

# Impact pathways: putting workers front and center in addressing workforce shortages in intellectual disability care

International  
Journal of  
Operations &  
Production  
Management

251

Vincent Peters

*Department of Tranzo, Tilburg University, Tilburg, Netherlands and  
Department of Information Systems and Operations Management,  
Tilburg University, Tilburg, Netherlands, and*

Noud Frielink, Carry van Leest, Lucienne Heerkens and Petri Embregts  
*Department of Tranzo, Tilburg University, Tilburg, Netherlands*

Received 12 February 2024  
Revised 14 June 2024  
5 July 2024  
Accepted 15 July 2024

## Abstract

**Purpose** – Addressing workforce shortages in operations and supply chain management (OSCM) necessitates adaptive measures by both individuals and organizations, with a pivotal role played by Human Resources (HR). This impact pathway delves into how healthcare organizations can effectively manage workforce shortages, informed by HR practices. Through an in-depth understanding of healthcare organizations, the authors pinpoint challenges and concerns linked to workforce shortages. Pathways are proposed to stimulate future OSCM research and collaboration, leveraging innovative and creative methods from the HR field.

**Design/methodology/approach** – Data was collected from various representatives from healthcare organizations to explore how healthcare organizations for people with intellectual disabilities address the challenges stemming from contemporary workforce shortages.

**Findings** – Three pathways were outlined to address workforce shortages in healthcare supply chains, utilizing intellectual disability care as a representative example. These pathways comprise optimizing the potential of the current workforce, illustrating innovative HR practices for enhancing their performance, and proposing strategies for retaining these valuable workers.

**Originality/value** – Despite its potential, the HR domain remains relatively underdeveloped within OSCM research. The authors show how HR practices can potentially mitigate impending workforce shortages. While utilizing intellectual disability care as a representative example, this paper proposes that the impact pathways identified can be extended to various other healthcare settings.

**Keywords** Workforce shortage, Healthcare, Retention, Intellectual disability care

**Paper type** Impact pathway paper

## 1. Introduction

Global supply chains are currently facing tremendous challenges, including shifting consumer demands, geopolitical complexities, and shortages of skilled workers. Notably, the workforce shortage stands out as a paramount predicament and portends substantial disruptions to global supply chains. Projections suggest that organizations worldwide will face an immense dearth of skilled labor by 2030, leading to an estimated revenue loss of approximately \$8.45tn (Korn Ferry, 2023). This impending scenario raises concerns for the resilience of supply chains and major labor-intensive supply chain industries worldwide.

© Vincent Peters, Noud Frielink, Carry van Leest, Lucienne Heerkens and Petri Embregts. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licences/by/4.0/legalcode>



International Journal of Operations &  
Production Management  
Vol. 44 No. 13, 2024  
pp. 251-262  
Emerald Publishing Limited  
0144-3577  
DOI 10.1108/IJOPM-02-2024-0086

The healthcare sector represents such a major labor-intensive supply chain, where an impending workforce shortage looms large. Sustaining current healthcare services coverage is contingent upon the availability, accessibility, and quality of healthcare workers (WHO, 2023). According to the World Health Organization (WHO), a global shortage of 10 million healthcare workers is projected by 2030. This shortage stems from underinvestment in healthcare worker education and training, and the mismatch between educational and employment strategies in relation to the evolving needs of healthcare systems and populations (WHO, 2023).

In response to the impending workforce shortage in healthcare, we collaborated closely with boards of directors, Human Resources (HR) directors, and policy advisors of healthcare organizations to unveil the challenges they face in their daily operations. Our primary focus revolves around illuminating the contemporary challenge of workforce shortages in the realm of intellectual disability care. Supplementary File 1 sheds more light on specific details of workforce shortages in this realm of care. While sharing similarities with other healthcare services in recruitment, training, and supervision, intellectual disability care presents unique attributes making it a valuable case study. For example, services for people with intellectual disabilities must address elevated turnover rates based on the particular significance that relationships with staff hold for people with intellectual disabilities (Giesbers *et al.*, 2019). Our comprehensive analysis in this domain seeks to delve into the issue of workforce shortages and explore potential mitigation approaches from the perspective of HR and operations and supply chain management (OSCM). Manpower UK emphasizes that successful organizations recognize the need to broaden their scope beyond traditional HR functions and acquire expertise in new areas to address workforce shortages. The integration of artificial intelligence (AI) emerges as a potent, new HR instrument, as demonstrated by Baptist Health's use in addressing staffing challenges in operating rooms and Bon Secours Mercy Health's optimization of the recruitment process. These implementations have led to various positive outcomes, including enhanced efficiency and time savings. However, HR management is largely an underdeveloped area of knowledge in OSCM and its role in the supply chain could help address workforce shortages in healthcare. While HR may not provide simple solutions to complex workforce challenges, it can offer actionable strategies for organizations to recruit, retain, reengage, and reimagine the health workforce for a sustainable future. Therefore, the aim of this paper is to explore potential impact pathways and craft comprehensive strategies, informed by HR practices, to effectively address this pressing issue.

## 2. Workforce shortages in healthcare

Workforce shortages in healthcare have emerged as a critical issue across the globe (McKendrick, 2023). Resulting deficiencies in skills and competencies as well as disruptions to the regular flow of goods and services along the supply chain have shown a severe and detrimental effect on both healthcare organizations and staff, and the well-being of patients (Alexander *et al.*, 2022). Shortages in investment, recruitment, and training of healthcare workers, along with the ongoing imperative to enhance the quality of healthcare services, have contributed to an epidemic of burnout and health-related challenges among healthcare workers (WHO, 2023).

The COVID-19 pandemic has underscored the importance of prioritizing the well-being of the healthcare workforce, and clearly demonstrated that health systems can only operate effectively when staff are both functional and in good health (Micheli *et al.*, 2021). The delicate balance between providing optimal care and safeguarding one's physical, mental, and emotional health warrants in-depth analysis and extensive discussions on how to keep the current healthcare system sustainable.

Striking this delicate balance necessitates innovative thinking beyond conventional boundaries, to overcome the challenges posed by the healthcare workforce shortage.

While AI and automation are driving transformative changes and have the potential to mitigate workforce shortages in manufacturing industries (McKendrick, 2023), their relevance is less evident in service industries such as healthcare – specifically in the realm of intellectual disability care (the focus of this paper), where the client-worker relationship is at the core of service delivery (Embregts, 2011). When envisioning the future of the healthcare workforce and the evolving nature of work, a critical aspect lies in the realm of HR. The significance of selecting, coordinating, and managing employees has undergone substantial transformation since the turn of the century (Köchling *et al.*, 2023; Kraus *et al.*, 2023). While the fundamental functions of HR (including recruitment, training, and monitoring) persist, the methodologies employed to fulfill these responsibilities require a thorough and fundamental overhaul. Therefore, research should focus on innovative HR practices within healthcare supply chains, addressing both facilitators and barriers to implementation. This approach ensures a balanced understanding, highlighting potential benefits and pitfalls in tackling workforce shortages. Recognizing the strategic importance of HR management in healthcare supply chains, it is important to explore how innovative HR practices can adeptly mitigate workforce shortages.

### 3. Methods

In this study, we sought to explore how healthcare organizations for people with intellectual disabilities address contemporary workforce shortages, examine potential impact pathways, and craft comprehensive strategies to effectively address this pressing issue. We collaborated with multiple organizations in intellectual disability care of varying sizes (in terms of small/large client numbers) and client populations (ranging from people with severe intellectual disabilities to those functioning at the borderline level), both urban and rural, affiliated with the Academic Collaborative Center “Living with an Intellectual Disability” of Tilburg University. Please see Supplementary File 2 for more details on our data collection. Working closely with the board of directors, HR directors, and policy advisors from these organizations, we ensured alignment with contemporary practice issues. Together, we sought to identify viable pathways for addressing workforce shortages and minimizing their impact. In March and April 2023, eight interviews were conducted with board members, HR directors, and policy advisors from eight organizations. Ethical approval was obtained from the Ethics Review Board of Tilburg University [TSB\_RP830], and written informed consent was obtained from all participants. We developed a concise interview guide informed by relevant literature, organizational reports, and policy documents, covering topics such as demographic trends, labor market developments, and the potential impact of technology, enabling a thorough exploration of workforce shortage challenges. The overall data collection is further detailed in Table 1.

To analyze our interview data we employed a reflexive approach to thematic analysis, based on the work of Braun and Clarke (2019). Through the reflexive approach, themes were not predefined in order to “find” codes. Rather, themes were produced by organizing codes

**Table 1.** Data collection

	Type of data
Primary data	- Open interviews (8 interviews; 420 min)
Secondary data*	- Audiovisual materials (603 min)
	- Meeting minutes (720 min)
	- Reports (2,218 pages)
	- Web pages (1,298 pages)

**Note(s):** \*For more details, see Supplementary File 2

**Source(s):** Created by authors

around the core commonality of the interview – workforce shortages – that we interpreted from the data; Supplementary File 3 provides more insight into our data coding tree. After identifying the themes, we systematically searched for literature and collected organizational reports and policy documents to complement and substantiate our identified themes. The literature, organizational reports, and policy documents were integrated with the interview data to substantiate the identified pathways and corresponding themes. To illustrate the interview findings, we incorporated relevant quotes from our interview data, highlighting prospective pathways. In addition, we complemented our findings by incorporating real-life cases and examples to illustrate effective solutions that are already being implemented in practice (Supplementary File 4).

#### 4. Results

The data from the interviews showed three impact pathways to address workforce shortages that explore 1) how to maximize the potential of the existing workforce, 2) innovative practices for the existing workforce, and 3) ways to retain the existing workforce.

##### 4.1 Maximizing the potential of the existing workforce

Healthcare organizations emphasize the importance of maximizing the potential of their existing workforce through a comprehensive approach that prioritizes employee well-being, flexible staffing strategies, and skill-mix change of healthcare workers.

*4.1.1 Employee well-being.* All respondents expressed that putting the well-being of healthcare workers first is paramount. One respondent highlighted this by stating: “We used to put the client first, but we should now put both the client and the worker first” [HR Director]. To achieve this, healthcare organizations are promoting work-life balance, offering access to mental and physical health support, and fostering a positive work environment. These efforts are vital toward preventing burnout and reducing job-related stress, ultimately prioritizing employee health and sustainable employability (Gürbüz *et al.*, 2022). Policymakers and managers are encouraged to pay close attention to their workers’ sustainable employment, as it might lead to improved productivity and could create a positive impact on overall workforce performance.

*4.1.2 Flexible staffing strategies.* Another way of maximizing the potential of the existing workforce is through a flexible staffing strategy, reallocating workers to areas with the greatest need to alleviate shortage. One respondent noted: “Why would it not be possible for a worker to have an early-morning shift (7-9AM) in intellectual disability care and a late-morning shift (9AM-12PM) in elderly care?” [Manager]. This floating strategy is regarded positively across industries for employing versatile workers capable of performing multiple roles across various locations (Gnanlet and Gilland, 2014). The benefits of floating transcend the mere addressing of immediate staffing shortages. It may result in increased knowledge-sharing within teams and provides employees with exposure to a variety of tasks and knowledge (Gnanlet *et al.*, 2021), which they can effectively utilize when they return to their original teams. Hence encouraging employees to take on multiple roles or move to different teams, locations, organizations, or even sectors can be highly beneficial. Implementing floating as a regular workforce optimization practice could offer a more efficient way to adapt the existing workforce, as it might ensure effective resource utilization and improved overall performance, not just during times of workforce shortages but consistently (Gnanlet *et al.*, 2021).

*4.1.3 Skill-mix change of healthcare workers.* The respondents indicated that healthcare workers often spend a significant portion of their time on administrative tasks that do not require specialized knowledge, leading to decreased job satisfaction; as one respondent emphasized: “We often hear from our healthcare workers that they need to engage in too much administrative work and that they can spend little time on ‘quality time’ with clients, which is

*ultimately the job that is regarded highly*” [Member, Board of Directors]. We call for an approach that helps realign workers and ensures that their skills are effectively utilized. As such, misplacement of workers can be reduced and employees are less likely to feel underutilized or dissatisfied with their roles. One approach to address this is through skill-mix change, which involves redistributing skills, competencies, roles, or tasks within and across individuals, teams, organizations, and sectors (Maier *et al.*, 2022). Previous research shows that this approach could lead to employees adapting to alternate skills; by allowing healthcare workers to delegate certain responsibilities to well-trained, lower-level staff, resources can be utilized more efficiently. This approach aims to make the most of limited resources and maximize the potential of the existing workforce. By bridging skills gaps and enhancing workforce versatility, organizations can foster a more resilient workforce capable of adapting to various challenges effectively.

#### 4.2 Innovating practices for the existing workforce

Addressing workforce shortages requires innovative HR solutions and collaborative efforts to overcome traditional thinking, such as revamping the recruitment process, engaging in supplemental staffing, and utilizing technology and automation.

**4.2.1 Revamping the recruitment process.** The recruitment process was mentioned by respondents as an innovative solution to address workforce shortages, since adding extra manpower to the existing workforce may become necessary. However, as highlighted by an HR director, traditional recruitment can be time-consuming and resource-intensive. The literature shows that revamping the recruitment process can make recruitment a suitable fallback during workforce shortages (Köchling *et al.*, 2023). One suggested approach is to recruit candidates who meet approximately 80% of the recruitment criteria and then provide the necessary support and training for them to grow into the role. This widens the organization’s talent pool and offers opportunities for lateral entrants, career changers, migrant workers, and refugees to join the workforce. Given the ongoing refugee crisis in Europe and the Ukraine-Russia war (Caniato *et al.*, 2023), the group of refugee workers is becoming increasingly relevant. In this respect, one respondent stated: *“The Dutch workforce will only shrink in the coming years and we have to be innovative in finding new workers. Refugees might present opportunities for us to partially deal with workforce shortages”* [Senior Policy Advisor]. While engaging refugee workers presents promising opportunities, integrating them into the local workforce can be challenging for all parties involved. Future work should examine revamping the recruitment process and consequently focus on understanding and addressing these challenges, considering the implications from various perspectives – including the individual level (refugees, clients, local workforce), organizational level (employers, support organizations), and institutional level (governments, NGOs).

**4.2.2 Supplemental staffing strategies.** The respondents mentioned being compelled to resort to hiring temporary or agency-based employees to fill in the gaps in personnel scheduling: *“We simply need to hire self-employed individuals to complete the schedules. That is truly the situation we are currently confronted with”* [Member, Board of Directors]. This supplemental staffing strategy is considered cost-effective in some industries, such as the logistics industry (Gnanlet *et al.*, 2021), but it may not hold true for the healthcare industry, where temporary employees are often more expensive. Although using temporary workers can help fill vacancies, manage absenteeism, and handle surge demand, as mentioned by an HR director, it may not improve service quality due to higher coordination efforts required among temporary workers. Those workers might not be familiar with the protocols and norms of the unit they serve temporarily. In addition, as their work is often viewed as an economic exchange, they may be less motivated to engage in activities that foster a sense of belonging within the team, unit, or organization (Gnanlet *et al.*, 2021). This is particularly important for the field of intellectual disabilities, where people are dependent on care

throughout their life, and where building relationships is crucial for delivering quality care (Giesbers *et al.*, 2019) – something that cannot be achieved with temporary and agency-based employees.

As previous research on the subject remains inconclusive, it is essential to explore further whether and under which conditions supplemental staffing truly proves beneficial during times of workforce shortage in healthcare. This investigation might help organizations make informed decisions regarding the use of temporary workers and its potential impact on service quality and overall cost-effectiveness.

*4.2.3 Technology and automation.* Most respondents mentioned that harnessing the power of technology and automation is promising in the long term, yet does not offer tools for dealing with workforce shortages in the short term. As expressed by one respondent: “*In our field of care, technology is a means to an end and people truly need to see the added value [technology acceptance] before they will start using it*” [HR Director and Communications Manager]. It was mentioned that technology and automation have the potential to alleviate the burden on the existing workforce by streamlining administrative tasks and enabling staff to focus on more meaningful aspects of client care (e.g. direct client contact). Previous research shows that automating routine and repetitive tasks, such as administrative duties and data entry, allows employees to dedicate more time to complex responsibilities (Köchling *et al.*, 2023). Moreover, integrating electronic health records between different healthcare organizations, adopting telemedicine platforms, and utilizing AI-driven systems can enhance communication and collaboration among healthcare workers, leading to better coordination of care and improved client outcomes (Kraus *et al.*, 2023). In the long run, improving the design and adoption of technology and automation can potentially address workforce shortages in various industries, including healthcare. By finding the right balance between technology and human touch, organizations might create a workforce that is efficient, fulfilled, and better equipped to meet current and future challenges.

#### *4.3 Retaining the existing workforce*

Addressing workforce shortages, especially in labor-intensive supply chains like healthcare, stresses the critical importance of retaining the existing workforce. It is important to take employee commitment and job satisfaction into consideration, as well as critically examine the onboarding program offered by organizations.

*4.3.1 Employee commitment and job satisfaction.* All respondents argued that their organizations should expand their traditional HR practices beyond convention. Prioritizing the creation of a supportive and inclusive work environment, offering competitive compensation packages, and recognizing employees’ contributions are essential steps to boost morale and enhance job satisfaction (Kraus *et al.*, 2023). The HR directors mentioned that investing in continuous professional development and training opportunities enables their employees to enhance their skills and ensures they stay engaged in their roles. They likewise argued that their organizations are exploring opportunities for implementing flexible work arrangements, such as part-time options or remote work, and offering contracts of more hours which is an uncommon practice in healthcare. Previous research has shown that such opportunities can accommodate individual employee needs and promote a healthy work-life balance (Micheli *et al.*, 2021). Interestingly, the HR directors asserted that these efforts do not result in organizational commitment: “*When we ask our workers whom they are committed to, they almost always answer that they are committed to the unit where they work. Instead of ‘I work at organization X’, they will say that they work at unit Y*” [HR Director]. This seems troublesome, as previous research has repeatedly shown that strengthening organizational commitment is crucial, given that it has been identified as a significant predictor of workforce retention in any industry. Understanding how to foster organizational commitment might yield valuable insights for retaining the workforce.

**4.3.2 Onboarding programs.** Respondents expressed concern about high turnover among employees, especially recent graduates within their first two years: “*We observe that we are not keeping our people on board during their first year of appointment, and this is especially true for recent graduates. We are at our wits’ end and are looking for ways to keep them on board*” [HR Director]. Research highlights the importance of support, like onboarding and mentorship, for early-career workers, as over half of recently graduated workers leave their job within the first year. In addition, generations like Gen Z (born in 1997–2012) have unique needs and demands compared to previous generations, requiring a different approach in the workplace (Kraus *et al.*, 2023). To address this retention challenge, organizations could prioritize a well-designed onboarding process that has a significant impact on employee retention and job satisfaction, regardless of generation (Frögéli *et al.*, 2023). A comprehensive and structured introduction to the organization, its values, and its culture during onboarding programs might help new employees feel welcomed and engaged from the start, setting a positive tone for their entire employment journey. Moreover, respondents argued that onboarding can be improved by tailoring the program to the individual needs and aspirations of new employees, promoting a sense of belonging and investment in the organization’s success. Research shows that continuous support and mentorship during the onboarding period ensures a smooth transition into new employees’ roles, enabling them to contribute effectively to the organization (Kraus *et al.*, 2023). Currently, onboarding programs are often offered from the perspective of the organization, overlooking the needs and aspirations of new employees (Frögéli *et al.*, 2023). This might result in negative onboarding experiences, leading workers to leave the organization. Utilizing employee journey mapping could be an effective means to gain insight into employee perspectives during the onboarding program. By exploring ways to retain the existing workforce, organizations can not only bridge workforce shortages but also build a stable and resilient workforce that delivers the highest level of service and care for their clients. This commitment to employee support and development might pay dividends in the form of increased job satisfaction and improved retention rates.

## 5. Conclusion

It is evident that urgent action is needed to address the challenges stemming from severe workforce shortages in global supply chains. This necessitates investment in people, technology, and healthcare infrastructure to empower workers to practice at their highest capacity while improving work-life balance. By delving into the imminent workforce shortages in Dutch intellectual disability care, we uncovered the challenges and issues related to workforce shortages. Through interviews and literature integration, we outlined three impact pathways inspiring innovative, creative, and critical research: maximizing, innovating, and retaining the existing workforce. We have developed future research questions and potential policy implications for each pathway (Table 2), advocating for diverse theoretical approaches across scientific fields. Our goal is to inspire OSCM scholars to pursue innovative, interdisciplinary research vital for addressing workforce shortages in global supply chains.

While this paper employs intellectual disability care as an illustrative example, we posit that the identified impact pathways are applicable to other healthcare settings to ensure optimal quality of care and care as well as quality of life for clients and patients involved. With collaborative efforts and commitment from all involved organizations to finding innovative solutions, we can build a brighter future for global supply chains, ensuring not just survival but thriving success.

**Table 2.** Proposed impact pathways, exemplary future research questions, and policy implications for addressing workforce shortages in healthcare through innovative HR practices

Impact pathway	Theme	Exemplary future research questions	Policy implications
1. Maximizing the potential of the existing workforce	Employee well-being (e.g. <a href="#">Gürbüz et al., 2022</a> )	<ul style="list-style-type: none"> <li>• Which resource configurations and tools are needed to improve employee well-being?</li> <li>• What measurement scales can be developed and/or utilized in the future to help employees self-assess their well-being?</li> <li>• From a longitudinal perspective, what do employees consider necessary to remain sustainably employable in healthcare?</li> </ul>	Understanding what the healthcare workforce needs in order to remain sustainably employable is crucial for the availability of the healthcare workforce in the long run
	Flexible staffing strategies (e.g. <a href="#">Gnanlet et al., 2021</a> )	<ul style="list-style-type: none"> <li>• What is the impact of flexible staffing strategies on quality of care and quality of life in healthcare?</li> <li>• How can flexible staffing strategies be utilized across healthcare organizations and/or sectors?</li> <li>• What are the legal and regulatory challenges associated with flexible staffing strategies in healthcare?</li> </ul>	Gaining insight into how flexible staffing strategies can be utilized across healthcare supply chains should help policymakers execute these strategies, benefitting all organizations involved
	Skill-mix change of healthcare workers (e.g. <a href="#">Maier et al., 2022</a> )	<ul style="list-style-type: none"> <li>• What are the effects of skill-mix changes in healthcare at the client (e.g. patient safety, patient satisfaction), worker (e.g. job satisfaction, intention to stay), and organization level (e.g. cost effectiveness, performance)?</li> <li>• What are the barriers and facilitators to changing the skill-mix of healthcare workers?</li> <li>• What are the legal and regulatory challenges associated with implementing skill-mix change in healthcare?</li> </ul>	Apprehending the concept of skill-mix change can assist policymakers in making informed decisions on implementing policies to authorize delegation of tasks, potentially resulting in more efficient allocation and utilization of the healthcare workforce
2. Innovating practices for the existing workforce	Revamping the recruitment process (e.g. <a href="#">Köchling et al., 2023</a> )	<ul style="list-style-type: none"> <li>• What are the challenges and opportunities to integrating refugee workers into the local workforce, from the</li> </ul>	Understanding refugee workers' perspective should assist policymakers in tailoring their policies to beneficiaries such as

(continued)

Impact pathway	Theme	Exemplary future research questions	Policy implications
		<p>perspective of refugee workers, co-workers, managers, and clients receiving care?</p> <ul style="list-style-type: none"> <li>• What are the implications of these challenges and opportunities for global healthcare supply chains in the pursuit of delivering sustainable and future-proof healthcare?</li> <li>• What are the risks, benefits, and intended/unintended consequences of relying on artificial intelligence during the (entire) recruitment process (screening and preselection, telephone, or video interview), and does it lead to operational outcomes (e.g. cost reduction, efficiency gains)?</li> </ul>	<p>refugees and co-workers to add extra manpower to the existing workforce</p> <p>Comprehending the impact of utilizing artificial intelligence in the recruitment process should effectively help policymakers with decision-making</p>
	Supplemental staffing strategies (e.g. <a href="#">Gnanlet et al., 2021</a> )	<ul style="list-style-type: none"> <li>• What is the impact of supplemental staffing strategies on quality of care and quality of life in healthcare?</li> <li>• Under which conditions can supplemental staffing prove beneficial in healthcare?</li> <li>• What are the challenges encountered by temporary workers given their negative connotations in health care, from the perspective of temporary workers, co-workers, and clients?</li> </ul>	<p>Obtaining insights into supplemental staffing strategies might help policymakers make informed decisions on the use of temporary workers and its potential impact on service quality and cost-effectiveness</p>
	Technology and automation (e.g. <a href="#">Kraus et al., 2023</a> )	<ul style="list-style-type: none"> <li>• How can emerging technologies contribute to reconfigure organizational resources to reduce employee workload?</li> <li>• What are the risks and unintended consequences of relying on emerging technologies (e.g. artificial intelligence) for innovating the existing workforce?</li> <li>• From a longitudinal perspective, how can companies effectively</li> </ul>	<p>Gaining understanding of the acceptance and value of technology and automation in healthcare could assist policymakers in effectively deploying technology and automation. Training and education in utilizing technology and automation is required to ensure effective implementation and continuous improvement</p>

(continued)

Table 2.

Impact pathway	Theme	Exemplary future research questions	Policy implications
3. Retaining the existing workforce	Employee commitment and job satisfaction (e.g. Kraus <i>et al.</i> , 2023)	<p>program and measure the impact of emerging technologies on organizational performance?</p> <ul style="list-style-type: none"> <li>• How do policymakers respond to changes in work practices as a result of emerging technologies, and how do they prepare workers for the realities of the future of work (e.g. through education, up-skilling, re-skilling, and lifelong learning)?</li> <li>• What are the specifics and needs of each generation in the workforce and how are HR activities tied to each specific group to effectively enhance employee commitment and job satisfaction?</li> <li>• How can policies be designed to optimize the factors that influence the success and effectiveness of flexible and hybrid work arrangements, such as part-time options and remote work?</li> </ul>	Comprehending the impact of employee commitment and job satisfaction is relevant for policymakers. They benefit from developing their management strategies weighing employees' commitment and job satisfaction, consequently enhancing retention of the existing workforce
	Onboarding programs (e.g. Frögéli <i>et al.</i> , 2023)	<ul style="list-style-type: none"> <li>• What are key onboarding activities (and which activities are lacking) during the onboarding program for incoming workers, from their own perspective, while taking into account generational differences (e.g. Gen Z)?</li> <li>• What are the barriers and facilitators to offering onboarding programs in healthcare, as perceived by HR employees and training officers, and how can these barriers be overcome to ensure successful onboarding experiences of incoming healthcare workers?</li> <li>• From a longitudinal perspective, what is the effect of formal onboarding programs on incoming healthcare workers' intention to stay?</li> </ul>	Attending to the onboarding of new employees is crucial for policymakers. Not only does it enhance retention of their newcomers, it also results in greater revenue growth and a greater profit margin than organizations that are less active and effective in terms of onboarding

Source(s): Created by authors

---

**References**

- Alexander, A., Blome, C., Schleper, M.C. and Roscoe, S. (2022), "Managing the 'new normal': the future of operations and supply chain management in unprecedented times", *International Journal of Operations and Production Management*, Vol. 42 No. 8, pp. 1061-1076, doi: [10.1108/ijopm-06-2022-0367](https://doi.org/10.1108/ijopm-06-2022-0367).
- Braun, V. and Clarke, V. (2019), "Reflecting on reflexive thematic analysis", *Qualitative Research in Sport, Exercise and Health*, Vol. 11 No. 4, pp. 589-597, doi: [10.1080/2159676x.2019.1628806](https://doi.org/10.1080/2159676x.2019.1628806).
- Caniato, F., Graham, G., Roehrich, J.K. and Vereecke, A. (2023), "Impact pathways: a home for insights from relevant and impactful operations and supply chain management research", *International Journal of Operations and Production Management*, Vol. 43 No. 13, pp. 270-288, doi: [10.1108/ijopm-03-2023-0163](https://doi.org/10.1108/ijopm-03-2023-0163).
- Embregts, P.J.C.M. (2011), *Zien, Bewogen Worden*, in *Beweging Komen*, Prismaprint, Tilburg.
- Frögéli, E., Jenner, B. and Gustavsson, P. (2023), "Effectiveness of formal onboarding for facilitating organizational socialization: a systematic review", *PLoS ONE*, Vol. 18 No. 2, e0281823, doi: [10.1371/journal.pone.0281823](https://doi.org/10.1371/journal.pone.0281823).
- Giesbers, S.A.H., Hendriks, A.H.C., Jahoda, A., Hastings, R.P. and Embregts, P.J.C.M. (2019), "Living with support: experiences of people with mild intellectual disability", *Journal of Applied Research in Intellectual Disabilities*, Vol. 32 No. 2, pp. 446-456, doi: [10.1111/jar.12542](https://doi.org/10.1111/jar.12542).
- Gnanlet, A. and Gilland, W.G. (2014), "Impact of productivity on cross-training configurations and optimal staffing decisions in hospitals", *European Journal of Operational Research*, Vol. 238 No. 1, pp. 254-269, doi: [10.1016/j.ejor.2014.03.033](https://doi.org/10.1016/j.ejor.2014.03.033).
- Gnanlet, A., Sharma, L., McDermott, C. and Yayla-Kullu, M. (2021), "Impact of workforce flexibility on quality of care: moderating effects of workload and severity of illness", *International Journal of Operations and Production Management*, Vol. 41 No. 12, pp. 1785-1806, doi: [10.1108/ijopm-04-2021-0247](https://doi.org/10.1108/ijopm-04-2021-0247).
- Gürbüz, S., Joosen, M.C.W., Kooij, D.T.A.M., Bakker, A.B., van der Klink, J.J.L. and Brouwers, E.P.M. (2022), "Measuring sustainable employability: psychometric properties of the capability set for work questionnaire", *BMC Public Health*, Vol. 22 No. 1, p. 1184, doi: [10.1186/s12889-022-13609-8](https://doi.org/10.1186/s12889-022-13609-8).
- Köchling, A., Wehner, M.C. and Warkocz, J. (2023), "Can I show my skills? Affective responses to artificial intelligence in the recruitment process", *Review of Management Science*, Vol. 17 No. 6, pp. 2109-2138, doi: [10.1007/s11846-021-00514-4](https://doi.org/10.1007/s11846-021-00514-4).
- Korn Ferry (2023), "The global talent crunch: prepare for the impending talent shortage", available at: <https://www.kornferry.com/challenges/future-of-work> (accessed 23 May 2023).
- Kraus, S., Ferraris, A. and Bertello, A. (2023), "The future of work: how innovation and digitalization re-shape the workplace", *Journal of Innovation and Knowledge*, Vol. 8 No. 4, 100438, doi: [10.1016/j.jik.2023.100438](https://doi.org/10.1016/j.jik.2023.100438).
- Maier, C.B., Kroezen, M., Wismar, M. and Busse, R. (2022), *Skill-Mix Innovation, Effectiveness and Implementation: Improving Primary and Chronic Care*, Cambridge University Press, Cambridge, UK.
- McKendrick, J. (2023), "How to address the supply-chain staffing crisis", *Harvard Business Review*, available at: <https://hbr.org/2023/09/how-to-address-the-supply-chain-staffing-crisis> (accessed 18 September 2023).
- Micheli, P., Johnson, M. and Godsell, J. (2021), "Editorial How the Covid-19 pandemic has affected, and will affect, operations and supply chain management research and practice", *International Journal of Operations and Production Management*, Vol. 41 No. 6, pp. 773-780, doi: [10.1108/ijopm-06-2021-902](https://doi.org/10.1108/ijopm-06-2021-902).
- World Health Organization (2023), "Health workforce", available at: [https://www.who.int/health-topics/health-workforce#tab=tab\\_1](https://www.who.int/health-topics/health-workforce#tab=tab_1) (accessed 6 February 2023).

**Appendix**

The supplementary material for this article can be found online.

**Corresponding author**

Vincent Peters can be contacted at: [v.j.t.peters@tilburguniversity.edu](mailto:v.j.t.peters@tilburguniversity.edu)