Guest editorial: Towards decent work in the era of Logistics 4.0

1. Introduction

Social sustainability holds an important position in logistics management, emphasizing the fulfillment of responsibilities pertaining to human rights, employment, equality, poverty, education, health and safety (Alghababsheh and Gallear, 2022). In the logistics industry, which encompasses the management of goods, services and information flow, the pursuit of social sustainability goals involves the effective management of logistics activities to generate positive impacts on employees, customers and society at large (Fernandes *et al*., 2023). Among the various social sustainability concerns, decent work is a critical aspect that requires meticulous attention. Decent work, as articulated by the International Labor Organization, encompasses "*opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men.*" It aligns with the United Nations' Sustainable Development Goal 8, titled "Decent Work and Economic Growth," which underscores the significance of ensuring fair employment practices and fostering economic development. This strategic alignment emphasizes the integral role of decent work in achieving broader sustainable development objectives.

In the logistics sector, ensuring decent work for logistics workers remains an ongoing challenge. Based on data from the U.S. Bureau of Labor Statistics, warehouse logistics in 2023 experienced frequent work disruptions, with 4.1 injury and illness cases per 100 full-time workers involving days away from work, job restriction or job transfer [1]. In maritime logistics, seafarers report a higher fatal accident rate than the general workforce (Neis *et al*., 2025). Beyond physical safety and objective indicators such as injury rates and income, emerging workplace well-being assessments increasingly incorporate subjective indicators, including job satisfaction and happiness. For instance, although the Seafarer Happiness Index in 2025 showed modest improvements, the results continued to reveal concerns related to limited two-way evaluation mechanisms, unfair perceived disrespectful treatment and inadequate organizational support systems [2].

While diversity and inclusion can act as powerful drivers of workforce transformation, gender inequality remains a persistent issue in the logistics sector (Preet, 2025). Scott and Davis-Sramek (2023) noted that women drivers remain significantly underrepresented in private carrier, local and less-than-truckload segments. Similarly, a joint survey published by the International Maritime Organization and the Women's International Shipping and Trading Association reported that women constitute only a small proportion of the global seafaring workforce, underscoring the continued need for policies addressing sexual harassment and other forms of workplace discrimination (WTO and WISTA, 2024).

Despite persistent social issues yet to be fully addressed, the logistics industry is currently undergoing transformative shifts driven by the fourth industrial revolution, transitioning into the era of Logistics 4.0. Logistics 4.0 can be defined as "*the logistical system that enables the sustainable satisfaction of individualized customer demands without an increase in costs and supports this development in industry and trade using digital technologies";* it underscores the pivotal role of humans, particularly employees whose work will be both influenced and supported by advanced technologies (Winkelhaus and Grosse, 2020). Characterized by automation, artificial intelligence, robotics and digitalization, Logistics 4.0 has introduced various innovations in the logistics sector, including autonomous shipping, autonomous ports, delivery drones, delivery robots, autonomous trucks, augmented reality and the Internet of

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Things. In this era, logistics companies are compelled to adapt to ongoing transformations propelled by automation technologies to enhance social sustainability performance.

The objective of this special issue is to enhance understanding of decent work and propose strategies that prioritize the humanization of work and address decent work challenges within the evolving technological landscape of logistics. The contributions selected for this special issue advance theory, measurement and practice related to decent work by offering an evidence-based perspective on how Logistics 4.0 technologies can be aligned with worker well-being and sustainable employment outcomes.

This editorial is structured to situate decent work as a central pillar of social sustainability in the era of Logistics 4.0. It begins by introducing the concept of decent work and reviewing what technologies are being introduced into logistics sectors. The editorial then synthesizes existing research linking Logistics 4.0 technologies to decent work from economic, psychological and managerial perspectives, highlighting key conceptual and empirical gaps that motivated the call for papers. Building on this foundation, the editorial reviews and integrates the five papers included in the special issue, illustrating how each study advances understanding of decent work through novel theoretical lenses, methodological approaches and sector-specific insights. The editorial concludes by identifying remaining research challenges and outlining future research directions.

2. Decent work: concepts and research in the digitalized logistics system

2.1 Concepts of decent work

The concept of decent work can be understood from multiple perspectives. As summarized by Saragih *et al*. (2024), decent work may be conceptualized at three levels. At the macroeconomic level, it refers to objective working conditions, such as employment opportunities, social security, social dialog and workplace equality. From a self-value or psychological perspective, decent work reflects individuals' subjective evaluations of their work, drawing on psychological theories and emphasizing factors such as safety, work–life balance, leisure and organizational values. Finally, from a management perspective, decent work focuses on human resource management and organizational behavior, highlighting the role of managers in shaping working conditions and improving individual, team and organizational performance (see Table 1).

2.2 Emerging technologies in Logistics 4.0

Among the technologies associated with Logistics 4.0, some are primarily designed to enhance customer convenience, service quality and delivery responsiveness (Hrouga and Sbihi, 2023; Xie *et al*., 2025). However, even when these technologies are consumer-facing in their original intent, their implementation often requires logistics workers to adapt to new systems, workflows and performance expectations. As a result, many Logistics 4.0 technologies simultaneously shape both service outcomes and work processes, influencing workers' tasks,

Table 1. Decent work concepts

Perspective	Emphasis
Economy/Macro level	Objective working conditions with respect for human rights
Self-value/ Psychology	Personal evaluation of the quality of all aspects of work in relation to workers' well-being and meaningful lives
Management	Working conditions that are oriented towards increasing the productivity of individuals, work teams and organizations

Source(s): Saragih *et al*. (2024)

skill requirements and working environments (Winkelhaus and Grosse, 2020; Perotti *et al.*, 2025). Table 2 summarizes key Logistics 4.0 technologies that may influence logistics workers' work across major logistics sectors.

2.3 Linking decent work to Logistics 4.0: overview of current research

The rapid diffusion of Logistics 4.0 technologies has been reshaping work organization, employment relations and worker experiences across logistics sectors. Table 3 synthesizes the current state of research linking decent work to Logistics 4.0.

From an economic and macro-level perspective, the emergence of Logistics 4.0 technologies may pose challenges related to job displacement and employment security (Bratanova *et al.*, 2026). Existing literature suggests that the deployment of automation technologies could potentially displace a substantial number of logistics jobs. At the same time, these technologies may also generate new employment opportunities, particularly in areas such as remote-control operations, digital monitoring centers and supporting infrastructure development (Li and Yuen, 2024; Wang *et al.*, 2023; Sitkin, 2025). Nevertheless, workers' adaptation to increasingly digitalized and automated working environments remains an ongoing and significant challenge for the logistics workforce.

Table 2. Emerging Logistics 4.0 technologies

Logistics sector	Logistics 4.0 technologies	Real-world application	References
Warehouse	Autonomous mobile robots; automated guided vehicles	Automated mobile robots Kiva robots; On Grid Robotic Pick	Grover and Ashraf (2024) and Zhang *et al.* (2023)
Transportation	Semi-autonomous and autonomous trucks; autonomous ships	Volvo Active Driver Assist; Yara Birkeland	Fritschy and Spinler (2019) and Bolbot *et al.* (2025)
Delivery	Platform-based gig delivery systems; delivery drones and robots	Amazon Flex and Uber Eats delivery platforms; Amazon Prime Air	Lin *et al.* (2026) and Koh *et al.* (2023)

Table 3. Overview of current research

Perspective	Focus	Limitations	Reference
Economy/ Macro level	Employment opportunities and gender equality	Limited empirical research in different contexts and sectors; limited policy discussions on employment retention and transition	Jo and D'Agostini (2020), Wang *et al.* (2023) and Narayanan *et al.* (2023)
Self-value/ Psychology	Job satisfaction, empowerment and well-being	Inadequate sector-differentiated research on the antecedents of job satisfaction and empowerment in interaction with different technologies	Kohl *et al.* (2021) and Winkelhaus *et al.* (2022)
Management	Health and safety management and worker voice	Insufficient understanding on technology-related negative health consequences; inadequate strategies to protect logistics workers' safety in cooperation with digital technologies, negotiating with managers and upskilling	Ramos *et al.* (2020), Zhang *et al.* (2020) and Das and Arya (2023)

The pursuit of equality is another central objective of sustainable development. Existing frameworks have primarily examined barriers to gender equality, including social, psychological and regulatory factors (Zhao *et al*., 2017; Sarker and Akgün, 2025). While these perspectives provide valuable insights, the implementation of Logistics 4.0 technologies raises additional questions regarding potential changes in working conditions, organizational practices and labor policies. Automation, as discussed by Roberts *et al*. (2019), may induce structural shifts in the labor market, potentially contributing to higher wages for women and more flexible working arrangements. Narayanan *et al*. (2023) further emphasize the importance of ensuring a level playing field and equal access to technology-related education and training for marginalized groups, such as female seafarers.

From a personal value perspective, Winkelhaus *et al*. (2022) found that digital technologies tend to support, enlarge or enrich work, leading to neutral or positive changes in task variety, task identity and skill use. In digitally supported but weakly automated environments, workers reported higher job satisfaction, as technologies reduced physical strain while preserving meaningful work and opportunities for learning. In contrast, high levels of automation were frequently associated with task simplification, standardization and deskilling. Workers in highly automated settings often perceived themselves as "part of a machine," experiencing reduced autonomy, task variety, task identity and feedback. Consequently, technological changes and ergonomic conditions and their associations with value perceptions, such as job satisfaction, perceived respect and professional identity, are critical considerations in evaluating the impacts of Logistics 4.0 on workers (Ashraf *et al*., 2025; Pang *et al*., 2026).

From a managerial perspective, occupational health management, encompassing both physical and psychological dimensions, is crucial for ensuring work quality. Automation in the logistics industry has the potential to replace repetitive operational tasks, such as the handling and movement of heavy goods, thereby alleviating physical strain and reducing operational risks for logistics workers (Gutelius and Theodore, 2019; Ellithy *et al*., 2024). Despite these potential benefits, the evolving technological landscape in logistics also raises concerns regarding new health and safety risks associated with changing work conditions. For example, the introduction of autonomous shipping may shift primary workplaces from vessels to shore-based remote control centers, which operate as socio-technical systems involving interactions with both co-workers and automated systems. While such arrangements offer protection from harsh maritime environments, technology-supported work settings may still pose health challenges for maritime logistics workers, including chronic illness, stress and fatigue (Bayrak and Muslu, 2025; Li *et al*., 2025b). In freight logistics, truck drivers' health has long been recognized as a critical concern due to demanding working conditions and extended driving hours (Xia *et al*., 2025). The introduction of autonomous trucking technologies has further raised concerns about drivers' anxiety and uncertainty related to job security and role transformation (Van Fossen *et al*., 2023). As autonomous technologies are increasingly adopted across the logistics industry, it is therefore essential to examine technology-related burnout, anxiety and stress among logistics workers, as well as their antecedents and consequences (Christian *et al*., 2024; Umair *et al*., 2023).

Logistics workers' representation and negotiation with management constitute another pivotal concern for decent work. The integration of Logistics 4.0 technologies may change the landscape of worker representation. For instance, increasing levels of automation in maritime logistics can weaken the authority traditionally held by onboard officers, redistributing decision-making power and potentially influencing seafarers' sense of agency and contractual relationships (Li and Yuen, 2024). Moreover, the expansion of gig platforms and crowd-sourced logistics work adds further complexity to worker representation and the protection of workers' rights. Gig workers typically lack long-term employment relationships with employers, and gig platforms are often weakly institutionalized with low pay, restricted employment rights, heightened job insecurity and limited access to formal mechanisms of representation, such as labor unions, collective bargaining arrangements or works councils (Li

et al., 2023; Ajonbadi *et al*., 2025; Dasgupta *et al*., 2025). As a result, numerous concerns have been raised regarding unfair wages, limited legal recognition and insufficient protective measures (Hossain and Mozahem, 2022; Purcell and Brook, 2022).

3. Future opportunities for decent work research

Despite the growing body of research on decent work for logistics workers, several critical gaps remain. From a macro-level perspective, greater attention is needed to the formulation of worker-beneficial codes of conduct that can effectively guide organizational and policy practices (Reinecke and Donaghey, 2021).

In interaction with technologies at work, there is a lack of in-depth understanding of the mechanisms shaping logistics workers' dynamic decision-making processes in increasingly complex work environments. In this regard, it is necessary to conduct more high-quality intervention research that explicitly addresses occupational health and safety issues among logistics workers. The digitalized and automated nature of contemporary logistics work calls for closer examination of several under-researched issues, including algorithmic or automated bias, mental fatigue and workers' cognitive and psychological well-being. These concerns are likely to intensify as Logistics 4.0 technologies become more deeply embedded in daily work practices.

Furthermore, it is imperative to acknowledge and better understand demographic differences among logistics workers. Gligor *et al*. (2022) suggest that male and female workers may approach logistics innovations in distinct ways; however, nuanced and systematic research on demographic-specific responses to logistics technologies remains limited. By tailoring managerial and organizational strategies to account for the strengths, needs and preferences of diverse worker groups, organizations may enhance both productivity and worker well-being. As illustrated in Figure 1, future research directions can be summarized across three key dimensions, each offering promising avenues for advancing the decent work agenda in the context of Logistics 4.0.

Decent work conceptualization and measurement	• How is decent work conceptualized and measured across macro-, meso-, and micro-level perspectives in logistics 4.0 contexts? • How do subjective and objective measures of decent work evolve in capturing logistics workers' experiences in digitalized environments?
Collaboration with technologies and people	• How does Logistics 4.0 reshape collaboration through different technologies, and how can sustainable collaboration be promoted across Logistics 4.0 technologies through ergonomic design, managerial practices, and policy interventions? • How do logistics 4.0 technologies reshape collaboration between logistics workers and key stakeholders (e.g., managers, customers, other employees, and self-identity)?
Heterogeneity across different sectors and demographic groups	• How does the impact of Logistics 4.0 technologies on decent work vary across logistics sectors (e.g., transportation, warehousing, last-mile delivery)? • How do demographic characteristics (e.g., gender, age, digital literacy, and cultural context) shape the relationship between Logistics 4.0 technologies and decent work outcomes, and how can more tailored strategies be developed?

Figure 1. Future research opportunities

3.1 Decent work: conceptualization and scales in the digitalized logistics landscape

As Soundararajan *et al*. (2021) noted, the prevailing buyer-centric orientation in sustainable supply chain management has resulted in limited scholarly attention to workers as central stakeholders. Existing research remains predominantly focused on shareholder value and buyer firms' performance, with a strong emphasis on identifying "best practices" that improve efficiency, competitiveness or reputational outcomes. Although social sustainability has gained increasing visibility within this literature, it is often conceptualized through a limited set of tangible indicators such as wages and working hours.

As Logistics 4.0 technologies increasingly restructure work processes, employment relations and performance monitoring in logistics operations, traditional conceptualizations of decent work require theoretical updating and empirical refinement. The emerging digitalized work conditions characterized by algorithmic management, data-driven surveillance and human–machine interaction should be considered in the decent work framework (Kohl *et al*., 2020; Winkelhaus and Grosse, 2020).

From a measurement perspective, there remain insufficient validated, context-specific scales that reflect how digital technologies shape workers' autonomy, workload intensity, perceived control and psychological well-being. Future studies should develop and validate Logistics 4.0-specific decent work scales that integrate both objective conditions (e.g. employment stability and social protection) and subjective appraisals (e.g. techno-stress, evaluation apprehension and perceived competence).

3.2 Sustainable collaboration with technologies and people

A key future opportunity lies in reframing Logistics 4.0 not merely as a technological transformation but as a process of sustainable collaboration between digital systems and human workers. While consumer-oriented research have primarily been assessed in terms of efficiency and service performance (Koh and Yuen, 2023; Koh *et al*., 2024), the technologies also fundamentally alter task allocation, decision-making authority and social interactions at work. For instance, in warehousing, the deployment of autonomous mobile robots and algorithmic task assignment systems alters workers' autonomy, pace of work and human–robot collaboration (Konstantinidis *et al*., 2022). In last-mile delivery, route-optimization algorithms, platform-based dispatching and autonomous or semi-autonomous vehicles redefine worker–consumer interactions and blur traditional employment boundaries (Britt *et al*., 2025; Min *et al*., 2025). In managerial contexts, algorithm-based performance evaluation systems and blockchain-enabled reporting tools reconfigure power relations between workers and supervisors by altering surveillance and standardization (Duggan *et al*., 2023). Without deliberate human-centered design and governance, these sector-specific technologies risk intensifying work pressure, eroding worker autonomy and undermining core principles of decent work.

The introduction of autonomous technologies is also reshaping how logistics workers interact with multiple social actors, including consumers, managers, co-workers and themselves. From a consumer-facing perspective, technologies such as autonomous delivery vehicles and underground autonomous delivery systems could reduce direct human interaction while introducing new forms of mediated trust, responsibility and accountability (Koh *et al*., 2024; Li *et al*., 2025a). In relation to managers, algorithm-based evaluation systems, digital performance monitoring through wearable devices and blockchain-enabled reporting applications increasingly govern workers' behaviors, performance assessments and compliance, often with different levels of transparency or opportunities for negotiation (Li *et al*., 2023). At the employee level, automation may lead logistics workers to collaborate with fewer human colleagues and more robotic systems, potentially influencing social support, informal learning and collective problem-solving at work (Ghaderi, 2019; Chan *et al*., 2025). At the individual level, these technological transformations may influence workers' self-perception and occupational identity, as they navigate questions of autonomy, control, skill relevance and personal value in digitally mediated work environments (Aalberg *et al*., 2024).

Future research should therefore examine how Logistics 4.0 technologies can be designed and governed to complement rather than substitute human capabilities, fostering meaningful work, skill development and shared responsibility between humans and intelligent systems.

3.3 The heterogeneity among sectors and demographics

Future studies should explicitly address sectoral and occupational heterogeneities in how Logistics 4.0 affects decent work. Due to differences in task complexity, employment arrangements, regulatory environments and exposure to algorithmic control, the implications of digital technologies vary significantly across logistics segments such as maritime logistics, warehousing, last-mile delivery and platform-based logistics. A "one-size-fits-all" approach risks obscuring these important contextual variations. Comparative research across logistics subsectors, countries and institutional settings would help identify where Logistics 4.0 technologies enhance decent work and where they exacerbate decent work deficits. By incorporating sectoral heterogeneity, future research can provide more nuanced theoretical insights and more actionable policy recommendations for promoting decent work in the Logistics 4.0 era.

4. Scanning the special issue

4.1 Characteristics of the papers included in the special

The special issue attracted scholar interest in decent work, human–technology interaction and workforce sustainability in the era of Logistics 4.0. Following a rigorous peer-review process, five papers were selected for publication. A summary of the selected papers can be found in Table 4.

The five papers address complementary yet distinct aspects of decent work and human-centered logistics transformation. The first study revisits the concept of decent work in automated warehouse environments, integrating work values, automation intensity and job satisfaction to propose a comprehensive framework tailored to Logistics 4.0. The second paper focuses on logistics digital gig workers and develops a multidimensional scale of decent work perception, capturing respect and fairness, autonomy, safety and fulfillment under algorithmic management. The third paper explores employees' willingness to collaborate with autonomous delivery robots, examining functional, social and relational factors and comparing responses across cultural contexts. The fourth paper investigates how psychological contracts and psychological perceptions relate to the retention of professional gig workers in errand delivery platforms, highlighting the roles of organizational identification and trust. The last study examines how the congruence between employee voice and supervisor listening shapes employees' perceived respect and performance in Logistics 4.0 settings, emphasizing the relational dynamics within digitally enabled logistics organizations.

Methodologically, the papers demonstrate substantial diversity while maintaining a strong empirical orientation. All five studies employ empirical methods, though with different research designs. Four studies rely primarily on survey data and advanced quantitative techniques such as structural equation modeling and polynomial regression. One study adopts a mixed-methods scale development approach, combining grounded theory interviews with factor analysis.

The data sources also vary considerably in terms of geography, industry context and collection strategy. Several studies draw on data from China, particularly in platform-based logistics and gig work settings, while others focus on South Korea's warehousing sector or adopt cross-cultural samples spanning Eastern and Western contexts.

4.2 Contributions of the papers included in the special issue

4.2.1 Paper 1: revisiting the concept of decent work: exploring work values and job satisfaction in the era of Logistics 4.0. EL Aissoug *et al*. (2026) examine how work values shape job satisfaction through the mediating role of decent work in the context of Logistics 4.0.

Table 4. Summary of included papers

Paper	Sector	Decent work focus	Technology focus	Theory lens	Method	Key contributions to gaps
EL Aissoug *et al*. (2026)	Warehouse	Decent work concept	Automation technologies	Self-determination, equity and psychology of working theory	Survey and structural equation modeling	Contributed to the concept of decent work in the warehouse setting from a personal value perspective; decent work constructs mediate the relationship between work values and job satisfaction; the level of automation is a significant moderator
Lyu *et al*. (2026)	Gig worker	decent work measurement	Gig platform	Grounded theory	Literature review and factor analysis	Contributed to the measurement of decent work in gig platform; developed measurement scale specifically designed for decent work perception among logistics digital gig worker
Shin *et al*. (2026)	Warehouse	Collaboration with technologies	Autonomous delivery robots	Technology acceptance model and service robot acceptance model	Survey and structural equation modeling	Contributed to the identification of key considerations for collaboration with robots at work; identified motivators such as perceived usefulness; identified inhibitors such as insecurity
Liu and Cai (2026)	Errand delivery	Worker retainment	Gig platform	Psychological contract theory and psychological perception theory	Survey and structural equation modeling	Contributed to the identification of considerations for worker retention; identified organizational identification and career satisfaction as significant factors associated with task performance and professional retention
Pang *et al*. (2026)	General logistics	Worker voice	Smart logistics platform	Social exchange theory	Polynomial regression and response surface analysis	Contributed to the collaboration between logistics workers and supervisors; examined the role of congruence in employee-supervisor communication, perceived respect and performance

Drawing on self-determination theory, the triple bottom line and the psychology of working theory, the study develops a multi-level theoretical framework that conceptualizes decent work through three dimensions, namely, happiness, equity and social sustainability. Using survey data from warehouse employees in South Korea and covariance-based structural equation modeling, the findings show that decent work dimensions play a significant mediating role in the relationship between work values and job satisfaction. Moreover, the degree of automation acts as a moderator, strengthening the association with happiness and job satisfaction while weakening the association with social sustainability in highly automated roles and showing no significant moderating effect on equity. These findings indicate that automation selectively amplifies certain components of decent work in shaping job satisfaction, rather than uniformly intensifying perceptions of workplace unfairness. The study advances the logistics and social sustainability literature by offering an integrated, empirically validated framework for understanding decent work in technology-intensive logistics environments and by highlighting how automation reshapes value–satisfaction pathways.

4.2.2 Paper 2: scale development of decent work among logistics digital gig workers. Lyu *et al*. (2026) develop and validate a measurement scale for decent work perception among logistics digital gig workers in the context of the platform economy and algorithmic management. Using a mixed-methods design, the study identifies the core dimensions of decent work perception through grounded theory based on in-depth interviews with gig workers and subsequently validates the scale using survey data and rigorous psychometric testing. The findings conceptualize decent work perception as a second-order construct comprising four dimensions: respect and fairness, freedom and autonomy, safety and reliability and confidence and fulfillment. This study contributes to the decent work research by extending decent work theory to the logistics gig economy and by providing a validated measurement instrument specifically designed for gig workers, offering a robust foundation for future empirical research on worker well-being and social sustainability in Logistics 4.0.

4.2.3 Paper 3: employee willingness to collaborate with autonomous delivery robots: a cross-cultural perspective. Shin *et al*. (2026) investigated the factors shaping logistics employees' willingness to collaborate with autonomous delivery robots and developed an integrative framework by extending the technology acceptance model with social and relational dimensions from the service robot acceptance model. Drawing on survey data, the study finds that perceived usefulness, ease of use, anthropomorphism and social influence positively relate to employees' willingness to collaborate with autonomous delivery robots, while perceived insecurity exhibits a negative association. Procedural fairness plays a key mediating role in the Chinese context, amplifying the positive association with motivators and mitigating insecurity, whereas its mediating role is not observed in the Western sample, highlighting important cross-cultural differences. Overall, the study contributes to decent work research by advancing understanding of employee–robot collaboration, emphasizing the role of fairness and socio-emotional factors and offering insights into how autonomous delivery robot implementation can support decent work in Logistics 4.0.

4.2.4 Paper 4: how to retain professional gig workers in errand delivery: considering the roles of psychological contract and psychological perception. Liu and Cai (2026) investigated how errand delivery platforms can retain professional gig workers by developing an integrated theoretical framework grounded in psychological contract theory and psychological perception theory. Using survey data from gig workers in China and structural equation modeling, the findings show that both transactional and relational psychological contract fulfillment, together with workers' perceived self-congruence and perceived commerciality, positively relate to organizational identification and organizational trust. These relational and perceptual factors, in turn, enhance task performance and career satisfaction, which are key drivers of professional retention. The results further reveal a chain mediating mechanism whereby organizational identification and trust improve task performance and career satisfaction, ultimately strengthening retention intentions. This study contributes to decent work research by shifting attention from short-term gig participation to professional retention

and by offering theory-driven insights into how platforms can manage employment relationships more sustainably in last-mile logistics.

4.2.5 Paper 5: employees' perceived respect and performance in Logistics 4.0: a dyadic perspective of the congruence between employee voice and supervisor listening. Pang *et al.* (2026) examined how the alignment between employee voice and supervisor listening shapes employees' perceived respect and, in turn, their performance in the context of Logistics 4.0. Drawing on social exchange theory and data from logistics employees and supervisors in China, the study employs polynomial regression and response surface analysis to capture congruence effects. The findings show that employees report higher levels of perceived respect when employee voice and supervisor listening are congruent, regardless of whether this congruence occurs at high or low levels. Moreover, perceived respect is positively associated with employee performance. The results further demonstrate that a firm's social sustainability orientation amplifies the positive effect of voice-listening congruence on perceived respect. By adopting a dyadic and congruence-based perspective, the study advances understanding of respectful employment relationships in digital logistics environments and highlights the role of socially sustainable organizational orientations in promoting decent work outcomes.

5. Looking ahead

5.1 Future research directions

Collectively, the five papers demonstrate that digitalization in Logistics 4.0 reshapes sustainability by influencing how logistics workers experience decent work through job satisfaction, well-being, fairness, autonomy, voice, retention and collaboration with digital and autonomous technologies. While the studies in this special issue advance understanding of decent work in the era of Logistics 4.0, they also reveal several important avenues for future research.

First, the current evidence base remains geographically and sectorally concentrated. Most studies focus on East Asian (e.g. China and Korea) and Western contexts and predominantly examine warehousing, gig work and last-mile delivery. Future research should extend this scope by incorporating underexplored regions such as Southeast Asia, Africa, Latin America and emerging logistics hubs in the Middle East, where institutional environments, labor regulations and cultural norms may fundamentally reshape how digitalization influences decent work. Similarly, expanding analysis to other logistics sectors such as port operations, maritime logistics, cold-chain logistics and reverse logistics would provide a more comprehensive understanding of how decent work challenges and opportunities vary across operational contexts.

Second, existing research tends to examine digital technology adoption and worker-related outcomes in a relatively static and fragmented manner. Rather than assuming a linear or uniform relationship between digitalization and decent work outcomes, future studies should focus on how and under what conditions digital technologies reshape work quality. Future research should also examine the integration processes through which digital tools are embedded into sustainability-oriented logistics practices.

Third, there is a need to more explicitly unpack the multidimensional nature of decent work in digitally enabled logistics systems. While prior studies often emphasize economic security or job satisfaction, the papers in this issue point to a broader set of subdimensions that warrant systematic investigation. Future research should theorize how different dimensions interact and how trade-offs may emerge between efficiency-driven digitalization and human-centered work design.

Table 5 outlines a few key research questions that may guide future decent work research in the digital logistics context. Overall, these directions call for more culturally sensitive, sector-diverse and theoretically integrated research agendas. Advancing decent work in Logistics 4.0 requires moving beyond narrow evaluations of technology or performance outcomes towards

Table 5. Research gaps and future research questions

Research gap	Key research questions
Diverse cultural, sectorial and technological context	• How do demographic disparities impact the adoption of advanced technologies and skills in Logistics 4.0 among workers? • To what extent does the organizational culture in logistics 4.0 companies contribute to or hinder gender equality in the workplace? • How factors such as race, ethnicity, socioeconomic status and disability intersect with gender to shape individuals' experiences in logistics and transportation industries?
Dynamics in worker interaction with technology and people	• What are the socio-cultural factors influencing the demand and supply dynamics of logistics workers? • How does the integration of Logistics 4.0 technology impact communication channels, decision-making processes and employee roles? • What is the psychosocial impact of technology adoption in Logistics 4.0 on the mental health and well-being of logistics workers?
Multidimensional concepts of decent work	• How can decent work be conceptually decomposed into interrelated dimensions in Logistics 4.0 contexts? • Which dimensions of decent work are most directly related to by different categories of digital technologies?

a deeper understanding of how digital systems, organizational practices and institutional contexts jointly shape the experiences of logistics workers.

5.2 Concluding remarks

The rapid diffusion of Logistics 4.0 technologies is reshaping how logistics systems are designed, governed and experienced by workers. This special issue responds to this transformation by advancing a more nuanced and worker-centered understanding of decent work in digitally enabled logistics environments. The contributions in this issue collectively demonstrate that the implications of Logistics 4.0 for decent work are contingent on how technologies are designed, implemented and embedded within organizational and institutional contexts.

The five papers included in this special issue extend existing knowledge in several important ways. Together, they move the literature beyond narrow economic or efficiency-based evaluations by illuminating the multidimensional nature of decent work, encompassing dignity, autonomy, fairness, psychological well-being, voice and meaningful collaboration with technologies. The studies further highlight that digital platforms, automation and algorithmic management do not uniformly erode or enhance work quality; instead, their effects vary across sectors, worker groups and cultural contexts. By integrating perspectives from psychology, human resource management, technology acceptance and social sustainability, this special issue underscores that advancing decent work in Logistics 4.0 is not solely a technological challenge but a socio-technical and ethical one. Without deliberate interventions, digital transformation risks reinforcing power asymmetries, work intensification and employment insecurity, particularly for gig workers and workers in highly automated settings.

Looking ahead, the insights offered in this special issue call for a shift in both research and practice. For scholars, there is a need to develop more integrative theories and measurement tools that capture the evolving meanings of decent work under digitalization while accounting for sectoral, cultural and institutional heterogeneity. For practitioners and policymakers, the

findings highlight the importance of embedding decent work principles into the governance of Logistics 4.0 technologies, ensuring that innovation supports not only operational excellence but also sustainable and dignified employment. Through this collective effort, we hope that the studies in this special issue will stimulate further interdisciplinary dialog and provide a robust foundation for shaping more inclusive, resilient and human-centered logistics systems in the digital era.

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Notes

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