indecent hero emerges (Anar, 2020).

Therefore, the novel, in the sense of the narrative genre, needs to be approached as a form of realistic narrative. While classical artistic representations aim to reflect what should be, realistic literature as an extension of this strives to reflect what is. If we consider the novel as a reflection of averages or an expression of the ordinary and the everyday, we can also read it as a witness of the era in which it was written. In this context, *The Jungle* can be read as a text that provides significant details about the average individuals in the industrial world of early 20th-century United States. More specifically, the book showcases the details of HR practices of the relevant era’s businesses, demonstrating how human resource management, a specialized function in today’s context, was conducted in the early stages.

5 Analysis of *The Jungle*

This section of the study examines the content of the mentioned book. An analysis of content is shaped by the initial purpose. For instance, if the goal is to address gender issues, focus should be on related topics within the book. Similarly, if ethnic discrimination is the focus, then narratives related to that context should be emphasized. In this study, my focus is on labour relations, particularly human resource management practices. This is because I want to explore how these practices were conducted in the early 1900s, a time when human resource management wasn’t a specialized function yet, as Kaufman (2008) pointed out. The intention is to explore the history of HRM in early American business through the lens of this novel’s content.

Before writing his novel, Upton Sinclair conducted a seven-week preliminary research in Chicago in late 1904. One of the key texts that inspired him was Harriet Beecher Stowe’s *Uncle Tom’s Cabin*. However, due to the period he lived in and his observations, he was compelled to write about a different form of slavery, referred to as “wage slavery”. Sinclair regarded the working conditions of labourers as a kind of slavery (Arthur, 2006). His aim was to make people aware of the workers’ plight. To achieve this, he conducted interviews with workers, reformers, and health officials, and likely even worked as a labourer himself for a short period (Graf, 2020: 911). The book he began writing around Christmas of 1904 was first published in sections in 1905 in the socialist newspaper *Appeal to Reason*, and in book format in 1906 (Arthur, 2006; Coodley, 2023).

After briefly introducing the context and subject of the book, the primary objective of this study is to demonstrate workplace practices related to specific themes concerning labour relations.

5.1 The Books’ Subject

The book’s subject revolves around the experiences of an 11-person family that emigrates from Lithuania to the United States. It’s possible to view American history as a history of immigration. Since the “discovery”, there has been a continuous influx of people into this “new world”. However, if we limit it to our subject, in the middle of the 19th century, intense waves of immigration from Central and Western Europe to the USA took place due to social and political reasons based on the famine in Ireland and the confusion caused by various political revolutionary movements in the continent. Later in the 19th century, the flow was largely fuelled by Eastern and Southern Europeans (Baxter & Nowrasteh, 2021). The family depicted in *The Jungle* was a part of this latter group. In the early 20th century, America was a beacon of hope for desperate individuals worldwide, often dubbed the “land of opportunity.” This is analogous to the “land of opportunity” idea, where New York City was referred to as the “Golden Door” (Ravitch, 1977).

The family members, none of whom know a word of English, encounter numerous unpleasant incidents throughout their journey to America. They fall victim to the exploitation of unscrupulous individuals, among other challenges. Their lives in America, though started with great hopes, spiral into a journey towards the bottom. The author vividly narrates this dramatic journey throughout the book. The power of the book perhaps stems from its portrayal of this journey, which becomes especially evocative due to the depiction of a kind of “survival of the fittest” in the *laissez-faire* system.

5.2 Main Themes

5.2.1 Foreman’s (and Forelady’s) Empire

One of the most common practices in the early stages of human management is the arbitrary governance of persons endowed with specific unwritten powers. These practices are generally known in the literature as “foreman’s empire” (Budd, 2005; Kaufman, 2008, 2009). The foreman is an individual responsible for overseeing a specific operation and arbitrarily procuring personnel for that operation. This arbitrariness describes an unspecialized practice, often accompanied by extensive exploitation. If there are hundreds or even thousands of people waiting to enter a job, but only a few are to be admitted, giving “spoils” to the foreman to get candidates inside becomes an unwritten rule. Foremen not only play an active role in hiring but also during the execution of work processes and even when the connection to the job is severed, continuing their exploitative behaviours. In short, during this period, the management of human resources operated on

dynamics other than rational rules, predefined processes, or merit-based elements.

Upton Sinclair repeatedly highlights these qualities of foremen in the book. The book commences with an extensive wedding chapter. Despite the many joy-dampening financial matters, the happiness of finally achieving the goal is emphasized for the bride and groom. However, on the day following this exhausting wedding, it's revealed that all workers are required to go to work. This includes the bride and groom as well: "There is no exception to this rule, not even little Ona—who has asked for a holiday the day after her wedding day, a holiday without pay, and been refused. While there are so many who are anxious to work as you wish, there is no occasion for incommoding yourself with those who must work otherwise" (p. 21-22). The forewoman Ona has not granted her permission. Another time, Ona becomes seriously ill, yet she still must go to work:

"For two weeks afterward she suffered cruelly—and yet every day she had to drag herself to her work. The forewoman was especially severe with Ona, because she believed that she was obstinate on account of having been refused a holiday the day after her wedding. Ona had an idea that her 'forelady' did not like to have her girls marry—perhaps because she was old and ugly and unmarried herself" (p. 88-89).

It took them two weeks to recover from the post-wedding fatigue, but even then, the day after the wedding, the family's child labourer Stanislovas failed to keep his job: "All that day he stood at his lard machine, rocking unsteadily, his eyes closing in spite of him; and he all but lost his place even so, for the foreman booted him twice to waken him" (p. 86-87).

Sinclair also provides detailed accounts of the mentioned "spoils". Gaining favour with the foreman to get hired required giving them some "gifts".

"Marija came home saying that she had met a girl named Jasaityte who had a friend that worked in one of the wrapping rooms in Brown's, and might get a place for Ona there; only the forelady was the kind that takes presents—it was no use for any one to ask her for a place unless at the same time they slipped a ten-dollar bill into her hand. (...) So in the end Ona, with a ten-dollar bill burning a hole in her palm, had another interview with the forelady" (p. 83-84)

Marija's hiring was possible due to another worker's (Mary) illness. This worker was quite productive but kept coughing due to the illness. "... and when Marija came, the 'forelady' had suddenly decided to turn her [Mary] off. The forelady had to come up to a certain standard herself, and could not stop for sick people, Jadvyga explained" (p. 72). In this section, Sinclair tells how Jonas took the place of a previous worker after he had a work accident, emphasizing "finding a job as a result of the misfortune of others" (p. 73).

Sinclair not only addresses the foremen's behaviour but also discusses the spoils received by the bosses, as depicted through the story of the elderly family member Antanas finding work. All capable family members must work for the family to survive. Under these circumstances, Antanas is also searching for a job. While searching, a man approaches him and asks how much he could pay to get the job. The elderly man is puzzled. The man asking the question suggests that if he gives a third of his wage, he can get the job. The family later investigates what this means. They learn that such behaviours from bosses are common (p. 69).

5.2.2 Child Labour

In the September 1906 issue of *Cosmopolitan Magazine*, a story about a Native American chief touring New York City is featured. Upon returning from the trip, the chief is asked what surprised him the most, expecting his response to be about the city's grandeur, towering buildings, and apparent prosperity. However, the most astonishing thing to the chief was the sight of young working children. The article introducing this story also presents the child labour statistics of 1900: 1.7 million children who worked for meagre wages, toiling for ten to fourteen hours a day. The author notes that by the year of writing the article, 1906, hundreds of thousands more were included in this number (Marham, 1906: 480-481) (Sinclair also mentions a similar figure, 1,750,000, p. 85). This issue of the magazine is from the same period in which *The Jungle* was published. The sections in the book concerning child labour provide a more detailed portrayal of the reality described in this article. The Bureau of Labor in America expressed that in 1900, child labour accounted for 20% of all children (Schuman, 2017a). Even though significant regulations to combat child labour were not enacted in the same year the book was written, 1906, important proposals were put forward (Schuman, 2017b).

It is appropriate to say that Sinclair's book contributes to the debates of that time by exposing the grim reality of child labour. He constructs his narrative on the foundation of a large family with many children, aiming to unveil the exploitation of child labour. When the family first arrives in the US, there are six children in the family, constituting half of the members. Later, more children will be born. In the struggle for life and death, the labour of children and the few cents they bring home become the family's last chance.

"Very often a man could get no work in Packingtown for months, while a child could go and get a place easily; there was always some new machine, by which the packers could get as much work out of a child as they had been able to get out of a man, and for a third of the pay" (p. 80).

While labour laws of the time prohibited the employ-

ment of children under sixteen, bypassing this regulation was not difficult. For instance, Stanislovas, a child, is taken to a priest who issues a document claiming he is two years older than his actual age, effectively making him sixteen. Thus, the young boy's fate is determined (p. 84). As the family's situation worsens in the later parts of the novel, resorting to the labour of other children becomes inevitable. The section about two children being sent to sell newspapers paints a clear picture of the conditions of the time, albeit somewhat lengthy:

“So it was finally decided that two more of the children would have to leave school. Next to Stanislovas, who was now fifteen, there was a girl, little Kotrina, who was two years younger, and then two boys, Vilimas, who was eleven, and Nikalojus, who was ten. Both of these last were bright boys, and there was no reason why their family should starve when tens of thousands of children no older were earning their own livings. So one morning they were given a quarter apiece and a roll with a sausage in it, and, with their minds top-heavy with good advice, were sent out to make their way to the city and learn to sell newspapers. They came back late at night in tears, having walked for the five or six miles to report that a man had offered to take them to a place where they sold newspapers, and had taken their money and gone into a store to get them, and nevermore been seen. So they both received a whipping, and the next morning set out again. This time they found the newspaper place, and procured their stock; and after wandering about till nearly noontime, saying “Paper?” to every one they saw, they had all their stock taken away and received a thrashing besides from a big newsman upon whose territory they had trespassed. Fortunately, however, they had already sold some papers, and came back with nearly as much as they started with” (p. 144-145).

Children had to navigate through harsh winter conditions, and if they failed to make their way through snow-covered streets, they would face violence at home. In short, while Sinclair portrays the conditions of that era as an unbearable atmosphere for adults, he paints a much darker picture for children. Photographers have left rich visual records of child labour from this period (Hine & Freedman, 1998; Riis, 2015). Photographer Lewis Hine captured numerous photographs of children working in factories. The *Jungle* also illustrates this dramatic reality in detail through the character of Stanislovas. In fact, the main character, Jurgis, encounters a family member long after leaving home and learns from them that Stanislovas was killed by rats one night while sleeping in the workshop (p. 346).

5.2.3 Occupational Health and Safety

One of the responsibilities carried out by the human resources management function is workplace health condi-

tions and occupational safety. Among the tasks listed for a human resources manager in the International Labour Organization's international standard classification of occupations (ISCO-08) under code 1212 (h), “ensuring compliance with health and safety standards and regulations” is also included (ILOSTAT, 2008). This field under the HRM umbrella encompasses a broad context since it pertains to both workplace accidents and occupational diseases. In the early stages of industrialization, as the field was not yet regulated, motivations such as high production, efficiency, and profitability were prioritized over the lives of workers.

One of the primary emphases in *The Jungle* is workplace health, safety, and hygiene conditions within the Chicago meatpacking industry. Sinclair described the process in meat processing plants, especially the unsanitary conditions, in such detail that these details caused the book to arouse great resonance. In fact, the sentence “I aimed at the public's heart, and by accident I hit it in the stomach”, which will probably be the first to come across in an ordinary search on this book, is related to this issue. The reason is that the food products are produced under such unhealthy conditions that it would be unlikely not to cause outrage among those consuming these products. However, this sentence also reveals that Sinclair initially thought this outrage would manifest differently. Many passages related to hygiene and OHS (Occupational Health and Safety) can be referred to, but I will focus on highlighting certain sections emphasized from the workers' perspective.

Starting with the conditions leading to the dramatic death of Jurgis' father, elderly Antanas, would be appropriate. For the family to survive, all family members need to contribute by working. Antanas also eventually finds a job after a long search. No matter how severe the conditions, the old man does not complain and continues to work. However, sadly, this results in Antanas being the first lost member of the family:

Then there was old Antanas. The winter came, and the place where he worked was a dark, unheated cellar, where you could see your breath all day, and where your fingers sometimes tried to freeze. So the old man's cough grew every day worse, until there came a time when it hardly ever stopped, and he had become a nuisance about the place. Then, too, a still more dreadful thing happened to him; he worked in a place where his feet were soaked in chemicals, and it was not long before they had eaten through his new boots. Then sores began to break out on his feet, and grow worse and worse. Whether it was that his blood was bad, or there had been a cut, he could not say; but he asked the men about it, and learned that it was a regular thing—it was the saltpeter. Every one felt it, sooner or later, and then it was all up with him, at least for that sort of work. The sores would never heal—in the end his toes would drop off, if he did not quit. Yet old Antanas would not quit; he saw the suffering of his family, and he remembered what it had cost him to get a job. So he tied

up his feet, and went on limping about and coughing, until at last he fell to pieces, all at once and in a heap, like the One-Horse Shay” (p. 90-91).

Sinclair emphasizes throughout the book how employees worked in extremely unhealthy conditions. First and foremost, when the family arrives in Chicago and starts exploring the factory district, we see that the entire neighbourhood is situated near a garbage dump. Later on, both the neighbourhood’s and work environment’s foul odour is described with a strong emphasis.

“The men who worked on the killing beds would come to reek with foulness, so that you could smell one of them fifty feet away; there was simply no such thing as keeping decent, the most careful man gave it up in the end, and wallowed in uncleanness. There was not even a place where a man could wash his hands, and the men ate as much raw blood as food at dinnertime. When they were at work they could not even wipe off their faces—they were as helpless as newly born babes in that respect; and it may seem like a small matter, but when the sweat began to run down their necks and tickle them, or a fly to bother them, it was a torture like being burned alive” (p. 120-121).

The odour described here, later in the book, would be overshadowed by the stench that clings to Jurgis while he works in the fertilizer plant. This sharp smell makes people avoid him wherever he goes, and getting rid of it is hardly possible. Even if you cut ties with the job completely, it takes days and weeks for it to fade away.

Another family member, Marija, Ona’s cousin, loses her job at the cannery and finds work at another cannery. Her job involves slaughtering sick cattle. This job is also filled with risks of disease and accidents:

“She was shut up in one of the rooms where the people seldom saw the daylight; beneath her were the chilling rooms, where the meat was frozen, and above her were the cooking rooms; and so she stood on an ice-cold floor, while her head was often so hot that she could scarcely breathe. Trimming beef off the bones by the hundred-weight, while standing up from early morning till late at night, with heavy boots on and the floor always damp and full of puddles, liable to be thrown out of work indefinitely because of a slackening in the trade, liable again to be kept overtime in rush seasons, and be worked till she trembled in every nerve and lost her grip on her slimy knife, and gave herself a poisoned wound—that was the new life that unfolded itself before Marija” (p. 124).

Indeed, in later sections, we see that Marija injures her hand in a workplace accident and becomes unable to work. “She’s cut her hand! (...) She’s cut it bad, this time, worse than before. She can’t work and it’s all turning green, and the company doctor says she may—she may have to have it cut off” (p. 202).

One of the family’s disasters was the workplace accident Jurgis himself experienced. While trying to escape from the animals brought for slaughter, Jurgis sprains

his ankle. At first, he doesn’t take the accident seriously and continues working. However, as the pain intensifies, he eventually faints, and he has to report his condition to the boss. In order to work again, he needs to recover first, which takes months (p. 136).

Sinclair, particularly through the character of child Stanislovas, highlights child labour and the helplessness of children. The book portrays harsh winters in Chicago, where tough work conditions are coupled with harsh weather conditions. What the family fears most is losing their jobs. The accounting is so delicate that even the loss of one person’s income disrupts the balance sheet. On a harsh winter day when the family sets out for the factory before dawn, they fail to reach it and are forced to return home freezing. Stanislovas’ fingers are frozen.

“All that day and night the family was half-crazed with fear that Ona and the boy had lost their places; and in the morning they set out earlier than ever, after the little fellow had been beaten with a stick by Jurgis. (...) One of the consequences of this episode was that the first joints of three of the little boy’s fingers were permanently disabled, and another that thereafter he always had to be beaten before he set out to work, whenever there was fresh snow on the ground” (p. 142).

Sinclair depicts the factories as a sort of “blood-sucking” monster. This monster immediately places healthy workers in jobs but has a mechanism that discards those who can’t endure the harsh conditions. When Jurgis first arrived in America, he easily found work because he was strong and healthy. The employer noticed him and gave him a job. However, as he weakened, finding work became more difficult.

“In the beginning he had been fresh and strong, and he had gotten a job the first day; but now he was second-hand, a damaged article, so to speak, and they did not want him. They had got the best of him—they had worn him out, with their speeding-up and their carelessness, and now they had thrown him away! (...) The vast majority, however, were simply the worn-out parts of the great merciless packing machine; they had toiled there, and kept up with the pace, some of them for ten or twenty years, until finally the time had come when they could not keep up with it any more. Some had been frankly told that they were too old, that a sprier man was needed; others had given occasion, by some act of carelessness or incompetence; with most, however, the occasion had been the same as with Jurgis. They had been overworked and underfed so long, and finally some disease had laid them on their backs; or they had cut themselves, and had blood poisoning, or met with some other accident” (p.147-148).

Under these circumstances, Jurgis is left with no choice but to work at the fertilizer plant mentioned earlier. Sinclair portrays the workers here as people sentenced to death overtime:

“Here they made the blood into albumen, and made other foul-smelling things into things still more foul-smelling. (...) Working in his shirt sleeves, and with the thermometer at over a hundred, the phosphates soaked in through every pore of Jurgis’ skin, and in five minutes he had a headache, and in fifteen was almost dazed. The blood was pounding in his brain like an engine’s throbbing; there was a frightful pain in the top of his skull, and he could hardly control his hands. Still, with the memory of his four months’ siege behind him, he fought on, in a frenzy of determination; and half an hour later he began to vomit—he vomited until it seemed as if his inwards must be torn into shreds” (p. 152-155).

While Sinclair structured his novel *The Jungle* into 31 chapters, it can be divided into two overarching sections when viewed from a bird’s eye perspective. The first section depicts the family’s arrival in America with great hopes and their immediate encounter with harsh realities. This part begins with the family’s determined efforts to establish a foothold in life. As the story unfolds, a sort of journey to “bottom” commences. However, no matter how intense the drama becomes, the family never ceases to imagine a way out. For Jurgis, this struggle to “stand on the line” comes to an end with the death of his son, little Antanas. This event could be seen as a sort of nadir. After this incident, the second half of the story begins for Jurgis, representing a kind of personal journey.

If we were to follow this pattern of division, the second section (Chapter 22 in the book) starts with a sort of “return to nature.” In this part, upon receiving news of his son’s death, Jurgis leaves everything behind and abandons the family. He travels, seizing job opportunities that come his way. He takes up the job of tunnel digging for telephone lines.

“On an average, the tunnelling cost a life a day and several manglings; it was seldom, however, that more than a dozen or two men heard of any one accident. The work was all done by the new boring machinery, with as little blasting as possible; but there would be falling rocks and crushed supports, and premature explosions—and in addition all the dangers of railroading. So it was that one night, as Jurgis was on his way out with his gang, an engine and a loaded car dashed round one of the innumerable right-angle branches and struck him upon the shoulder, hurling him against the concrete wall and knocking him senseless” (p. 269).

Lastly, under this section, it is pertinent to mention a passage that describes the company’s decision to bring in workers from other cities to continue operations after the union’s strike decision. This passage once again underscores the health risks inherent in the meatpacking industry’s working conditions:

“All day long the blazing midsummer sun beat down upon that square mile of abominations: upon tens of thousands of cattle crowded into pens whose wooden floors

stank and steamed contagion; upon bare, blistering, cinder-strewn railroad tracks, and huge blocks of dingy meat factories, whose labyrinthine passages defied a breath of fresh air to penetrate them; and there were not merely rivers of hot blood, and car-loads of moist flesh, and rendering vats and soap caldrons, glue factories and fertilizer tanks, that smelt like the craters of hell—there were also tons of garbage festering in the sun, and the greasy laundry of the workers hung out to dry, and dining rooms littered with food and black with flies, and toilet rooms that were open sewers” (p. 328).

While the novel extensively discusses workplace health and safety, it also delves into the hygiene of food processing. However, since the focus of this analysis is on working conditions and human resources management, I referred more to passages directly affecting workers. Nonetheless, it’s important to note that one of the reasons the novel had such a significant impact on public opinion after its publication was its descriptions of food hygiene. Despite Sinclair’s intentions, these passages had a profound impact, even unintentionally “hitting the stomach”.

5.2.4 Wages

In his work, David Ricardo, one of the foundational texts of classical economics, explains the concept of “natural wages” in the section on wages. According to Ricardo, just like any other commodity in the market, labour also has a market price and a natural price. The natural price of labour is the price necessary for workers to maintain and sustain their families without an increase or decrease in their numbers. This wage is determined based on the cost of food and other essential needs required by the labourer and their family for subsistence. Ricardo points out that while the market price of labour may deviate from the natural price due to the quantity of labour supply, it tends to gravitate towards the level of the natural wage (Ricardo, 2001: 58). Here, we observe that classical economists treat labour as a simple commodity. They believed that commodities have both market prices and natural prices, with the natural price representing the production cost of the commodity. Consequently, the natural wage of labour (though not easily calculated) corresponded to its reproduction cost (Moore, 1895: 291–292).

In this context, I am not aiming to delve into the extensive debates on natural wages within the labour economics literature. It suffices for our purpose to express that this wage level ensures a minimum level for the reproduction of the workforce. Upton Sinclair emphasizes in *The Jungle* that the wages earned by workers are significantly below this level. One passage ends with two sentences that highlight this situation: “This was in truth not living; it was scarcely even existing, and they felt that it was too little for the price they paid. They were willing to work all the time;

and when people did their best, ought they not to be able to keep alive?" (p. 118-119).

Under this heading, perhaps it would be appropriate to consider wages in the context of discrimination. In this wage regime, which could not even be counted as a natural wage, women and children were even more disadvantaged. Since institutionalized human resources practices were absent, wage records were not well-maintained, and the rightful wage of an employee depended on the attention of the record keeper. If you were underpaid, you had to remain silent. In fact, Marija loses her job for pursuing the missing wages she deserved (p. 122). Marija searches for a job for a month and finally finds work as a cutter in the meatpacking plant. "She got this because the boss saw that she had the muscles of a man, and so he discharged a man and put Marija to do his work, paying her a little more than half what he had been paying before" (p. 124).

I'd like to share two passages related to wages. One of them deals with the methods employers resorted to in order to reduce wages:

"They would get new pacemakers and pay them more; they would drive the men on with new machinery—it was said that in the hog-killing rooms the speed at which the hogs moved was determined by clockwork, and that it was increased a little every day. In piecework they would reduce the time, requiring the same work in a shorter time, and paying the same wages; and then, after the workers had accustomed themselves to this new speed, they would reduce the rate of payment to correspond with the reduction in time! They had done this so often in the canning establishments that the girls were fairly desperate; their wages had gone down by a full third in the past two years, and a storm of discontent was brewing that was likely to break any day" (p. 130).

The second passage emphasizes that the wages are even below the natural wage level mentioned above:

For an unskilled man, who made ten dollars a week in the rush seasons and five in the dull, it all depended upon his age and the number he had dependent upon him. An unmarried man could save, if he did not drink, and if he was absolutely selfish—that is, if he paid no heed to the demands of his old parents, or of his little brothers and sisters, or of any other relatives he might have, as well as of the members of his union, and his chums, and the people who might be starving to death next door. (p. 149).

5.2.5 Other Matters Related to Labour Relations in the Book

Under this heading, I will highlight a few points related to human resource management in *The Jungle*. One of these points is job insecurity. Job insecurity roughly refers to the lack of continuous employment or uncertainty regarding employment continuity. Especially during periods

when labour rights were underdeveloped and human resource management practices were not institutionalized, this insecurity was a fundamental aspect of work life. Although this uncertainty would later diminish in the Fordist work regime, which Zygmunt Bauman (2001) would refer to as the "heavy modern era," job security was far from being the norm during the time *The Jungle* was written. As known, in the Fordist work regime, job security and long-term employment would become the norm, but these securities would disappear again in the post-Fordist era (Bauman, 2004, 2013b, 2013a). In fact, to describe the uncertainties in post-Fordist work life, the term "precarious" would be used, which some authors would define as the deprivation of job security that the proletarians of the Fordist era had enjoyed (Standing, 2021). Returning to the book, finding and maintaining a job are of utmost importance. This is because surviving in the struggle for survival of workers is closely related to job retention. Therefore, even immediately after a special day like a wedding, our main characters have to go to work. Regardless of the reason, whether it's a wedding, a demand for rights, or harsh weather conditions, you know that every moment you don't go to work, someone else could take your place and you could lose your job. The reason for little Stanislovas enduring Jurgis's violence to go to work in cold weather is precisely this.

Another point I will address under this heading is career management. In *The Jungle*, which depicts a working environment far from the Fordist work regime mentioned above, career is not yet a matter dealt with in the long term. One must wait until the second half of the 20th century for that (Greenhaus et al., 2009). It is shown throughout the book that workers' work lives are dependent on the season, market fluctuations, the arbitrary attitudes of foremen or employers, in short, by a thread. However, one passage directly emphasizes the futility of career expectations:

"Jurgis had come there, and thought he was going to make himself useful, and rise and become a skilled man; but he would soon find out his error—for nobody rose in Packingtown by doing good work. You could lay that down for a rule—if you met a man who was rising in Packingtown, you met a knave. That man who had been sent to Jurgis' father by the boss, he would rise; the man who told tales and spied upon his fellows would rise; but the man who minded his own business and did his work—why, they would "speed him up" till they had worn him out, and then they would throw him into the gutter" (p. 70-71).

Lastly, let's conclude this section by emphasizing the blue-collar – white-collar distinction. As is known, as the scale of factories grew, the number of administrative positions needed also increased, giving rise to a sort of administrative class (Braverman, 1998). Although both blue-collar workers (manual labour) and white-collar workers (administrative roles) are sociologically members of the working class, there has always been a disconnect

between these two groups. The image of a white-collar worker is more associated with being educated, performing mental work, and working in clean environments, and is thus idealized as a more skilled employee. On the other hand, being a blue-collar worker is associated with lack of skill, lack of education, and performing manual labour. Therefore, a disconnect, and consequently a hierarchy, is assumed to exist between these two groups. A passage in the book highlights this distinction:

“The managers and superintendents and clerks of Packingtown were all recruited from another class, and never from the workers; they scorned the workers, the very meanest of them. A poor devil of a bookkeeper who had been working in Durham’s for twenty years at a salary of six dollars a week, and might work there for twenty more and do no better, would yet consider himself a gentleman, as far removed as the poles from the most skilled worker on the killing beds; he would dress differently, and live in another part of the town, and come to work at a different hour of the day, and in every way make sure that he never rubbed elbows with a laboring man. Perhaps this was due to the repulsiveness of the work; at any rate, the people who worked with their hands were a class apart, and were made to feel it” (p. 121-2).

6 Discussion: What can We Learn from a Novel in the Context of HRM History?

A novel brings the reader into the world it describes by focusing on the everyday and the mundane. In other words, the narrative of a novel describes a world that the reader is familiar with, a world they live in. Therefore, the characters are not true “heroes” in the literal sense. Characters belong to a league of ordinary individuals that an average reader can include themselves in. To this extent, a novel derives its power from the familiarity of the world it depicts. In fact, the more a novel captures this familiarity or ordinariness, the more it becomes a true novel. In other words, as mentioned earlier, the “averages” presented by a novel appear as authentic to the reader as they seem likely.

Still, isn’t it contradictory for a social science analysis to refer to a novel or artistic representation and attempt to support its claims through it? The answer to this question depends on how you define science, that is, whether you adhere to a strict positivist view of science or a more interpretive definition that allows for interpretation. However, we know that in recent times, sociological studies have made more use of artistic representations than before (Strangleman & Warren, 2008). Since Snow’s (2020) “The Two Cultures”, the number of those emphasizing the intersection of literature and scientific field has been increasing. Literature, in the context of this study, the novel, gains its power partly from its attempt to reflect the av-

erage of the depicted world, and moreover, from the author’s ability to intervene in the world they have created to make this average even more realistic. This has attracted scientists, who are otherwise confined by the rigid rules of scientific knowledge production procedures, to be able to see and present certain details and connections of their research subjects through these artistic representations. For instance, it’s difficult not to marvel at how Orhan Pamuk (2015) managed to capture the inner worlds or voices of the characters in his novel *A Strangeness in My Mind*. The reader might not have been aware of having similar thoughts in similar situations in their own life until they read about these subtleties. Hence, the novel includes the reader in this average and makes them a part of the story. Of course, Orhan Pamuk is just one example; you could also think of many novels by Dostoevsky, for instance.

Yet, we still haven’t reached the question that was posed at the beginning of this section. If a novel can present the familiar world, and furthermore, present details that a scientific perspective might miss, the answer will be relatively clear. Moreover, when you read the novel many years after it was written, the details you read are no longer part of your current world, but rather details of the time the story was set in. In other words, the novel transforms into a kind of historical narrative that conveys the world of its time. When considered in the context of *The Jungle*, the purpose of writing the novel becomes even more significant. As mentioned earlier, Upton Sinclair embarked on a sort of muckraking journalism and aimed to portray what was happening, especially in the workers’ world, in the meatpacking industry from his own perspective. Indeed, these exposé activities, as described above, created a huge impact and accelerated certain legislative actions. These regulations, along with other factors shown in Figure 1, are among the factors that shaped HRM practices. This aspect of the book is related to the factors shaping HRM.

On the other hand, the relationships between the book’s characters and work, as well as work organizations throughout the book, provide abundant details about the management of the human factor in early management practices. The HRM practices we examined individually above are now carried out in a more institutionalized manner that is suitable for the evolved state of HRM today. Nevertheless, it’s possible to say that the novel provides rich data in the context of showing early practices, which is the aim of this study.

Finally, while suggesting that the novel is an important genre in the context of examining the relevant period, it is useful to remind that one should not make the mistake of reading its narrative as an “academic historical text” by completely ignoring its fictional aspect. When social scientists use a novel as material, they should not forget their research purpose and should not engage with it entirely, reading it solely as a reality.

7 Conclusion

In this study, we examined the details related to human resource management presented in *The Jungle* based on the assumption that novels can provide important insights about the period they were written in. In other words, we subjected the novel to a “purposeful” reading. Purposeful reading refers to reading a relevant text within a predetermined thematic context. The main theme determined for this study is human resource management, or more broadly, employment relations. While the novel contains various details, purposeful reading highlighted the aspects related to employment relations.

The period in which the novel was written, an early period where specialized HRM functions did not exist, was known for organizations using arbitrary foreman practices (foreman’s empire) based on discretion to control and manage human resources. This aspect is emphasized throughout the novel.

Furthermore, this period was characterized by intense child labour. Although there were limited regulations to prevent it, these regulations were quite easy to bypass. Sinclair structured the central family in the novel as a large family with many children to vividly depict child labour. The challenges of child labour and the issue of bypassing the aforementioned regulations are openly displayed in the book.

Occupational health and safety are among the most prominently addressed themes in the book. Within this theme, it is appropriate to emphasize two points. First, the direct dangers inherent in the work and the accidents they lead to. The second is the unsanitary conditions in the food processing industry. Sinclair elaborates on both aspects in detail throughout the book. The public reaction to the hygiene issue even exceeded the author’s initial expectations and led to his famous statement: “I aimed at the public’s heart, and by accident, I hit its stomach.”

The book also provides details about the remuneration policies of the period. Regarding wages, it is possible to highlight two aspects. One is that wages are significantly lower than the level of the “natural wage”, and the other is that women and children receive significantly lower wages even when performing the same tasks.

In conclusion, *The Jungle* serves as a significant example of obtaining insights about a certain period from a novel. The novel, to the extent that it reflects the habitus of the period, can become a kind of time machine. It would not be an exaggeration to assert that the discussed novel is ambitious in achieving this.

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Razkrinkavanje Skozi roman: Upton Sinclairov "The Jungle" in Zgodnja Zgodovina Upravljanja s Človeškimi Viri

Ozadje in namen: Ta študija temelji na predpostavki, da roman, ki je sodobna pripovedna oblika, odraža kanon obdobja, v katerem je bil napisan. V tem kontekstu študija poskuša prikazati, kako so bile prakse upravljanja s človeškimi viri izvajane v velikih industrijskih enotah v obdobju, ko funkcija upravljanja s človeškimi viri še ni bila specializirana, z romanom "The Jungle" avtorja Uptona Sinclaira.

Načrt/ Metodologija/ Pristop: Študija temelji na tipologiji, ki jo je Bruce E. Kaufman uporabil pri opisu zgodnje zgodovine upravljanja s človeškimi viri v ZDA. Kaufman našteje štirinajst dejavnikov, ki zaznamujejo zgodnje upravljanje s človeškimi viri. Eden od njih je razkrivanje dejavnosti gibanja Progressive. Zato je roman tukaj obravnavan kot sredstvo razkrivanja. Na tej osnovi študija analizira roman "The Jungle" okoli naslednjih tem: cesarstvo nadzornika, otroško delo, varnost in zdravje pri delu, plače, negotovost zaposlitve, kariera in delitev med modrim ovratnikom in belim ovratnikom.

Rezultati: Roman kaže, da čeprav se je obseg proizvodnih enot v zgodnjih 1900-ih povečal, prakse upravljanja s človeškimi viri še niso bile institucionalizirane in specializirane. Zato se rutine upravljanja s človeškimi viri izvajajo z arbitrarnim odnosom nadzornikov, plače so pod naravno ravno plač, otroško delo je široko razširjeno, delovno življenje pa je polno tveganj v smislu varnosti in zdravja pri delu.

Zaključek: Ko se pripoved romana o upravljanju s človeškimi viri bere vzporedno z akademskimi študijami, se vzporednost med obema pripovedima kaže, zakaj se romani lahko uporabljajo kot gradivo za akademske študije.

Ključne besede: *Prakse upravljanja s človeškimi viri, Zgodnja zgodovina upravljanja s človeškimi viri, Upton Sinclairov "The Jungle"*

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