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The impact of digitalisation on employment and productivity in the financial sector: A comparative analysis of information and communication technology usage of Central European and Baltic businesses

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ABSTRACT

Objective: The article aims to examine the impact of digitisation on employment and productivity in the financial sector and provide a comparative analysis between the Central European and the Baltic countries as no study has yet compared these two regions in terms of digitalisation and information and communication technology (ICT) usage despite similar economic backgrounds.

Research Design & Methods: To address this, we applied a two-pronged approach that combines a literature review with an empirical analysis of secondary data. We used multivariate analysis of variance (MANOVA) to estimate the simultaneous total effect of ICT use on employment and productivity and ordinary least squares (OLS) regression to examine the specific relationships identified by MANOVA.

Findings: Central European countries generally exhibit higher levels of employment and productivity than their Baltic counterparts, highlighting regional differences in economic conditions and labour market dynamics. ICT has a major impact on productivity but is also associated with declining employment levels, which raises concerns about potential job displacement. Investments in the financial sector have a positive effect on employment, which highlights its crucial role in supporting employment growth.

Implications & Recommendations: By implementing best practices and encouraging a culture of ongoing learning and innovation, the digital transformation of Central Europe and the Baltic countries can become smooth and successful. Regional comparative analysis further provides valuable contextual insights, highlighting the need for tailored policy interventions.

Contribution & Value Added: The analysis shows that investments do not have a significant direct effect on productivity. Capital investment does not guarantee an increase in output, just emphasises the need for a strategic investment approach.

Article type: research article

Keywords: digitalisation; ICT; employment; productivity; finance

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INTRODUCTION

Nowadays, the role of the financial sector in fostering job growth, national economic development, and people's financial inclusion is becoming increasingly obvious. The speed of digitisation has changed employment in financial services (Niemand *et al*., 2021). The rise of fintechs has altered the way how businesses operate, and labour organisation by the increased use of remote work and flexible sched-

uling (Garcia *et al*., 2024). This long-term impact could result from the increased demand for digitalised financial services during the pandemic (Setiawan *et al*., 2024).

Digitalisation encompasses skills and abilities while information and communication technology (ICT) concerns the use of ICT technology. Both have been profoundly reshaping employment patterns and productivity (Al-Surmi *et al*., 2021). To guarantee sustainable growth, institutions must address the concerns about fair working conditions, skill development, and funding (Adeoye *et al*., 2024).

Central European (CE) and Baltic countries have experienced significant economic transitions leading the groundwork for digitalisation efforts. In the Baltic countries (Estonia, Latvia, Lithuania), digitalisation has been integral to economic development, with Estonia particularly noted for its advanced e-government services (Himma-Kadakas & Kõuts-Klemm, 2023). According to Boikova *et al.* (2021), EU integration and investment, particularly in ICT infrastructure drives digitalisation in CE (including Poland, Hungary, and the Czech Republic). These regions continue to harness digital tools to enhance productivity and competitiveness in finance (Brodny & Tutak, 2022). That is why focusing on the digitalisation of the finance sector is essential.

How has digitalisation impacted employment and productivity in the financial sector of CE and Baltic countries? A comparative analysis of ICT usage between CE and the Baltic countries is essential to understand the distinct regional approaches to digitalisation in the financial sector as these two regions have not yet been compared to each other regarding the aspect of digitalisation and ICT usage despite their common economic background (*i.e.*, centrally planned economies).

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Digitalisation in the Financial Sector

Digitalisation in the financial sector has been reshaping how people deliver and consume financial services globally (Demidova *et al*., 2024). Artificial intelligence (AI) and machine learning (ML) have become integral to the financial sector, driving efficiency and innovation (Chen *et al*., 2023). Marengo (2024) argues that IoT technology enables connected devices to provide real-time data for various financial applications, leading to better decision-making.

Grishanova *et al.* (2022) state that one of the advances of digitalisation in finance is cloud computing, which has enabled financial institutions to reduce costs and improve flexibility. This shift also supports the development and deployment of new digital services more rapidly fostering innovation and competition such as apps, personalised financial advice platforms, and more integrated financial ecosystems (Breuer & Knetsch, 2023).

According to Anakpo *et al.* (2023), mobile payment solutions, digital wallets, and contactless payments bridge the gap for those without access to traditional banking services. Alqudah *et al.* (2023) state cryptocurrencies, such as Bitcoin and Ethereum, have also gained traction, offering an alternative to traditional currencies and payment systems worldwide. According to Adam *et al.* (2024), financial institutions that embrace these trends and invest in digital transformation are better positioned to thrive in an increasingly competitive and digital landscape.

The Impact of Digitalisation on Employment and Productivity

Digitalisation has profoundly reshaped employment patterns and created new opportunities while also presenting challenges such as job displacement. One of the most notable impacts of digitalisation is the automation of routine tasks (Kuncha & Sharma, 2024) and the rise of AI-powered chatbots and robo-advisors, freeing up human agents to tackle more complex issues (Huang *et al*., 2024).

However, there is a demand for new skills such as proficiency in data analysis, strategic planning, cybersecurity, and digital literacy (Abrantes & Hang, 2023). According to Möller (2023), continuous learning and upskilling have become essential for career advancement in this digital era.

Digitalisation has also enabled remote work, offering greater flexibility to employees especially during and after the COVID-19 pandemic (Battisti *et al*., 2022) as well as improved work-life balance

and increased job satisfaction (Al Mohamed *et al*., 2024). One of the most profound impacts of digitalisation on productivity, *i.e.*, automation of routine and repetitive tasks, reduces both the time and resources needed (Eziefule *et al*., 2024).

Online banking platforms, mobile apps, and AI-driven customer service solutions provide customers with convenient and efficient access to financial services (Sheth *et al*., 2022), which also reduces the time and effort for communication and coordination, leading to more efficient operations.

ICT Usage in Central Europe and the Baltic Countries

Digitalisation has significantly impacted the CE financial sector, particularly through ICT. Various studies (*e.g*., Skare *et al.*, 2023; Kádárová *et al*., 2023; Nicolás-Agustín *et al*., 2024) have highlighted its influence on employment, productivity, and operational efficiency. On the policy front, the European Union has implemented various initiatives to promote digitalisation, such as Act 2554 of the EU on the Digital Finance Package and the Digital Operational Resilience (DORA, 2022).

The rate and effectiveness of ICT adoption vary across CE countries (Bayar *et al*., 2024; Saba *et al*., 2024). According to Švarc *et al.* (2021), countries like Estonia and Poland have been at the forefront of digital transformation, with high levels of ICT adoption and significant investments in digital infrastructure. In contrast, some countries in the region have lagged in ICT adoption, facing challenges such as limited digital skills and inadequate infrastructure (Stecenko & Stukalina, 2022). This disparity highlights the need for targeted policies tailored to regional differences and investments to ensure that all countries in the region can benefit from digitalisation, which has not been called for so far in the literature.

The adoption of ICT has also been a significant driver of transformation, impacting, among others, employment, productivity, and operational efficiency in the Baltic financial sector. Financial institutions and fintech companies have embraced digital banking (Mavlutova *et al*., 2023) and have made substantial investments in technological infrastructure, which has been pivotal in their digital transformation (Kunicina *et al*., 2024). According to Szentmihályi (2023), Estonia, often referred to as the 'digital nation,' has been a leader in this regard. The country has developed a robust digital infrastructure, including e-residency, digital ID cards, and blockchain technology for secure transactions (Espinosa, 2024). According to Raudla *et al.* (2024), Latvia and Lithuania have also made significant strides, with extensive broadband coverage and investments in fintech innovations.

Government policies have played a crucial role in promoting ICT adoption. Estonia's government has been particularly proactive, implementing policies that encourage digital innovation and entrepreneurship (Espinosa, 2024). For example, the Digital Agenda 2030 for Estonia (2021) aims to enhance the country's digital infrastructure and services. Similarly, Latvia and Lithuania (Bitė *et al*., 2023) have introduced policies to support digitalisation, such as tax incentives for tech startups and investments in digital education.

Our article focuses on Austria, the Czech Republic, Estonia, Latvia, Lithuania, Poland, Slovakia, and Slovenia and compares the impact of ICT on employment and productivity. Estonia and Poland lead in digital transformation, improving operational efficiency and innovation. Other CE countries face challenges like limited digital skills and infrastructure, hindering their digital benefits. Our research investigates these regional disparities in ICT adoption and infrastructure, offering targeted policy recommendations based on unique regional challenges and opportunities.

Consequently, we addressed the following research question:

What impact does ICT use have on employment and productivity in the financial sector of the CE and Baltic countries?

Building on the insights from Skare *et al.* (2023), Kádárová *et al.* (2023), Nicolás-Agustín *et al.* (2024), and Raudla *et al.* (2024), we tested three hypotheses:

H1: ICT use in finance leads to job changes, often reducing employment due to automation.

H2: Higher ICT use boosts productivity by enhancing operational efficiency.

H3: ICT's impact on employment and productivity varies between CE and Baltic countries due to regional differences.

RESEARCH METHODOLOGY

We conducted an empirical analysis using a quantitative research design based on data from authoritative sources such as OECD and Eurostat, covering the period from 2005 to the present. The dataset includes key financial sector indicators, particularly employment (number of jobs) and productivity (output per worker). We developed a composite index reflecting various aspects of ICT use, including employee computer and internet usage, business website functionality, use of enterprise software (*e.g.,* ERP, CRM), electronic order processing, and cloud computing adoption. In total, we used 18 variables to construct this index by averaging normalised and weighted values, validated against the DESI index. To control for investment effects, we included Eurostat's financial sector investment data, aligning with our research objectives, as investment significantly influences job creation, digital adoption, and innovation.

Our analysis used two statistical methods. First, we applied a multivariate analysis of variance (MANOVA) to assess the simultaneous effect of ICT use on employment and productivity. We then used ordinary least squares (OLS) regression to focus on how ICT affects employment and productivity individually to examine the specific relationships identified by MANOVA. We chose these methods because they fit our data well and align with our research objectives, allowing us to comprehensively analyse the complex relationships between ICT use, employment, and productivity.

The empirical model used in OLS regression takes the following form:

$$Yi = \beta 0 + \beta 1(ICT\ Composite\ Index) + \beta 2(Financial\ Sector\ Investment) + \epsilon \quad (1)$$

in which $Y\mathrm{i}$ represents employment or productivity as the dependent variable, the ICT composite index is the main independent variable, and financial sector investment serves as the control variable. This model allowed us to quantify the impact of ICT use on employment and productivity while controlling for other influencing factors.

RESULTS AND DISCUSSION

Digital Status of the Regions

The Baltic countries are making progress in digitalisation, Estonia is leading in overall digital performance, Latvia is excelling in connectivity, and Lithuania is strong in digital technology integration (Česnauskė, 2019). The European Commission's Digital Economy and Society Index (DESI) is the main tool for assessing digital progress across various components. Although digitalisation offers opportunities for economic growth and competitiveness, the Baltic countries have not yet fully exploited their potential (Česnauskė, 2019; Eteris, 2020). To address this, these countries are adopting sustainability and digital agenda plans (Eteris, 2020).

While digitisation can boost productivity and competitiveness, e-government services in Central and Eastern European countries remain relatively underdeveloped (Spaček *et al.,* 2020). Digital transformation has a significant impact on international competitiveness in the region (Grynia, 2022), yet enterprise digital maturity varies widely and still lags behind other EU countries (Brodny & Tutak, 2021). Despite differing national strategies and centralisation levels, countries like the Czech Republic, Hungary, and Romania are at similar stages of e-government development (Spaček *et al.,* 2020).

The Baltic countries have made significant progress in digital infrastructure and innovative digital policies. Estonia stands out for leading e-government initiatives and extensive digital literacy programmes. Although CE countries are trying to integrate digital skills into their education and training systems, there are still significant differences in digital infrastructure and resources. Despite efforts to increase digital literacy and promote a broader digital transformation, adoption rates and overall progress are generally slower than in the more developed Baltic countries (Anacka & Lechman, 2023).

DESI 2022 provides valuable insights into the digitisation progress of CE and Baltic countries. These countries show different levels of performance in key areas such as connectivity, digital skills and the application of digital technologies in business (Figure 1).

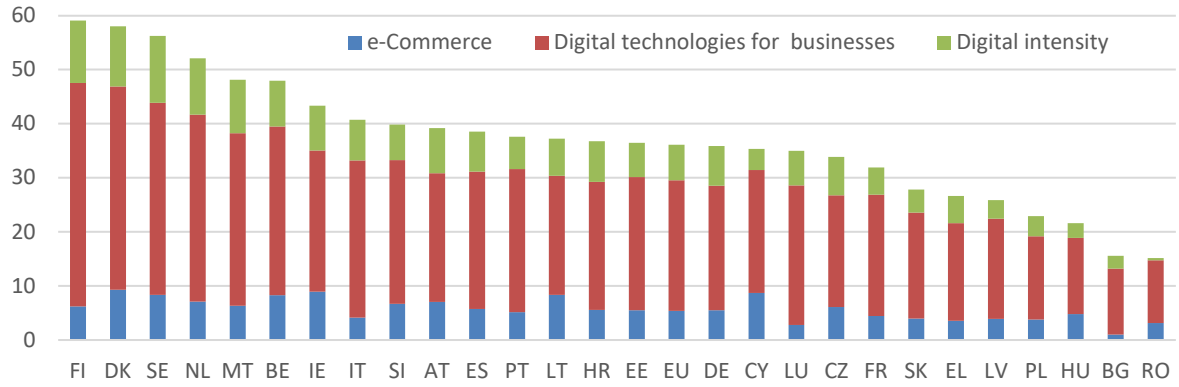

Figure 1. Integration of digital technologies
Source: DESI 2022, European Commission.

The digital landscape of CE and the Baltic countries shows a promising but uneven path towards digital transformation. Connectivity is strong, with Austria, the Czech Republic and Lithuania achieving over 95% broadband coverage, while Estonia excels with a 90% e-government take-up rate, highlighting its advanced digital infrastructure.

The digitalisation of business is changing in a big way. Poland and Slovakia lag, with only 15% of businesses using cloud services, compared to 40% in Estonia. Austria and Lithuania demonstrate strong digital skills, with around 75% of their population having basic digital skills.

Austria and Slovenia lead the way in terms of digital intensity, with many businesses reaching 'high' or 'very high' levels thanks to supportive policies and innovation. In contrast, Poland, Slovakia and Hungary face significant challenges, indicating a need for better infrastructure and digital skills. The Czech Republic has medium digital adoption with growth potential (Figures 1 and 2).

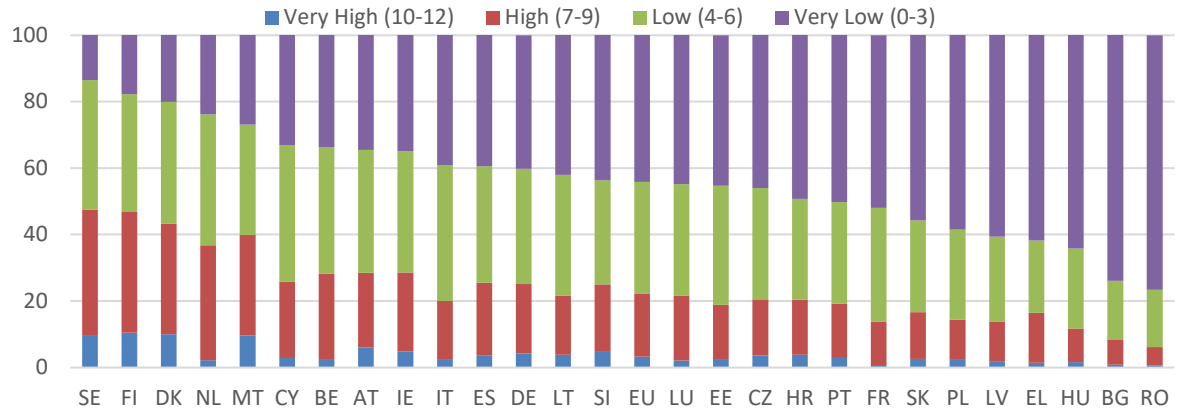

Figure 2. Digital Intensity Index by level (% of enterprises), 2022
Source: Eurostat, European Union survey on ICT usage and e-commerce in enterprises.

DESI 2022 data highlights the need for sustained investment and supportive policies to bridge the digital divide and increase digital competitiveness in the region. Countries like Estonia and Austria demonstrate high adoption of advanced digital technologies, while Lithuania and Slovenia perform well in e-commerce and digital government services. Figure 3 illustrates varied digital technology adoption among businesses in CE and the Baltic countries. The Figure shows Austria, Estonia, and Slovenia lead in digital integration, whereas Hungary, Poland and Latvia lag. The CE region has an average score of 20.03, below the EU average of 24.18, indicating the need for strengthened digital adoption efforts. The Baltic countries show a mixed performance, with Estonia leading the way, while Latvia and Lithuania have lower performances. This disparity reinforces the importance of aligned strategies to bridge the digital divide and promote comprehensive digital transformation in the region.

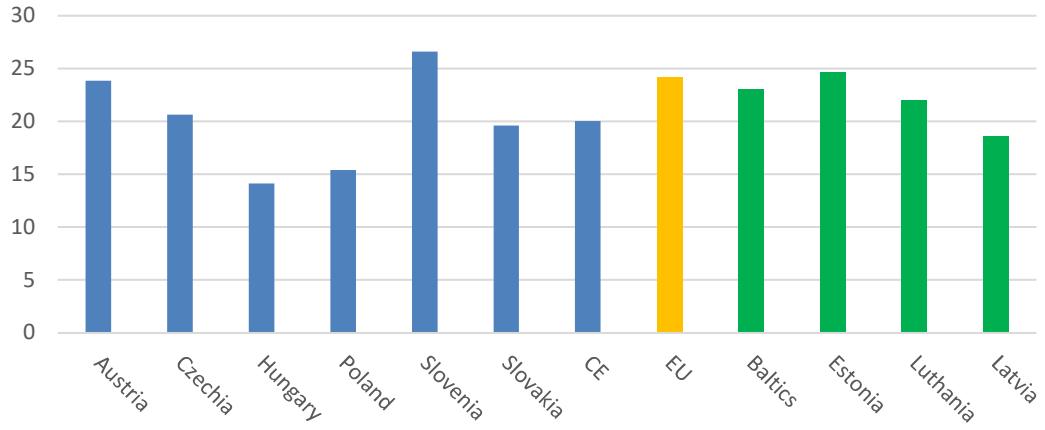

Figure 3. Usage of digital technologies by businesses
Source: own elaboration based on DESI data.

Impact of ICT usage on the regions

The results of MANOVA and OLS regression models provide valuable insights into the impact of ICT use and investment on employment and productivity in the financial sectors of CE and Baltic countries. The analysis shows that the mean and median levels of ICT adoption are generally higher in CE than in the Baltics, suggesting a more advanced use of technology in CE. In contrast, greater variability in ICT use across the Baltic countries may indicate uneven technology infrastructure or investment levels.

We assessed ICT use in the financial sector with various measures reflecting the adoption of digital technology, including the proportion of employees using computers and the Internet, the frequency of digital transactions, investments in ICT infrastructure, and the adoption of advanced digital tools and software. We combined these measures into a standardised composite index to provide a unified view of ICT use across the studied countries.

The data shows a clear upward trend in ICT adoption in all surveyed countries from 2005 to 2023, reflecting a growing commitment to digital transformation. Each country shows steady growth in the percentage of businesses integrating digital technologies, highlighting the benefits of digitalisation such as increased efficiency, competitiveness and innovation. For example, Estonia continues to lead in digital adoption, while Austria and the Czech Republic are also showing strong growth, highlighting their success in promoting a digital-friendly business environment (Figure 4).

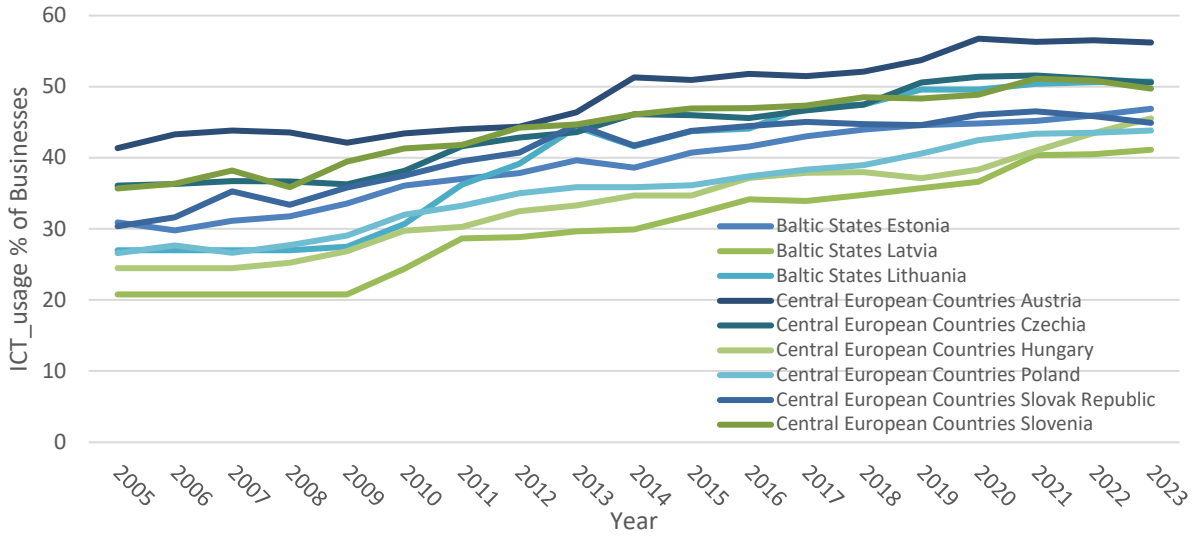

Figure 4. ICT usage in the financial sector
Source: own elaboration.

Along with trends in ICT use, investment patterns also revealed marked regional differences. CE countries exhibited higher average and median investment values than the Baltic countries, suggesting a more developed or wider scope of economic activities and investment opportunities in these regions. In contrast, the Baltic countries showed greater variability in investment levels, which may reflect differences in economic stability and investment practices (Figure 5).

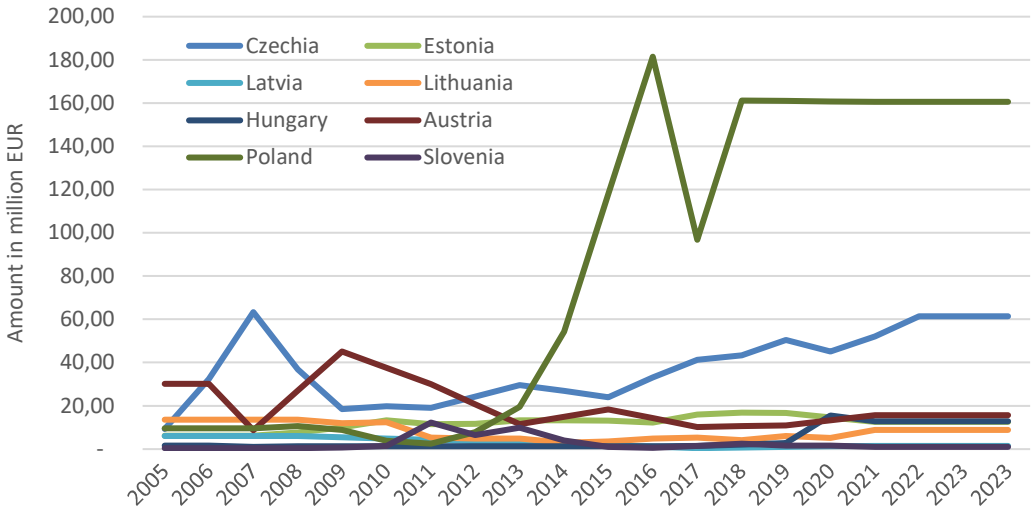

Figure 5. R&D spending by business enterprises
Source: own elaboration based on the Eurostat data.

A comprehensive analysis of the MANOVA results revealed significant findings regarding regional differences and the impact of ICT use and investment on employment and productivity. The overall model fit is robust, with a Wilks' Lambda of 0.7348, an F-value of 30.1391, and a p-value of 0.0000, confirming the model's significance. Additional statistics, *i.e.,* Pillai's Trace (0.2652), Hotelling-Lawley Trace (0.3609), and Roy's Greatest Root (0.3609), further support the presence of strong differences in the multivariate response.

Regarding ICT use, the Wilks' Lambda value of 0.9136 and F-value of 7.8956 indicate a significant effect on employment and productivity, supported by a p-value of 0.0005. Pillai's Trace (0.0864), Hotelling-Lawley Trace (0.0946), and Roy's Greatest Root (0.0946) further confirmed this underscoring the meaningful impact of ICT use.

For investment, the Wilks' Lambda value of 0.4721 and F-value of 93.3530 highlight a significant effect on employment and productivity, with a p-value of 0.0000 indicating a strong effect independent of ICT use. Pillai's Trace (0.5279), Hotelling-Lawley Trace (1.1180), and Roy's Greatest Root (1.1180) further corroborated it emphasizing the substantial role of investment in shaping these dependent variables (Table 1).

The test results indicated a significant overall effect of the model, demonstrating that both ICT use and investment significantly affected employment and productivity. Statistical tests confirm a strong collective effect of the independent variables on the dependent variables with high statistical significance ($p < 0.0001$). This robust significance underscores the relevance of ICT use and investment in explaining changes in employment and productivity.

Examining individual effects, ICT use had a significant impact on the combined dependent variables, as shown by a Wilks' lambda of 0.9136 and an F-value of 7.8956 ($p = 0.0005$). This result highlights ICT's crucial role in affecting employment and productivity, emphasising its importance in digitising the financial sector. Similarly, investment has a substantial effect, with a Wilks' lambda of 0.4721 and an F-value of 93.3530 ($p < 0.0001$), indicating a significant influence on employment and productivity outcomes.

OLS regression models further clarified these relationships. In the employment model, ICT use had a significant negative coefficient of -3.7166 ($p = 0.013$), suggesting that each unit increase in ICT use was associated with a decrease in employment of approximately 3.72 units. This negative relationship

likely reflects the role of digitisation in automating processes and enhancing efficiency, thereby reducing labour demand in the financial sector. Conversely, the investment coefficient had a significant positive effect on employment, with a value of 4.6265 ($p < 0.0001$), indicating that each unit increase in investment correlates with an increase in employment of about 4.63 units, supporting the idea that financial resources facilitate job creation and sector expansion.

Table 1. MANOVA model results

Group	Measure	Value	Num DF	Den DF	F Value	Pr > F
Intercept	Wilks' lambda	0.735	2.0000	167.0000	30.139	0.0000
	Pillai's trace	0.265	2.0000	167.0000	30.139	0.0000
	Hotelling-Lawley trace	0.361	2.0000	167.0000	30.139	0.0000
	Roy's greatest root	0.361	2.0000	167.0000	30.139	0.0000
ICT usage	Wilks' lambda	0.914	2.0000	167.0000	7.8956	0.0005
	Pillai's trace	0.086	2.0000	167.0000	7.8956	0.0005
	Hotelling-Lawley trace	0.095	2.0000	167.0000	7.8956	0.0005
	Roy's greatest root	0.095	2.0000	167.0000	7.8956	0.0005
Investment	Wilks' lambda	0.472	2.0000	167.0000	93.353	0.0000
	Pillai's trace	0.528	2.0000	167.0000	93.353	0.0000
	Hotelling-Lawley trace	1.1180	2.0000	167.0000	93.353	0.0000
	Roy's greatest root	1.1180	2.0000	167.0000	93.353	0.0000

Source: own study.

The OLS regression on productivity showed that ICT use is positively associated with productivity, with a coefficient of 0.8537 ($p = 0.001$), indicating that productivity rises by approximately 0.85 units for each unit increase in ICT use. This positive relationship highlights the role of digitisation in boosting efficiency and productivity in the financial sector. Similarly, the investment coefficient had a significant effect on productivity, with a value of 0.2183 ($p = 0.001$), suggesting that productivity increased by about 0.22 units for each unit increase in investment, highlighting the positive contribution of investment to productivity levels in the analysed context (Table 2.)

The analysis revealed the complex relationship between ICT use and investment in the financial sector. While ICT adoption is associated with increased productivity, it is also associated with reduced employment due to automation of tasks and optimization of processes. This dual effect emphasises ICT as a means of increasing efficiency but raises concerns about changing jobs. Conversely, investments play a positive role in job creation and sector expansion, although they do not significantly affect productivity, suggesting that increasing financial capital alone does not necessarily lead to higher output per worker.

Regionally, CE exhibited higher and more stable productivity levels, reflecting their developed economic infrastructure and stable economic environment. In contrast, the Baltics showed greater variability in productivity, which may indicate underlying economic challenges or a mismatch in investment and technology adoption.

We rejected the hypotheses that ICT use and investment have no significant effect on employment and productivity. Our findings show that **ICT use significantly reduces jobs** due to automation while **enhancing productivity**, and that **investment positively affects employment** while **significantly boosting productivity**.

Figures 6 and 7 depict regional differences in employment and productivity in the sector. Descriptive statistics show an upward trend in productivity in CE countries, while the Baltic countries exhibit variable productivity levels, remaining relatively stable over the period. This stability is primarily influenced by Latvia and Lithuania, which lag behind Estonia in digitisation and technological adoption. Estonia's success in digitisation suggests that Latvia and Lithuania should adopt similar strategies to increase their productivity. Noteworthy, investment levels vary across regions, with significantly higher average investment rates in CE (3 times on average over the period), where businesses tripled sector investment compared to the Baltic countries.

Table 2. OLS Regression results

Dep. Variable:	Productivity	R-squared:	0.137		Employment	R-squared:	0.498	
Model:	OLS	Adj. R-squared:	0.127		OLS	Adj. R-squared:	0.492	
Method:	Least Squares	F-statistic:	13.39		Least Squares	F-statistic:	83.35	
Date:	Fri, 02 Aug 2025	Prob (F-statistic):	4.03E-06		Fri, 02 Aug 2025	Prob (F-statistic):	7.17E-26	
Time:	16:16:12	Log-Likelihood:	-809.64		16:16:12	Log-Likelihood:	-1108.4	
No. Observations:	171	AIC:	1625		171	AIC:	2223	
Df Residuals:	168	BIC:	1635		168	BIC:	2232	
Df Model:	2				2			
Covariance Type:	nonrobust				nonrobust			
	coef	std err t	P>|t|	[0.025 0.975]	coef	std err t	P>|t|	[0.025 0.975]
const	64.8382	10.353 6.263	0.000	44.400 85.277	240.6554	59.417 4.05	0.000	123.355 357.956
ICT_usage	0.8537	0.258 3.308	0.001	0.344 1.363	-3.7166	1.481-2.509	0.013	-6.641-0.793
Investment	0.2183	0.063 3.49	0.001	0.095 0.342	4.6265	0.359 12.889	0.000	3.918 5.335
Omnibus:	75.044	Durbin-Watson:	1.927		92.169	Durbin-Watson:	1.831	
Prob (Omnibus):	0.000	Jarque-Bera (JB):	422.080		0.000	Jarque-Bera (JB):	345.778	
Skew:	1.519	Prob (JB):	2.22E-92		2.195	Prob (JB):	8.23E-76	
Kurtosis:	10.072	Cond. No.	237		8.409	Cond. No.	237	

Source: own study.

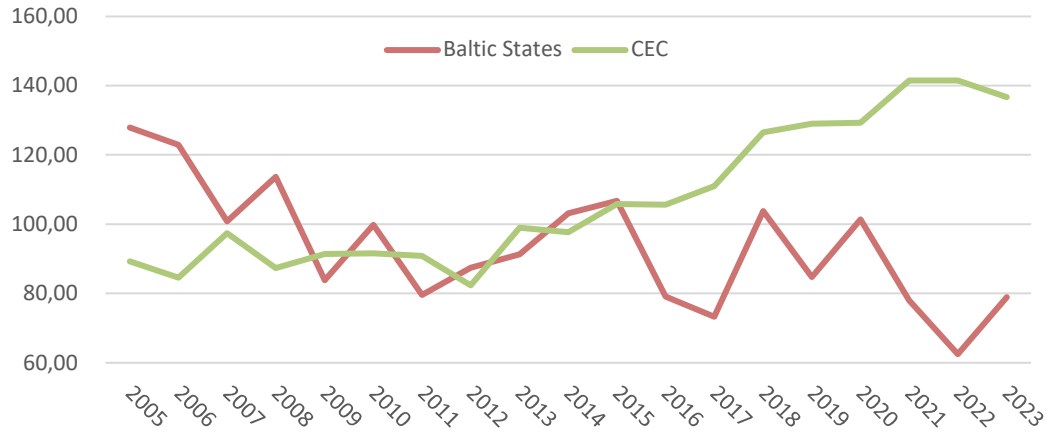

Figure 6. Average productivity in the regions
Source: own elaboration based on the OECD data.

This disparity in investment levels is likely to have different effects on productivity across these regions. The test results further confirm that employment trends differ between regions. CE shows a slight downward trend in employment, while the Baltics show more dynamic results with an ever increasing trend in recent years. These changes are likely influenced by different national strategies and other factors not controlled in the study, such as overall economic and political performance.

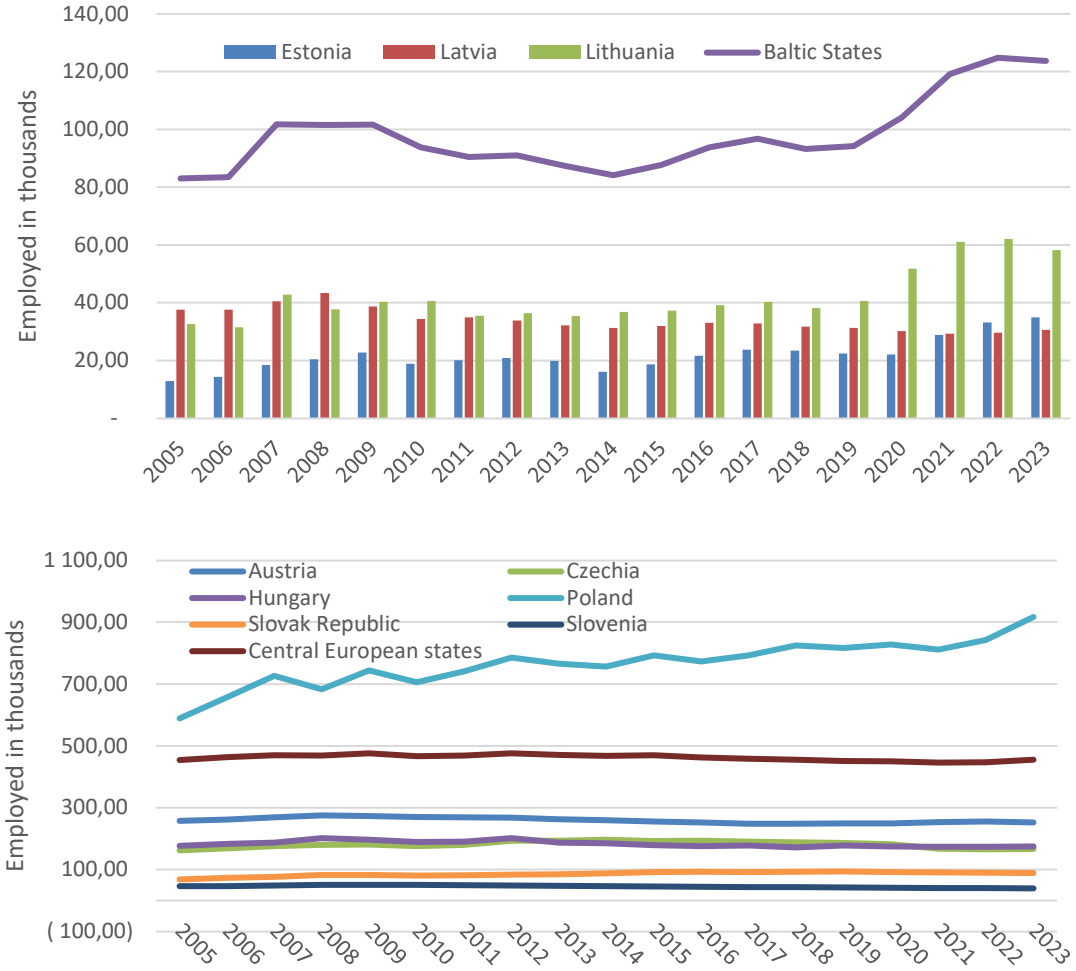

Figure 7. Employment by business enterprises in the regions
Source: own elaboration based on the OECD data.

Based on the results, we acknowledge several study limitations. Variations in data availability and quality across sources may affect result comparability and introduce inconsistencies. We addressed missing data for certain variables, particularly in the early years, for Latvia and Lithuania using interpolation. Our reliance on cross-sectional data limited the ability to establish causality or analyse trends. The indicators used to measure digital technology adoption may not fully capture the complexity and impact of digital transformation within enterprises. Regional differences in digitisation between CE and Baltic countries may influence the results and require further analysis to understand local contexts. We also did not fully account for the economic and political environments, which may affect digital adoption and effectiveness. Due to data limitations, we could not perform separate OLS and MANOVA analyses for the Baltic countries, restricting these to CE and potentially limiting generalizability.

Our article aims to understand the impact of digitalisation on employment and productivity. The consensus in the literature (Olaniyi *et al.*, 2024; Sheth *et al.*, 2022) is that digitalisation enhances productivity and operational efficiency but also creates challenges related to workforce displacement and skill gaps (Kaur *et al.*, 2023; Hellweg & Schneider, 2023).

The Baltic countries, particularly Estonia, have been pioneers in digital transformation. In contrast, CE has seen varied progress, with some countries advancing rapidly and others lagging due to bureaucratic hurdles. This variation illustrates the influence of cultural, economic, and political factors on technological diffusion, aligning with the diffusion of innovations theory (Acikgoz *et al.*, 2023).

Despite regional differences, both CE and the Baltic countries face common challenges like workforce displacement and the need for continuous upskilling, as well as opportunities for new job creation, enhanced productivity, and economic growth driven by digital innovation.

CONCLUSIONS

This article provides an in-depth examination of digitisation's impact, particularly using ICT, on employment and productivity in the financial sector across CE countries and the Baltic countries. The MANOVA results unambiguously show that both regional differences and the independent variables – ICT use and investment – significantly affect employment and productivity. CE countries generally exhibit higher levels of employment and productivity than their Baltic counterparts, highlighting regional differences in economic conditions and labour market dynamics.

The analysis shows that the use of ICT has a major impact on productivity, highlighting the transformative potential of digital technologies in enhancing sector performance. However, this advancement in ICT has also been associated with declining employment levels, raising concerns about potential job displacement.

Conversely, investments in the financial sector are shown to have a positive effect on employment, reinforcing the importance of capital flows in job creation and sector expansion. This finding highlights the crucial role of financial investment in supporting employment growth. Nevertheless, the analysis shows that investments do not have a significant direct effect on productivity. This observation suggests that while capital investment is vital to job creation, it alone does not guarantee an increase in output per worker. It emphasises the need for a strategic investment approach, where financial resources are aligned with other productivity-enhancing factors.

Digitalisation, particularly through ICT, enhances productivity and operational efficiency but reveals notable regional differences in adoption. This study builds on existing theories by comparing CE and Baltic countries, highlighting the need for context-specific digital strategies. Bridging these regional gaps requires tailored policy interventions. Central European policymakers could draw on successful Baltic strategies, such as Estonia's e-government initiatives and digital literacy programmes, to overcome bureaucratic barriers and accelerate digital transformation.

Recommendations

The findings suggest that supportive regulatory frameworks and proactive digital policies are essential. The focus must shift to investing in digital infrastructure such as high-speed internet access and secured digital platforms. Implementing educational programmes to enhance digital skills across all age groups can help bridge the skills gap.

This includes integrating digital literacy into school curriculums and offering adult education programmes. Providing social safety nets and retraining programmes for displaced workers can help mitigate the negative impacts of digitalisation. Policies should encourage continuous learning and adaptability. Encouraging a culture that embraces digital innovation and continuous learning (upskilling and reskilling) is crucial. Being open to new roles and responsibilities can help employees navigate the changing job landscape. Developing soft skills such as problem-solving and critical thinking is also beneficial.

Avenues for Further Research

Despite the valuable insights, there are gaps in the research that require further exploration. One notable gap is the long-term impact of digitalisation on employment patterns and job quality. While short-term effects are well-documented, longitudinal studies could provide a deeper understanding of how digitalisation reshapes the labour market over time. Moreover, more research is needed on the effectiveness of various policy interventions in bridging the digital skills gap and supporting workforce transitions. Comparative studies across different regions and sectors could also shed light on best practices and successful strategies for managing digital transformation. The impact of ICT usage in the regions in more detail can also be a topic for further research.

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Use of Artificial Intelligence

The manuscript is free from AI usage.

Conflict of Interest

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