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Abstract

The offshoring-fuelled growth of the Central and Eastern European business services sector gave rise to shared service centres (SSCs), quasi-autonomous entities providing routine-intensive tasks for the central organisation. The advent of technologies like Intelligent Process Automation, Robotic Process Automation, and Artificial Intelligence jeopardises SSCs' employment model, necessitating workers' skills adaptation. The study challenges the deskilling hypothesis and reveals that automation in the Polish SSCs is conducive to upskilling and worker autonomy. Drawing on 31 in-depth interviews, we highlight the negotiated nature of automation processes shaped by interactions between headquarters, SSCs, and their workers. Workers actively participated in automation processes, eliminating the most mundane tasks. This resulted in upskilling, higher job satisfaction and empowerment. Yet, this phenomenon heavily depends upon the fact that automation is triggered by labour shortages, which limit the expansion of SSCs. This situation encourages companies to leverage the specific expertise entrenched in their existing workforce. The study underscores the importance of fostering employee-driven automation and upskilling initiatives for overall job satisfaction and quality.

Keywords: automation, Shared Service Centres, skills, job quality

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1. Introduction

The growing interest in offshoring services to low-cost locations has been a vital part of business strategies since the early 2000s. Multinationals sought cost-cutting opportunities, and the improvements in long-distance communication (ICT) enabled them to offshore increasingly advanced tasks and activities, such as accounting, human resources management, and R&D (Baldwin, 2019). The drive for cost savings and service enhancements (Richter and Brühl, 2017) created a specific organisational form, namely shared services centres (SSCs) – partly autonomous facilities which remain in companies' organisational structures (Mezihorak, 2018). Central Eastern European economies that joined the European Union in the 2000s soon became essential locations of SSCs.

Initially, SSCs were hubs of routine-intensive, highly modular cognitive jobs. However, emerging technologies such as Robot Process Automation (RPA), Artificial Intelligence (AI), and Intelligent Process Automation (IPA) increasingly enable automation of such tasks. At the same time, demographically-driven labour shortage, growing human capital, and rising wages induce SSCs to shift towards more knowledge-intensive work. In consequence, SSCs undergo a structural change. Little is known, however, about the drivers of cognitive work automation and its impact on worker skills and autonomy, especially in knowledge-intensive business services.

The study aims to fill this gap and assess whether automation of routine-intensive tasks in SSCs can increase workers' skills and autonomy. Building upon longstanding sociological and economic theories, namely the Labour Process Theory and the Routine-replacing Technological Change concept, we pay particular attention to shifts occurring in skill and competency prerequisites. We evaluate their implications for power relations dynamics within firms. Additionally, we identify skills rising and declining in value and automation's influence on worker's independence and decision-making. We highlight the role of labour shortage as a trigger of automation that shapes its impact on skills and autonomy. We use four exploratory case studies based on 31 in-depth interviews conducted in Shared Services Centres in Poland in 2022.

We start with Braverman's deskilling theory, which assumes that job roles evolve primarily to boost efficiency within a capitalist framework as work becomes more standardised and automated. This results in 'deskilling', where workers are detached from comprehending the whole labour process and become executants of repetitive tasks dictated by mechanisation. Such erosion of workers' skills exploits labour towards capitalist interests. As a result, autonomy suffers as deskilled and disempowered workers lose control over their tasks. We argue that the establishment of SSCs resembled such a process.

We find, however, that automation in the inquired SSCs is conducive to higher skill levels and autonomy. It contradicts Braverman's argument and may be called "empowering automation". It emerges in a specific macroeconomic context: the desire for growth expressed by managers is constrained by demographically driven labour shortages. Struggling to expand employment and facing higher hiring costs, firms embark on bottom-up automation. While Labour Process Theory offers insights into the genesis of SSCs, it falls short of aligning with contemporary automation dynamics. We found no substantiating evidence for automation causing deskilling, disempowerment and reduction in employment within the SSCs. On the contrary, so far, automation improves job quality by removing tedious, repetitive tasks. Automating the most repetitive tasks creates space for more creative or ambitious tasks, benefiting entry-level workers. It increases the need for skills such as critical thinking and creativity. In this regard, the push toward automation in business services resembles early-stage industrial

automation. Evidence from Japan shows that the shortage of unskilled factory workers was positively associated with robot adoption, while the shortage of skilled workers limited it (Deng et al., 2023). The adoption of robots enabled productivity growth and had no negative effects on employment effects (Adachi et al., 2022).

The rest of the article is structured as follows. The second section reviews perspectives on the interplay between technology and skills and sketches the conceptual framework. The third section outlines the Polish labour market context, which – as we argue – is crucial for understanding the outcome of automation in Shared Services Centres. The fourth section outlines the research design, data collection, and analysis approach. The fifth section presents the findings from our case studies. The final section discusses the findings.

2. Conceptual framework

2.1. Perspectives on the interplay between skills, autonomy and automation

The interplay between technology and skills has long been studied in sociology and economics, particularly concerning the advancement of automation. This dynamic was notably explored through the Labour Process Theory (LPT) introduced by Braverman (1974), positing that automation and technological progress trigger deskilling within a capitalist framework. Automation and mass production, he argued, displace traditional craftsmanship with standardised routines, substituting skilled artisans with machine operators adhering to pre-established protocols. This phenomenon compels workers into specialised, repetitive roles, eroding their overall proficiency and independence. As workers become detached from their tasks due to the deepening influence of "Taylorist" approaches and automation, they transform into mere components of a larger production mechanism, causing dissatisfaction and disengagement.

Braverman further argued that implementing automation and new technologies primarily serves capitalist interests, aiming to maximise profits (Braverman, 1974, p. 139). Although automation may enhance productivity, the lion's share of benefits favours the capitalist class, exacerbating income inequality and worker exploitation. As technology advances, workers' control and autonomy over tasks diminish, as they are relegated to narrowly defined roles under stringent management. This lack of autonomy contributes to the deskilling of labour and a sense of detachment between workers and their outputs.

Since the 1980s, rapid progress in Information and Communication Technologies (ICT) and robotics has been the key technological force shaping the demand for labour and skills. This second industrial revolution was supposed to pave the way towards a more flexible and decentralised system with greater autonomy. The deskilling theory was contrasted with the view that the upcoming "flexible specialisation" might enable more worker control over tasks and responsibilities (Piore and Sabel, 1984). In this view, technology can provide advanced skills to professionals, granting them greater command over more specific knowledge (Barley, 2006; Kornelakis et al., 2022). Empirical studies have indeed provided evidence that computerisation increased autonomy (Menon et al., 2020).

This shift in labour dynamics finds resonance in the routine-replacing technological change (RRTC) hypothesis, according to which ICT substituted humans mainly in routine tasks that are structured, repetitive, and easier to codify than non-routine tasks that require problem-solving, creativity, or interpersonal skills (Acemoglu and Autor, 2011). Routine work can be either manual (for instance, work of assemblers or plant or machine operators) or cognitive (for instance, accountants or bank tellers) and usually requires a medium level of skills. Routine tasks are

also easier to monitor remotely, which makes them easier to offshore (Blinder and Krueger, 2013). Compared to earlier technological revolutions, ICT allowed automation and offshoring of cognitive work, extending the potential deskilling risk to office jobs. Simultaneously, job opportunities and wages increased within the realm of creative professions that benefited from the productivity-enhancing power of emerging technologies and capitalised on worldwide markets. Likewise, employment expanded in simple service jobs that demand in-person interactions but usually pay low wages, rendering automation complex and financially unsound.

As a consequence of RRTC and offshoring, in high-income countries, employment levels and relative earnings have declined in routine-intensive, middle-paying occupations, leading to job and wage polarisation (Autor et al., 2003; Goos et al., 2014; Spitz-Oener, 2006). However, in middle-income and emerging economies that exhibit a lower supply of skills and lag behind in technology adoption, routine employment, mainly routine cognitive employment, has been increasing (Hardy et al., 2018). Consequently, low- and middle-income countries increased their role as the dominant supplier of routine labour in the global division of work (Lewandowski et al., 2023).

Both approaches highlight that technology impacts repetitive, structured tasks, shifting the labour demand. However, they differ significantly. First, The Labor Process Theory (LPT) centres on the changing nature of work, the degradation of labour, and the power relations between capitalists and workers. In contrast, the Routine-Replacing Technological Change theory (RRTC) focuses on task and job specificity and technological impact on routine vs. non-routine tasks. Second, while the LPT argues that automation leads to the deskilling and disempowerment of workers, the RRTC suggests that automation may potentially lead to value addition for certain kinds of jobs, especially creative ones. At the same time, those involving routinised tasks get eliminated or offshored. Third, LPT is more critical of automation, viewing it as a tool for capitalist control that results in deskilling and worker exploitation. On the contrary, RRTC theory takes a more neutral, emphasising job specificity and how technology affects different job sectors. It suggests that technological progress widens inequality between workers in managerial and professional occupations and those in manual or middle-skilled office jobs.

2.2. Shared services centres and modularity of work

Shared services centres (SSCs) are quasi-autonomous entities that offer services to a central organisation focused on its core business. They serve the same purpose as outsourcing, constituting a form of "quasi-externalisation" (Flecker et al., 2013) aimed at reducing costs, improving processes, and reallocating peripheral activities from core activities (Herbert and Seal, 2012). SSCs typically perform administrative or supporting functions such as finance, human resources, customer support, and other similar tasks (Cooke, 2006). They are often located in countries where labour is cheaper, such as Central and Eastern Europe or South-East Asia. Establishing SSCs often involves organisational changes (such as introducing an Enterprise Resource Planning system or cutting off the least productive parts of the process), restructuring and reorganisation (Howcroft and Richardson, 2012), which can significantly impact the organisation's culture and employees' attitudes[1].

[1] SSCs first gained attention as a form of "New Public Management" when applied to the outsourcing of public services. They were seen as a promising way of gaining efficiency, but their potential has not always been realized (Janssen and Joha, 2006). SSCs have also been explored from the perspective of globalisation and their position in global value chains (Fernandez-Stark et al., 2011; Gereffi and Fernandez-Stark, 2010), as well as the standardisation of tasks and roles (Hirst and Humphreys, 2015).

Informatisation, standardisation, and softwarisation, which lay at the basis of shared services centres, facilitate turning roles into tasks and entail 'modular work' (Hirst and Humphreys, 2015). This argument is based on Kallinikos (2003), who developed Gellner's concept of modularity (Gellner, 1996) to argue that modern humans "are involved in organisations *qua* roles, rather than *qua* persons". Organisations are composed not of 'whole' persons but of 'non-inclusive' roles, which can easily be changed, reshuffled or deleted to meet the organisation's evolving circumstances. By doing so, modularity expands the potential for organisational flexibility and necessitates workers to adapt flexibly and efficiently. It facilitates task reconfiguration, allowing for easy transferability between different job roles. A notable characteristic of this form of flexibility is that it permits roles to be adjusted in a manner that may overlook employees' professional expertise.

3. Polish labour market context

3.1. Key labour supply and demand trends

The Polish labour market has undergone significant changes since the EU accession in 2004. First, the labour market situation has improved over time, fuelled by fast economic growth and integration with global value chains (GVCs). The employment rate of the working-age population (15-64) increased from 51.4% in 2004 to 71.3% in 2022, while the unemployment rate declined from 19.4% in 2004 to 2.9% in 2022.[2] However, real wage growth was sluggish at 3.3% per year on average in 2004-2022, accelerating only in the late 2010s. Still, the labour share in GDP has remained among the lowest in the EU, at around 40%.

Second, Poland recorded noticeable education upgrading, driven by rising tertiary enrolment rates. The share of tertiary educated people aged 15-64 more than doubled from 12.6% in 2004 to 29.6% in 2022 (Figure 1, top panel). The growth was more pronounced among women (14.2% to 35.6%) than men (10.9% to 23.7%). The pool of potential BSC workers has exceeded 200 thousand graduates annually, especially as the curricula related to BSCs, such as ICT, languages, business, and administration, have gained popularity (Kubacki et al., 2023). Rapid improvements in education attainments and the growth of ICT specialists contributed to the appeal of Poland and other CEE countries as business offshoring destinations (Bykova et al. 2021).

Third, demographic change turned Poland from a country with abundant labour into one with a labour shortage. Until 2010, the working age (15-64) population grew, reaching 26.33 million people in 2009. Later, it shrank to 22.85 million (13.2% decline), mostly between 2015-2022 (Figure 1, top panel). The size of the young adult population (aged 25-29) started declining as early as 2009, reflecting Poland's low fertility rates. Moreover, the education boom peaked in the middle 2010s, and tertiary enrolment rates have declined among the youngest cohorts. Consequently, the number of tertiary-educated young adults grew from 740 thousand in 2004 to 1.22 million in 2012 (65% increase). However, it declined by the same amount later, reaching only 750 thousand people in 2021 (Figure 2, bottom panel). This reversal has particularly affected sectors, such as SSC, that grew by hiring many graduates. Recently, they have faced labour shortages not experienced since their establishment in Poland.

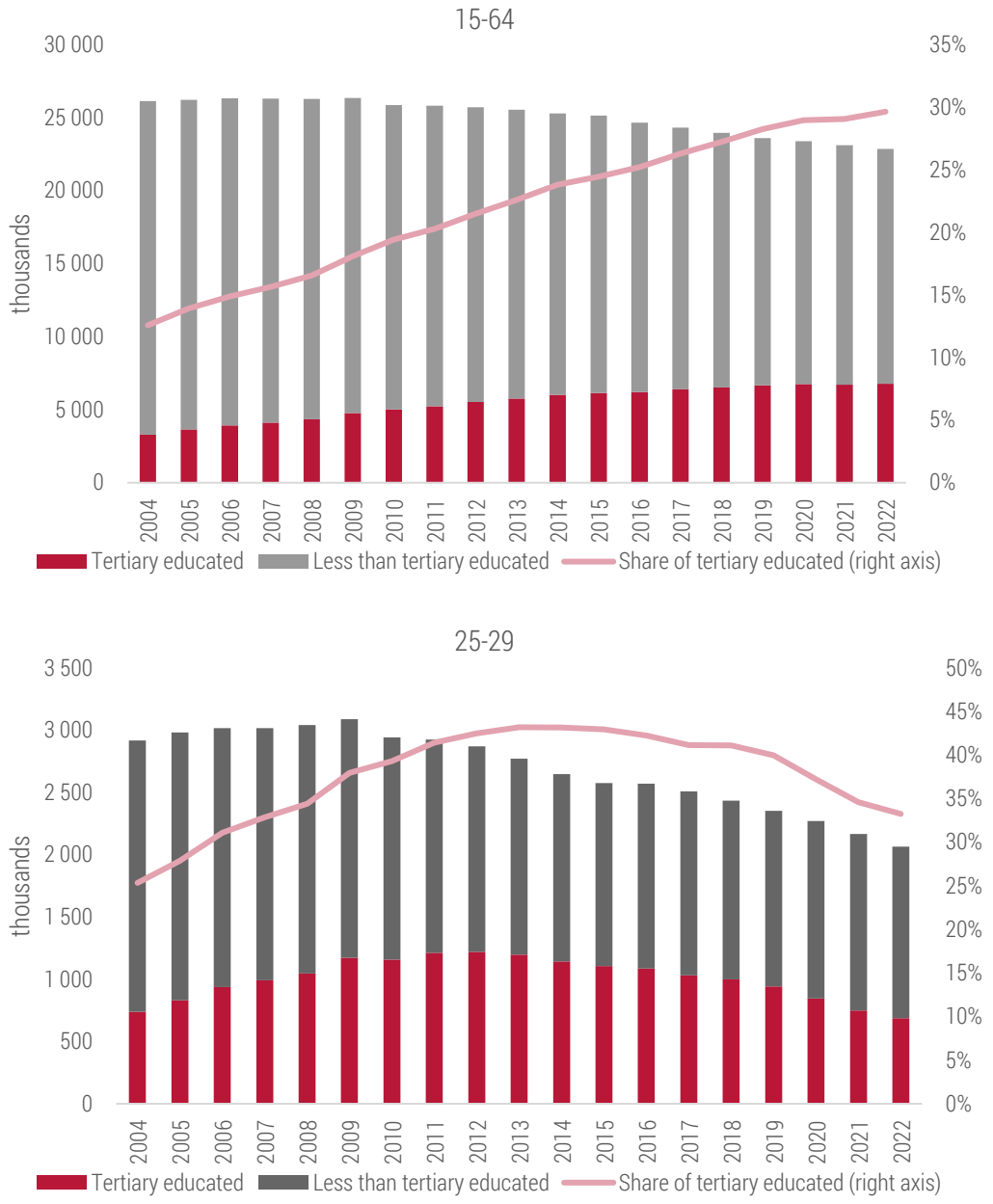
These efforts were supposed to improve efficiency and facilitate the circulation of the workforce. Another research angle considers control and competition between SSCs and the headquarters (Mezihorak, 2018). SSCs fragmented roles and turned them into tasks, making them more codifiable, easier to control, and relocate. The codification of back-office tasks opened the possibility of automating them when specific technology is available.

[2] Eurostat data unless otherwise noted.

Since the late 2010s, labour shortages have been partially eased by immigration. As per Statistics Poland data, the number of foreigners aged 18 or more residing in Poland stood at 750 thousand in 2016, rising to 2.2 million in 2019, just before the COVID-19 pandemic (GUS, n.d.). Most immigrants came from Ukraine and could integrate well into the labour market. In 2021, they accounted for about 5% of the total workforce (Mrugała and Tomczyk, 2022).

Nevertheless, the era of abundant labour and a large number of graduates entering the Polish labour market is over. By 2040, Poland's total labour supply is expected to decrease by a further 10% and 17% among the prime-aged population (25-54). The pace of prospective population ageing and its negative impact on economic growth are expected to be one of the strongest among the OECD countries (Kotschy and Bloom, 2023).

Figure 1. Population structure by age group and education in Poland 2004-2022.

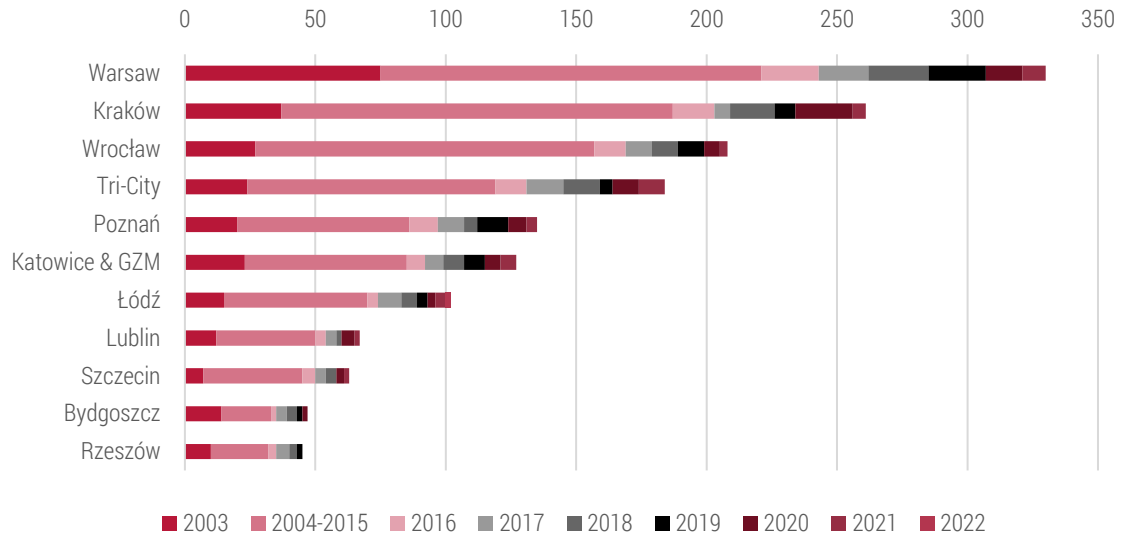


Source: Own elaboration on Eurostat data.

3.2. Poland as an outsourcing destination

Poland is a vital outsourcing destination. Business services centres (BSCs), particularly shared service centres (SSCs), have substantially grown as Poland integrated into European and global value chains. Between 2008 and 2023, BSC employment increased by 630%, reaching 435 thousand people employed in over 1,800 companies (Kubacki et al., 2023). In 2023, BSCs accounted for 6.7% of total business sector employment and 2.6% of total employment in Poland (Statistics Poland, 2023). The sector grew most dynamically between 2011 and 2020, when, on average, 80 centres were established annually. The industry is also highly concentrated. Three cities – Warsaw, Wroclaw, and Cracow – constitute 47.8% of all entities (Popławski et al., 2021).

Figure 2 Numbers of centres in the most important locations in Poland at the end of Q1 2022



Source: (Popławski et al., 2022) *Business Services Sector in Poland 2022*, p.26

The BSCs are highly integrated into GVCs. In 2023, 69.5% of SSCs, contributing 83.6% of jobs, were foreign-owned. Investors in BSCs come predominantly from the US (28% of total employment), followed by large European economies: the UK (10%), France (9%), and Germany (7%) (Kubacki et al., 2023). Factors attracting foreign investors to Poland include political and economic stability, transport accessibility, and proximity to Europe's economic core (Geodecki & Zawicki, 2021). As a semi-peripheral economy, Poland competes mainly on the cost margin, specifically labour costs (Suwandi 2019). Decentralised (enterprise or company level) wage bargaining and the minor role of trade unions in the private sector facilitated such competition in Poland and other Central Eastern European (CEE) countries (WEF 2019). Despite some catching up, the wage gap between Poland and the Western European countries remains substantial.

Over time, the Polish BSC sector has upgraded in GVCs. The complexity and sophistication of business processes have gradually increased, requiring worker upskilling and intensified automation of repetitive tasks. In 2023, 56.9% of all SSCs' functions were considered knowledge-intensive, a 12.9 p.p. increase since 2019 (Kubacki et al., 2023). In 2023, 58.2% of companies used solutions based on Intelligent Process Automation, and 30.3% planned to implement them, with the vital aim of optimising costs (Kubacki et al., 2023).

Multinationals' presence in CEE has been stabilized, in line with the growing investments' sunk costs and the development of specific, localised capabilities. Foreign capital has been eager to reinvest a larger share of its profits, and to upgrade and diversify the scope of activities, which strengthened the region's competitive position (illustrated by higher labour productivity and share in global markets) (Szent-Iványi, 2017; Domański and Gwosdz, 2009; Geodecki, 2021). Poland's improving institutional capacity (Bruszt et al., 2020) and technological capabilities (Hollanders et al., 2021; Radosevic et al., 2019) also change the nature of competitiveness. Since the 2010s, exports from Poland and other CEE countries have been less vulnerable to rising wages, and employers show greater interest in enhancing augmenting human capital (Gräbner et al., 2020; Grodzicki and Skrzypek, 2020).

4. Research approach

Our research design follows the exploratory case study approach (George and Bennett, 2005). An explanatory case study is a research design that explores and explains the underlying causes or mechanisms of a particular phenomenon or event. In an explanatory case study, the researcher goes beyond describing the surface-level features of a case and seeks to understand why a specific outcome occurred or what factors contributed to a particular situation. The focus is on providing insights into the causal relationships and understanding the deeper dynamics at play.

In selecting companies for the study, we applied several criteria. First, we focused on companies that were internally or externally described as Shared Services Centres in Poland. Second, we sought companies from various sectors and sizes (with over 250 employees) to examine the differences in adopting automation based on these variables. Third, we included companies with different lifespans in Poland to seek differences in experience with automation.

Table 1. The summary of studied companies

No.	1	2	3	4
Industry	Insurance	Technology	Industry	ICT
Location	Warsaw	Kraków	Kraków	Kraków
Employment	300	400	5000	2000
Country of origin	USA	Japan	UK	USA
Business functions	Shared services for brokers in Western Europe: issuing invoices, archiving documents, support with issued claims	Finances, taxes, internal audit, IT, data analysis	Finance, HR. customer operations, sales support, legal	Software engineering, R&D, customer experience, sales, HR
Established in Poland	2017	2007	2007	2012

Source: own elaboration

To collect data, we used a combination of semi-structured interviews with employees, managers, and CEOs of companies and aggregated data from Eurostat, ABSL, and CEE Business Services Summit & Awards 2022 video

recordings uploaded to the YouTube channel CEE Business Media and Awards. The interviewees were selected based on their experience with automated tools or robots, and we ensured diversity in seniority and experience levels and included a representative from human resources and recruitment. We conducted 31 interviews between May and June 2022, recorded with permission, and they lasted 45-60 minutes. The interviews followed a set of structured and open questions organised under themes. We analysed the interview transcripts, notes, and primary sources, such as ABSL reports, using MAXQDA. The transcriptions were then coded with the literature themes and processed via a content analysis approach (Braun and Clarke, 2006). The main themes of our thematic analysis were automation, skills and training, knowledge-intensive and transactional processes, job quality, and career prospects. We compared and refined these themes iteratively during the analysis.

5. Results

5.1. The evolving role of cheap labour supply as an SSC location driver

The relocation of a company's processes and jobs to low-cost countries like Poland has typically involved simplifying complex roles and reclassifying them as less advanced tasks. Sometimes, it was even more important than reducing labour costs.

The primary goal of our centre was not actually to create some labour arbitration or use a cheap labour force but to clean up processes, establish control, and introduce transparency and consistency, really. Moreover, we did that probably in the first 5 or 6 years. Then, later on, since it worked out well and the PR of our centre started to improve, we began to think about new processes. (Technological_3_CEO)

The shift of processes usually reduced costs due to wage differentials as well as the downgrading of job positions and pay structures. When a role is transferred, it is often broken down into more routine-intensive, modular tasks, making it more repetitive. This has long been recognised as a characteristic of work in shared services, with tasks often perceived as mundane, resulting in a high turnover rate.

For some time, the SSC sector in Poland embraced high turnover as a deep pool of labour market entrants facilitated hiring even for the most routine-intensive, modular jobs.

Krakow had at that time this important element of a huge group of educated young people and such a continuous, annual influx of a huge group of young, educated individuals, not only in finance but also in other areas. (Industry _8_CEO)

However, structural changes described in the third section substantially changed the Polish labour market. Faced with declining labour supply and a much tighter market, SSCs realise that their traditional reliance on high turnover and highly labour-intensive processes is no longer viable. Firstly, labour costs have increased noticeably. Secondly, a tighter labour market has raised workers' bargaining power, making attracting and retaining staff more challenging. Therefore, the overarching trend toward automation and introducing technological advancements appears advantageous for shared services centres. Automating the most routine tasks can alleviate labour shortages and improve the appeal of SSC jobs, facilitating the recruitment and retention of qualified candidates.

The amount of work is constantly increasing; it's not like we have the same level of work as we did five years ago. The workload is continually rising today, so these robots help us balance this increase. (Technological_6)

5.2. Bottom-up automation as a way to engage workers and tackle turnover

The automation efforts varied between interviewed companies. Due to their prolonged engagement with automation, information and communication technology (ICT) companies possess the most significant expertise and a well-versed workforce. Conversely, the insurance companies, accustomed to dealing with claim-specific cases, have been much less advanced. The roles shift from Western European offices to Poland has focused on centralisation and process streamlining rather than innovative automation. With operations already in Poland, they have only recently recognised significant potential for improvement. Initially, companies hired primarily workers with language degrees rather than advanced computational skills as the ability to perform routine, modular tasks for Western European offices was prioritised. While this has been gradually changing, the automation capabilities of SSCs remain limited due to a scarcity of skilled personnel, including mid and high-level managers.

In interviews with management representatives, a consensus emerges that automation will accelerate in the future, impacting the SSCs profoundly. What differentiates the companies is their readiness and the availability of qualified personnel to drive automation forward.

Despite the buzz surrounding Artificial Intelligence, Robotic Process Automation, and Intelligent Process Automation, these approaches are relatively costly and have not yet delivered the anticipated savings and enhancements. While they are widely discussed and viewed enthusiastically, adopting such advanced techniques requires substantial investments with uncertain returns. Even when processes are automated, human oversight is often necessary to verify bot-generated outputs. Sometimes, bots expected to improve productivity bring disappointment rather than relief.

I'll be honest, previously, in our company, there was an external firm that created these bots, and unfortunately, the quality of their work was very low. The bots were poorly written, as well. So, there were many errors, and our current team had to make many corrections because we now have a new, in-house team. It consists of several people. And now, it is much better (...) It used to be that, unfortunately, these bots would break down every day, so it caused more problems than benefits. I was never sure whether I'd come to work and be able to complete the report, whether there would be errors, or if it wouldn't work at all. (Technological_9)

The most impactful cost-saving and productivity-enhancing solutions thus far have not been sophisticated robots but rather solutions like the "paperless office" (digitising all documents), optical character recognition (OCR), Workflow, Workday, or custom platforms linking data from various systems. While many of these applications constitute digitisation rather than pure automation, they were sometimes conflated during the interviews. Visual Basic Applications, a relatively simple programming language used in Microsoft Excel, emerged as the most commonly used automation tool.

We identified two primary approaches to automation. First is top-down automation, where, for instance, a comprehensive platform is introduced to consolidate and streamline information from various systems while automating specific processes (albeit at high cost and time requirements). Second is bottom-up automation, which involves workers developing micro solutions or enhancements, such as creating VBA macros that significantly shorten processes. This second approach to automation appears increasingly popular, perhaps due to the imperfect implementation of top-down approaches explained above. It also involves staff with hands-on experience in specific processes, even without advanced technical expertise.

Many companies, including ours, are transitioning to a situation where some of this minor automation is being pushed onto users. This whole process of preparing bots by users is also associated with the creation of tools and automation programs that help with it. Most of these automation processes in these tools rely on specific pre-defined actions that are simply selected from a list, customised to fit one's capabilities and follow a specific pattern. (IT_2)

The interviewee from the previous excerpt (Technological_9) specialises in creating macros for various teams and serves as a one-person automation team. Members from different teams seek her assistance in tackling challenges they encounter in their spreadsheets. She aids them in creating more advanced macros and enhancing Excel formulas. Initially, her role primarily involved reporting, where she independently developed macros and assisted her colleagues. Over time, her support role was formalised and became integral to her job responsibilities. This pattern is increasingly common instead of hiring a professional responsible mainly for this type of automation.

Sometimes, the bottom-up approaches are formalised into "improvement/transformation teams". They pave the way for automation or design and deploy tools and platforms for specific teams. Moreover, there are "hobby groups" dedicated to automation and technology. For operational staff, participating in them is seen as a way to enhance their professional prospects. A similar concept of "citizen developers" workers without a solid IT background actively seeking opportunities to automate their tasks – was also popular in each company.

Part of us, at least, has predispositions for programming; here, they call us "citizen developers". We all come from financial backgrounds and are all users of various IT tools, and our knowledge mainly relates to Excel. However, we are not programmers in any way, and most of us have never been trained as programmers in our education. (IT_1)

Citizen developers identify gaps and create a tool (usually a macro or a bot) that automates and enhances the task, typically using apps and platforms that allow them to write bots in a simplified manner. These roles are usually informal and are not defined in corporate structures. Improvement and transformation teams outside of dedicated departments are also being used.

It has always been like that to some extent. If employees were good with Excel macros, they could speed up their work or their team's work by creating macros. (...) I don't know which came first, the chicken or the egg, but this whole process of transferring part of bot preparation to users is also associated with creating tools and automation programs that help with it. I can't remember their specific names, like the category of programs they belong to, but it's based on the principle of 'click & automate.' It's a low-programming tool (...). However, most of the automation in these tools is based on predefined actions that you simply select from the list and adapt to your needs. (IT_1)

To some extent, the "citizen developer" approach contrasts with Braverman's observation that „*where one engineer can direct fifty workers (...) there is no need for "wasting" the resources of society in educating all to the engineering standard*" (Braverman, 1974, p. 427). In SSCs facing labour shortages, upskilling workers benefits both sides. Embracing automation with a workforce's involvement brings companies numerous advantages. Relying on external consultants instead would carry the inherent risk of detachment from the core operations and a lack of familiarity with internal processes. Moreover, attracting talent from the market might be costly and time-consuming. This makes in-house expertise an appealing alternative. Engaging workers in automation efforts provides a platform for their professional growth. Individuals with backgrounds unrelated to IT or automation, such as graduates with language majors, can elevate their skills. Consequently, it presents a solution to the issue of high turnover, offering SSCs the opportunity to empower their workforce.

5.3. Impact of automation on the desired skillset

Skills in Shared Service Centers can be examined through two distinct lenses. First, from an organisational and managerial perspective, the automation of routine tasks prompts consideration of what new skill sets are required from workers. How does the demand for specific skills evolve as tasks are automated? Second, from a worker standpoint, automation raises questions about the individual's future and existing skills. Is one's skillset rendered obsolete, or can it be leveraged elsewhere within the organisation? If so, is upskilling required, and does the employer support it?

Organisation's perspective

Entry-level roles in SSCs have usually involved highly modular, repetitive work with specific and limited skill requirements. The drive to automate some of the procedures (especially in the "citizen developer" framework) increases the need for thinking outside the box, the ability to spot abnormalities, and critical and creative thinking. Still, the core skills sought after by SSCs' managers include primarily analytical and soft skills: attention to detail, commitment, teamwork, client focus, and language skills. The need for formal, tertiary education has gradually decreased, so a bachelor's degree and a 'good attitude' are often enough. Well-suited people are proactive, thrive on challenges, and want to learn and develop their skills. In practice, such an approach promotes younger candidates, who have less knowledge and experience but are more adaptive and audacious.

I'd rather we focus on hiring someone with the right attitude and teaching them almost everything they need to do to do the job. (Insurance_4)

So far, automation has not changed the more general implications for skills inherent to the SSCs. Entry skills are of lesser significance[3], as management seeks people who are *"transplantable and replaceable…capable of performing highly diverse tasks (…) if necessary by reading up manuals and specific jobs in the general standard style"* (Gellner, 1996, p. 102; Kallinikos, 2003). Highly modular work enables assigning tasks to people with little or no acquaintance with specific organisations, which, as a result, contribute to the *"mobility and exchangeability of labour. (…) the content of work itself may be rendered increasingly standardised to become independent from those who are to be called upon to perform it."* (Braverman, 1974).

In SSCs, a significant concern revolves around the repetitive and routine nature of tasks, which contributes to elevated turnover rates. This presents a paradox between the requirement for individuals comfortable with monotonous work and adaptable to change, actively seeking fresh challenges. Most managers aspire to strike a balance.

I seek individuals who can accept the repetitive nature of this work while also maintaining a proactive approach to it. They should consistently explore opportunities to approach tasks differently and enhance efficiency. (Insurance_2)

At the same time, there is an increasing need for people with programming skills, in addition to being highly knowledgeable about their specific business area. They are called "purple people" since blue is considered a business colour, and red is an IT colour. These workers can deal with various forms of automation and manage large quantities of data but are also very familiar with a specific domain, like finance.

[3] Except for the need for specific foreign language skills to support teams in other European countries. However, more multinational companies are adopting English as their primary corporate language.

We *call them 'purple people' (...) who understand the expectations of the business side, are knowledgeable about a specific domain and can program or analyse big data sets.* (Industry _3)

"Purple people' are highly sought-after and generously compensated. Hiring them on an external labour market is a challenge, compounded by the diversity of systems and business processes that can vary significantly across companies. The optimal strategy, therefore, lies in cultivating these specialists internally through proactive talent promotion. Recruitment specialists in SSCs are aware that they must be intentional in their hiring process and identify individuals who, in addition to the essential soft skills, exhibit an aptitude for programming and algorithmic thinking. Subsequently, organisations must provide an environment conducive to their development. However, as we show further on, training offered by companies is often perceived as insufficient or inadequate.

Workers' perspective

Automation has emerged across diverse teams, even those that may not have previously engaged extensively with programming or automation, such as Human Resources. This situation can develop in two ways: either these employees can start upskilling to enhance processes through automation and programming, or individuals with programming expertise (hailing mainly from the IT sector) can display an interest in comprehending HR or business processes. However, IT professionals often encounter a lot of other employment opportunities, frequently with superior remuneration. Consequently, such teams attract mainly specialists with self-taught programming skills. Therefore, the integration of automation transcends rigid roles.

So when it comes to skills, here I definitely have a lot of people who are... They are self-taught; they are individuals who have tinkered with things on their own and learned something somewhere, and now we're just starting to think about... Maybe some certification here, maybe a course here, to formalise this knowledge. (Industry _5)

However, in the interviewed companies, the burden of upskilling appears to primarily fall on employees, despite managerial rhetoric emphasising the importance of learning and training. While companies may provide opportunities for upskilling, such as access to learning platforms, it is often considered an activity to be pursued outside of regular working hours. Consequently, employees' ability to utilise these platforms and acquire specific skills remains constrained by their existing daily responsibilities.

So all these skills that, for instance, I'm building for myself to develop happen outside of work, after work. I've talked about this with a few people here, who have advised me, "Oh, we have these trainings, these, you should definitely do them because we support that, we pay for these expensive certifications." However, when you actually do it, that's a different question. And I know there are teams that are overloaded, and it might not be the company's issue; it's a market issue – because it's tough to find employees for the positions we're looking for right now. So, for example, there should be ten people, but there are seven because we've been searching for three for a few months. And these seven people have to handle the workload of ten. So, when do you find the time to train? That's a difficult question. (Technological_4)

Brief training periods accompany the dynamic rotation of teams and roles, aligning with employees' aspirations, as extended stays in a single role are perceived as indicative of limited ambition. However, the desire for continuous self-improvement must originate from the workers themselves, and its pursuit takes on a highly individualistic nature.

We provide opportunities, we are open to suggestions, and if someone is interested in a certain training, we naturally discuss the possibility of participation, whether it's internal or external. However, we don't force anyone here to attend any training. (Industry _7)

Employees recognise that to stay competitive and secure more enticing job opportunities, they must invest in continuous retraining. They understand that the most compelling roles often hinge on possessing these coveted skill sets. However, a notable contradiction exists between the narrative surrounding the "purple people," highly sought after by organisations, and the available training resources, including the time allocated for such endeavours. On the one hand, enterprises aspire to incorporate highly skilled specialists into their ranks. The difficulty of acquiring such expertise from the external market often necessitates internal training for teams oriented towards business functions, such as procurement or human resources.

On the other hand, the training programmes frequently lack the necessary focus on developing "hard" programming and analytical skills. A critical hindrance lies in the unavailability of time for employees to engage in training activities, particularly in teams burdened with substantial workloads. Moreover, our research has uncovered instances where employees were unaware of training opportunities, such as VBA courses offered by their company. This lack of awareness may be attributed to inadequate promotion through official channels or potential exaggeration by managers claiming the existence of such training initiatives.

Considering the existing challenges in talent acquisition faced by SSCs, training programs should be strategically aligned with developing programming skills, extensively promoted, and accompanied by sufficient time allocation for employees. However, our interviews did not reveal evidence of such a concerted effort in all organisations participating in the research.

No participants exhibited disinterest or apathy towards ongoing automation initiatives in the interviews. Instead, all showed a keen awareness of the importance of actively engaging with current processes. We did not encounter any perspectives from individuals disinterested in acquiring these skills or who perceived themselves as incapable of doing so. It is essential to acknowledge that our findings may not universally apply to the entire company or sector. Realistically, not every employee engaged in routine-intensive roles within shared services may be inclined to acquire basic programming skills. While their perspectives remain uncharted, they remain valuable assets for a sector poised for expansion, as demographic shortages necessitate their retention.

5.4. Autonomy and decision-making

Automation profoundly influences shared services centres, notably by bolstering autonomy, viewed both from the micro-level of individual workers and the macro-level of the organisation. A distinct pattern emerges. Automation represents a targeted and opportunity-laden process that signals the ideal moment for advancement. Organisational transformation becomes the prime juncture to demonstrate the commitment to growth and desire for more autonomy for workers and the organisation. We argue this is the case of "empowering automation", which would be situated at the opposite end of the spectrum compared to Braverman's argument.

Workers' perspective

In traditional post-Marxist perspectives (like LPT), automation was often viewed as a force that disempowered workers, relegating them to unskilled cogs in the machinery of large factories while eroding their autonomy.

However, is there a possibility for automation to foster empowerment among workers? The answer hinges significantly on workers' bargaining power and role in the automation process.

Automation has not considerably substituted human labour and reduced employment in any of the surveyed companies. It has been primarily deployed to complement human labour rather than replace it. Furthermore, the continual expansion of the sector has triggered a steady influx of novel tasks and procedures originating from Western offices. Even if specific processes were automated completely and employment declined, this action was often perceived as a strategic means to terminate individuals already slated for redundancy. Consequently, it is not feasible to regard automation as a transformative force in the context of addressing labour scarcities, as the demand for human labour remains pronounced.

Krakow is probably the only location that hasn't been marked by any restructuring, layoffs, and so on. But that doesn't mean that some positions stopped working; they did, but as I mentioned, individuals were moved to more advanced roles. (…) Actually, what's happening is that these simple tasks are either being outsourced to India or automated, but the people who used to perform these tasks are simply being moved to new, more interesting, and more advanced processes (Technological_CEO)

Automation so far is rather about people who don't have to work overtime any more than about serious redundancies in the headcount. (Technological_2).

Automation eliminates "click work," those laborious tasks that SSC workers generally find undesirable. Time saved from eliminating such tasks can be redirected towards more creative endeavours. By incorporating bots and macros, workers can enhance their skills and advance professionally. Automation is viewed as an enabler, driving occupational growth and personal development. Consequently, employees experience higher job satisfaction and are less inclined to leave their current positions. One of the managers in the industrial company articulated these expectations alongside a palpable enthusiasm for automation:

It's not that there should be fewer transactional jobs; there will be fewer of them, but at the same time, they will be more interesting, and it will allow for working with people who not only do the same cases or tickets, but they also can spend some time on project-based work (….) We want to free their time to fill it with activities that will make workers more interested in things happening around them. (Industry_4)

Eliminating click-work opens space for critical thinking and autonomous decision-making. This is perceived as empowering and improving the use of tertiary educated workers' cognitive capabilities. Braverman highlighted the "educational waste". *„In the capitalist mode of production, the prolongation of an ever emptier "education" combined with the reduction of labour to simple and ignorant tasks represent a waste of the educational years and a waste of humanity in the years thereafter."* (Braverman, 1974). According to one of the managers, this educational waste has been reduced by introducing automation.

Automation aims to alleviate tasks that educated individuals…let's be frank…shouldn't be doing. Graduates shouldn't be mindlessly clicking or merely relocating documents from one side to the other. They didn't pursue higher education for such activities. (Industry _7)

Automating repetitive tasks lowers adherence to procedural tasks and increases emphasis on critical thinking and creativity. This, in turn, boosts autonomy, a pivotal element in ensuring job quality.

And telling people to do this, then do that? Well, they won't be creative; they'll just be button pushers. The same applies to data science, and increasingly, we can say the same about other processes within our company. People are now expected to do more than simply follow step-by-step instructions. They're asked to tell us what can be improved, what's wrong, and their ideas for further enhancements. So, the paradigm is shifting, and more and more freedom is given to employees. (Technological_2_HR)

This view was shared by a high-level manager from the industrial company:

They still have boundaries within which they must operate, meaning they can't cross certain limits, but we teach them about this "grey area" and decision-making skills. For this client, I'll do something a bit differently, or I'll approach them differently, or I'll provide a different level of service because this is an important moment for them, and it will make a difference. Consequently, the skills and competencies of these people must be entirely different because they cannot be individuals who mindlessly follow instructions. (Industry _1)

However, this augmented level of independence might also diminish security. Given the dynamic nature of SSCs, marked by frequent process transitions, team restructuring, and organisational changes, employees are expected to display flexibility and enthusiasm towards ongoing adjustments. Remarkably, all interviewees appeared to embrace them. Nevertheless, some modifications introduced by companies may appear superficial, involving team restructuring and employee promotions, without a corresponding shift in their actual job responsibilities.

In conclusion, automation in the Polish SSCs has increased workers' autonomy, encouraging them to undertake more advanced and exciting tasks and fostering critical thinking. However, this phenomenon appears highly context-specific, primarily driven by labour and talent shortages. In a scenario of abundant labour and talent, the pace of automation would likely be slower, with less emphasis on retaining and upskilling existing employees. The competition for programmers and developers would be less intense, making external recruitment a more viable option for acquiring the coveted "purple people." As the demographic decline necessitates retaining workers, companies are compelled to engage them actively in the automation process.

Organisation's perspective

The automation-driven change allows SSCs to upgrade in the broader organisational structure. Employing people who no longer have to follow procedures mindlessly is beneficial as it is strictly connected with having more advanced processes on board.

As SSCs integrate increasingly sophisticated processes, the perception of their role in the organisational hierarchy transforms. This is a pivotal moment for negotiating and realising autonomy-driven aspirations. For instance, it is an opportunity to expand the team of developers, showcasing the capability to lead complex projects that hold strategic significance for the entire organisation. At times, different locations within the organisation engage in friendly competition, striving to excel in the ongoing pursuit of improvement—now further empowered by automation—an inherent and fundamental concept within SSCs. Such dedication can yield substantial dividends.

I think that this is also influenced by the fact that many departments are being closed in other companies, and many processes are being relocated to different countries, not within the companies. Many processes are being transferred to us and established here. So, thanks to these improvements, there is an opportunity to perform these additional tasks

that were previously handled in other countries. Now, if a process is streamlined within our organisation, there is more free time and the potential to move to another process. (Technological_3_CEO)

However, sometimes, it is just impossible, and such efforts meet with opposition from the HQ.

There are specific projects where we need to align globally, where we can't just do what we want to. I haven't experienced so much of those kinds of things, but it does happen that they'll say, "No, you can't just do that. We have another program, or we have another team. We have a big team that does robotics, for example, in India." So if I come up and I say, "Hey, I want to have five people who do robotics," they'll just tell me, "Wait, wait, if you ask for one, maybe, okay, I get it. You need someone locally. But if you ask me for five, we'll just tell you to go to India." (Insurance_CEO)

In all cases, the local managers strive to present their SSC as a competent partner with a surprising capability to deliver time and labour savings and process quality improvement, akin to what headquarters and other branches can achieve. In this way, certain SSCs aim to become hubs for process development planning, performing functions once reserved for headquarters. Even the term "Shared Services Centres" becomes derogative.

Right here, you mentioned the Shared Service Center at the beginning. We no longer go by that name within our company's structure. We're simply a business unit, a partnership unit. This change occurred due to building a higher level of competence, skills, and a deeper understanding of the business structures that our company possesses, which we have within our organisation.(Industry_6)

6. Conclusions

Since the EU accession in 2004, Poland has become the leading European destination for Shared Services Centres. The SSCs have been vehicles for streamlining and standardising processes implemented by corporations. Initially, the most modular processes underwent offshoring. A large and diverse pool of tertiary educated labour market entrants willing to perform routine-intensive tasks fuelled the SSC expansion in Poland. However, the change in demographic dynamics, the increasing tightness of the Polish labour market, and rising wages have recently made labour shortages a constraint on SSCs growth. The end of abundant, cheap labour triggered a shift toward automation. Grassroots initiatives by employees to automate the most monotonous and repetitive tasks are reinforced by managers responsible for implementations. As the Polish business services sector has made efforts to upgrade in global value chains, the managers are convinced that more complex processes will replace the simple automated tasks, increasing responsibility and wages. At the current stage of SSC development, new tasks transferred to Poland within corporate structures appear less monotonous and more ambitious than those relocated at the early stage of the sector's growth. The rising scope and level of SSCs' responsibilities increase their demand for labour and workforce skills.

So far, automation has not reduced total employment or workers' workload in the SSCs. These centres are at a juncture where new tasks continue to emerge, and most individuals perceive no imminent threat from artificial intelligence. Our observations reveal that automation has, in fact, enhanced worker autonomy and improved job quality by eliminating mundane and monotonous tasks, which are increasingly handled by bots or robots. Furthermore, workers actively participate in the automation process, presenting them with opportunities for skill development and exploring programming-related talents. Many view this engagement positively, as skills associated with automation and programming are highly sought after, and workers recognise their value.

At the same time, companies benefit from involving existing staff in automation efforts, leveraging workers' familiarity with processes. In their pursuit of growth, they must attract and retain talent capable of handling more advanced tasks but recognise the scarcity of such individuals in the market. The bottom-up automation drive helps them to reduce turnover and deal with hiring challenges. However, a notable inconsistency persists, as the provision of advanced training remains suboptimal. To some extent, firms free-ride on workers' drive to automate the most mundane tasks typical for the development stage they want to leave behind.

Our findings align with the literature that argues that new technology might lead to a recombination of roles and tasks, which goes hand-in-hand with some increase in autonomy and discretion (Barley, 2020; Petrakaki and Kornelakis, 2016). Automation is recognised to have the potential to improve job quality, for instance, by removing mundane tasks thanks to RPA (Kornelakis et al., 2022), and there is empirical evidence that computerisation led to an increase in autonomy in the last few decades (Menon et al., 2020). Significantly, this process could be facilitated by implementing strategies such as employee redeployment, job expansion, and redesign, resulting in the transformation of job responsibilities and the creation of new job profiles *(Kornelakis et al., 2022).*

However, in our case study, such "empowering automation" in SSCs emerges due to a specific macroeconomic context – demographically-driven labour shortage that constrains growth. It is contingent on the continuous appetite for expansion and structural upgrades. SSCs in Poland actively vie with similar centres in other locations for tasks, positioning their evolution as a matter of prestige, including personal prestige for head managers. Currently, this progression hinges on undertaking new, advanced tasks, automating processes, and showcasing the centre as a technological frontier. This mirrors the dynamic seen in workers who, as valuable contributors, are encouraged to "challenge processes" by seeking improvements and identifying blind spots. Proactivity and the presentation of improvement ideas are essential for individual workers and the entire organisation. They are also a core driving force in shared services impacting workers, leaders, and entire units.

Apart from upskilling, the introduction of automation and AI solutions raises the question of whether it affects organisational modularity. In less established centres, job roles appear modular and easily transferable, allowing individuals to transition between teams. Even if hired for a specific position, career paths can undergo multiple changes, with other individuals ready to assume previous roles. However, as one progresses to more advanced and higher-value roles, personal insights become increasingly valued. Paradoxically, automation can reduce modularity. Basic modular tasks and roles are being automated or replaced by artificial intelligence. What holds greater value is personal and professional expertise, as well as individual identity derived from experiences working in diverse teams and on complementary projects. Uniqueness becomes a prized quality, as the future of work in such centres revolves around distinct competencies that cannot be easily programmed.

The interviewees shared two fundamental observations crucial for the ongoing evolution of shared services. Firstly, the essence of their inception lies in the process of standardisation rather than solely cost reduction. Their foundational principle was the quest for consistency and efficiency in operations. Secondly, it is imperative to recognise that automation, which has become an integral facet of shared services, does not and will not likely result in layoffs. Contrary to the fears of workforce displacement, automation, according to our interviewees, mainly catalyses process enhancement. It is merely a tool for increasing productivity in organisations that can no longer grow solely by hiring more workers to perform labour-intensive tasks. This observation underscores the symbiotic relationship between technology and human expertise, with automation as a force multiplier for human potential.

To challenge or undermine these truths is virtually inconceivable, as they are deeply ingrained in the philosophy and purpose of shared services centres.

Further research could explore the nuanced relationship between automation and worker empowerment in different institutional and macroeconomic settings in the business services sector. For instance, automation introduced in the business services sector in call centres in South Africa accelerated the sectoral shift towards more complex roles. Still, the evidence on how it changed the content of existing jobs is limited (Whitehead et al., 2023). Moreover, comparing the impact of automation on skills and autonomy in shared services centres within one organisation but from different geographical contexts could provide valuable insights. Investigating the long-term effects of automation on skill development, job quality, and workers' engagement would contribute to a deeper understanding of how technology and human expertise intersect.

Finally, the implications of our research suggest that job autonomy perceived as a benefit of technology adoption should not be deemed automatic or self-evident. We unquestionably affirm that the impacts of technological change are not preordained or deterministic, and its outcomes result from negotiated processes that deeply require our sustained attention and scrutiny. Our research clearly emphasises that even though studied firms have enhanced job quality through automation, this enhancement is often peripheral to the core business objective. In fact, companies had long overlooked job quality considerations until it became an indispensable strategy for overcoming the pressing issue of labour shortages. Paradoxically, companies recognise the immense value of their workers — workers who are critical to the successful transition to automation — yet their commitments to adequate workforce training and skill enhancement appear woefully inadequate. This discrepancy between the perceived value of labour and the actual investment in human capital can be traced to the conventional corporate practice of treating labour not as a prized asset, but as a liability (Rani and Grimshaw, 2019). This perspective potentially emboldens firms to evade the responsibility for worker education and skill development, effectively unloading the costs of these essential functions onto their workers. This unfortunate trend is not sustainable, especially given the increasing awareness of labour's investment value in an era of technological change and business transformation.

Indeed, automation within SSCs contributes effectively to job quality, resourcefulness, and intrinsic worker satisfaction. Yet, it also calls into question the very nature of organisational labour dynamics, casting a light on enduring contradictions within prevailing investment practices in human labour. Irrefutably, our findings turn attention to the question: to what extent will automation in SSCs pivot upon worker involvement and the continued value placed on human skills? Further research into these dynamics across varying institutional and macroeconomic contexts will be an enriching contribution to the complex narrative of automation and labour process.

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