International Journal of Research in Human Resource Management

Zimkhitha F Juqu
University of KwaZulu Natal,
Mazisi Kunene Road,
Glenwood, Durban, 4041,
South Africa

Hlalele Matebese
University of Johannesburg,
PO Box 524, Auckland Park,
2006, South Africa

Normah F Mutongerwa
Liverpool John Moores
University, United Kingdom

Measuring the contingency of organisational failure to upskill low-skilled jobs with training to preclude technological development job losses: A human resource development contemporary crisis

Zimkhitha F Juqu, Hlalele Matebese and Normah F Mutongerwa

DOI: https://doi.org/10.33545/26633213.2024.v6.i1c.192

Abstract
The study aims to explore organisational oversight in the need to upskill low-skilled jobs through training to prevent job losses due to technological evolutions. This issue is a contemporary crisis that has massive implications for human resource development. The study utilised a theoretical lens as its research technique to gain a more in-depth comprehension of the complex nature of the problem at hand to achieve this objective. The results indicate that organisations fail to train low-skilled employees to reduce job losses attributable to technological advancements. As a result, these employees are at risk of losing their jobs due to the rapid advancements in technology. Therefore, this study argues that this is a crucial area that needs to be addressed in order to prevent job losses and ensure the longevity of these employees' careers.

Keywords: Artificial intelligence, fourth industrial revolution, human resource development, low-skilled jobs, technology, training and development

1. Introduction
Using digital technology has developed operations in businesses, and human resource management is no exception. There is a growing emphasis on developing digital skills among the workforce as enterprises strive to optimise their operations to remain competitive in the digital age (Amalia, 2024) [2]. This practice has given rise to digital-based Human Resource Management (HRM), which involves leveraging technology to streamline Human Resources (HR) processes, such as recruitment, training, performance management, and employee engagement. Businesses can improve the efficiency and effectiveness of their HR operations, enhance the employee experience, and drive organisational growth by adopting digital HR practices. As such, Human Resource Development (HRD) has become an integral component of effective HRM as it plays a crucial role in supporting and developing skills, abilities, and advancing knowledge of the workforce (Anwar & Abdullah, 2021) [3], particularly in the context of the Fourth Industrial Revolution (4IR), where the pace of technological advancement demands a continuous process of learning and adaptation. Accordingly, the role of information technology in shaping HR is becoming increasingly significant in the current globalisation market and rapid technological progress (Prastyaningtyas *et al*., 2023) [21].

In today's globalised market, technology has manifested the work environment, resulting in dwindling labour-intensive jobs. In this sense, the expansion of technology led to the widespread adoption of artificial intelligence (AI) in various industries, augmenting HR tasks in balancing the gap between the sellers of labour and AI (Jayaraman *et al*., 2024) [13]. This trend poses a challenge, particularly for low-skilled individuals. The emerging digital technology has brought about a significant shift in the industry climate; thus, organisations have had to adapt their operational, communicative, and competitive strategies to keep up with the evolving market dynamics, presenting new opportunities for growth and innovation, thereby fostering a more dynamic and constructive business terrain (Harahap, Kraugusteeliana, *et al*., 2023) [9-10]. As such, affected workers must receive adequate training to keep up with the changing job demands, adapt to the evolving environment, and remain competitive in their respective fields.

Corresponding Author:
Zimkhitha F Juqu
University of KwaZulu Natal,
Mazisi Kunene Road,
Glenwood, Durban, 4041,
South Africa

Therefore, it is crucial to provide them with the necessary education and training to prepare them for jobs that are in demand and cope with technological advancements. This practice will enhance their chances of employability and improve their quality of life. As a result of adopting this course, organisations will foster a proactive, inclusive culture crucial for embracing modern technologies and ensuring employees can acclimate and survive, where applicable, to an inevitable and perpetual change (Harahap, Sutrisno, *et al*., 2023) [9-10]. The rationale is that the majority of industries are in a state of constant transition, hence, employees must have access to training and development opportunities to expand their knowledge base, learn new techniques and practices, and become proficient in being entrenched in new technologies (Purwanto, 2023) [21]. This exercise is especially significant for industries where technology easily replaces human employees, such as those mentioned above.

While numerous studies explored the correlation between various technologies and employees, there seems to be a gap in knowledge regarding the relationship between training for low-skilled jobs and technological advancement. With technological innovation continuing to accelerate across different industries, it is becoming increasingly important to investigate how we can upskill employees for the changing nature of work and the evolving technological landscape. Hence, there was thus a crucial need for further research to examine the connection between technology and labour-intensive jobs and explore ways to equip workers with the necessary skills to keep up with the latest advancements.

2. Problem Statement
The problem statement of this study centres around the negative impact technology has on employees regarding job losses. The crux of the matter is that organisations are not adequately equipping their employees, particularly those with lower, semi skills and education levels, to adapt to technological shifts in the workplace. As a result, these individuals are more vulnerable to being displaced by technology, leading to unemployment and financial instability. This claim is further supported by (Sulintang *et al*., 2024) [25], who found that the labour market grapples with technological advancements and globalisation, which present new challenges and changes that impact job security, create skill gaps, and raise concerns about the 4IR. However, the current study argues that with the right HR strategies in education and training, organisations can adapt to these changes and create new opportunities for growth and success in the workforce for the affected workers.

3. Literature Review
In this study, a literature review was advanced and conducted to critically evaluate and analyse previously published academic works, such as journal articles, books, and conference proceedings related to the current study. Through the literature review, researchers identified gaps in the existing knowledge, highlighted the most relevant and significant findings, and provided a comprehensive overview of the current state of research in their field of study. The review of literature is subdivided and presented into the following subheadings: Modern Employee Training in Organisations Associated with Technological Development; The Effectiveness of 21st-century Training Strategies and their Impact on Employee Performance and Productivity; Organisational Deficiency to Training the Workforce in Technology; The Potential Limitations of Implementing Technology-Based Training Programmes in Corporations; Role of Human Resource Development in Promoting Technological Advancements, and The International Proportion of Low-Skilled Workers in Various Nations in 2020 and 2030.

3.1 Modern employee training in organisations associated with technological development
A contemporary technique for employee training entails using modern technologies such as AI and other digital tools. These tools provide a more efficient and effective way of imparting knowledge, skills, and competencies to workers. Furthermore, modern employee training programmes are designed to be more interactive and engaging, enhancing learner focus. Therefore, adopting modern employee training methods is critical for organisations that seek to remain competitive in today's dynamic business environment.

Popa *et al*. (2024) [20] established a notable correlation between employee competencies and the effectiveness of AI tool utilisation, positively influenced by employee optimism and innovativeness. The study's findings suggest that organisations can enhance their AI tool usage by ensuring the workforce possess the necessary skills and knowledge by creating an environment that fosters positivity and creativity. According to Mohammed *et al*. (2024) [15], the Technology-Organisation-Environment (TOE) factors have a noteworthy impact on the usage of Business Intelligence and Analytics (BIA) in commercial banks, highlighting their pivotal role in shaping this field. Additionally, the study found that employees' work experience moderates the relationship between technological and organisational factors and BIA usage (Mohammed *et al*., 2024) [15].

In other words, adopting BIA is influenced by technological and organisational factors dependent on employees' work experience. The research study's results indicate that banks must acknowledge the interdependence of technology, organisation, and environmental elements to benefit from BIA tools. Therefore, HRD must carefully assess the effect of technological and organisational factors on BIA adoption in low-skilled employees' work experience to ensure that technological training aligns with employee needs and avoids any misalignment.

In other sectors, Mukherjee *et al*. (2024) [26] assert that implementing the Internet of Things (IIoT) in small and medium-sized enterprises (SMEs) can improve their overall performance. This finding emphasises the need for HRD to use this technology in the workforce, where applicable, to achieve mutual benefits for both the employer and employees. While technological advancements can help organisations thrive in today's globalised market, some experts caution that there are also potential risks and threats associated with implementing these technologies. For instance, Tanriverdiyev (2022) [26] opines that the universal nature of Information and Communication Technology (ICT) resulted in a surge of cyberattacks aimed at individuals, corporations, and governments worldwide. This trend has led to weighty implications for the security and safety of sensitive data, financial transactions, and critical infrastructure. As a result, there is an urgent need for organisations and governments to strengthen their cybersecurity measures and enhance their capabilities to

effectively detect, prevent, and respond to cyber threats. Failure to undertake this measure may result in significant financial losses, reputational damage, and legal liabilities. Therefore, businesses and governments must invest in robust cybersecurity systems and stay vigilant to emerging threats in the digital topography. In this respect, HRD must be wary of cyber-attacks while adapting and using technology.

In this context, Abrahams *et al*. (2024) [1] suggest that organisations should take a balanced approach to cybersecurity, incorporating technological solutions and a deep understanding of human factors adhering to international standards to address these concerns. Organisations can better ensure their success and safety in the rapidly evolving digital world by being proactive rather than reactive regarding technological implementation. As such, Varma *et al*. (2022) [28] highlight that the current regulatory framework guides organisations in implementing effective cybersecurity measures and ensures a standardised approach to managing cyber risks. Therefore, adherence to these regulations is crucial to ensure the security of digital assets and overall organisational resilience against cyber threats. Thus, businesses must stay abreast with the growing regulatory geography and implement necessary measures to mitigate cybersecurity risks.

Numerous studies highlighted the advantages of incorporating technological tools and methods in various organisations. However, it is also crucial to recognise the potential risks and hazards that come along with technology. Therefore, HRD must take necessary measures to identify, manage, and mitigate them effectively by demonstrating proficiency in handling the dangers and challenges associated with implementing and executing technology in the workplace. This practice may include assessing the impact of technology on employees, ensuring data security and privacy, mitigating the risks of cyber-attacks and information breaches, and providing adequate training and support to employees to make the most of technology while minimising the risks. In this respect, HRD can help organisations harness the full potential of technology while ensuring a safe and productive work environment for all.

3.2 The effectiveness of 21st-century training strategies and their impact on employee performance and productivity

Organisations can equip their workforce with the skills and knowledge needed to sustain themselves by embracing the latest training techniques and tools. These approaches can include various types of training, such as online courses, workshops, coaching, and mentoring, among others. With this approach, they can create a culture of continuous learning and improvement benefitting the organisation and its employees by investing in employee development.

For this reason, Gadzali *et al*. (2023) [6] advised that organisational success in adapting to the changes of the digital era mainly relies on implementing robust HRM strategies during digital transformation. This suggestion signals that a smooth transition to digitalisation will enable organisations to achieve long-term success. While some authors support this viewpoint, they stress that achieving such success depends on the accountability of leadership. For instance, Turyadi *et al*. (2023) [27] assert that digital leadership can enhance workplace efficiency, productivity, and innovation by embracing suitable digital technologies.

These scholars further mentioned that it can aid in change management, promote digital transformation, and facilitate sound decision-making, all contributing to a business's success. However, according to Rulianti and Nurlilah (2021) [23], it is crucial to note that neglecting an employee's career development can weaken their commitment to the organisation, and this action can negatively affect their performance; as a result, these authors advised that considering employee's career progression is essential to maintain their commitment to the company and ensure their optimal performance.

Supporting this viewpoint from a different angle, (Hendriati *et al*., 2024) [10] proposed that a robust organisational culture, effective training programmes, and transparent communication channels enhance employee satisfaction, engagement, and commitment, reducing turnover rates. Correspondingly, Bhakuni and Saxena (2023) [4] demonstrates that employee retention significantly improved by implementing efficient training and development programmes, enhancing job performance and satisfaction, and employee engagement, resulting in a more motivated and productive workforce. To reinforce these findings, Nwokeocha (2024) [19] states that companies that allocate an average of $1,575 for each employee's training and development experience significant improvements in their business performance. Specifically, these organisations observed a remarkable 24% growth in their gross profits and a substantial 218% increase in their revenue per employee (Nwokeocha, 2024) [19]. These results provide strong evidence that investing in employee learning and development initiatives can significantly benefit the overall performance of an organisation.

Prior research shows that providing training and development opportunities to employees can benefit both the individual and the organisation. However, the current study argues that low-skilled workers are not receiving sufficient training to help them adapt to technological advancements, which may put their job security at risk. In light of this contention, organisations are urged to prioritise providing relevant training and development programmes to low-skilled workers to help them stay economically active in the job market. This practice will potentially benefit the workers and contribute to organisational success and growth while reducing escalating unemployment globally.

3.3 Organisational deficiency to training the workforce in technology

Many organisations face a deficiency in providing adequate technology training to their workforce, particularly low-skilled employees. This weakness can manifest in various ways, such as outdated software, lack of access to necessary tools, insufficient training materials, lack of funds, limited budgets, or simply a reluctance to invest in technology education. Without proper training, employees may struggle to perform tasks efficiently, leading to decreased productivity and morale. Additionally, inadequate technology training can leave employees feeling unprepared and unsupported, resulting in high turnover rates and difficulty attracting and retaining top talent. More importantly, low-skilled employees who lack the necessary contemporary skills commensurate to technology are susceptible to losing their jobs.

The manufacturing industry is a crucial sector significantly contributing to the Indonesian economy; however, this

industry faces several challenges in retaining competent personnel due to international competition, technological developments, and growing market demands (Zhu *et al*., 2023) [30]. Meanwhile, Qureshi *et al*. (2021) found a noticeable gap between the existing competencies and the skills required to address the challenges posed by AI technologies. This research highlights a growing disparity between the available skills and those relevant to keep up with the rapid advancements in AI technology. This discrepancy could have severe consequences, as it may lead to a shortage of skilled professionals capable of effectively implementing and utilising AI tools and techniques.

Therefore, executive management at the organisational level must establish effective policies such as training programmes or support centers to cultivate AI skills (Chatterjee *et al*., 2021) [5]. In this respect, Nwokeocha (2024) [19] emphasises that investing in staff development is not merely a cost but a valuable asset for corporate organisations. Institutions can align their strategies with the ever-changing workforce's contemporary dynamism and industry, securing longevity and competitiveness by thoughtfully articulating the significance of training and development initiatives (Nwokeocha, 2024) [19].

In light of the above arguments, it is evident that HRD in organisations lack various abilities to align training and development with technological advancement. Prior literature also highlights that investing in employee training and development is not an unnecessary expense to employers. Thus, a call is made to organisations to align training and development with contemporary technological demands in the competitive labour market, especially for low-skilled employees, as their existence is rapidly diminishing in the employment sphere compared to their counterparts. This claim implies that the departure of low-skilled workers from the workforce owing to technology leads to a concentration of semi-skilled, skilled, and highly skilled workers, causing an imbalance in the labour market.

3.4 The potential limitations of implementing technology-based training programmes in corporations

Corporations must carefully consider the potential limitations of technology-based training programmes before implementing them. While these programmes can offer many benefits, organisations must ensure they are the best fit for the specific training needs of the organisation and its employees. Bukliv, Kuchak, and Vasylyuk-Zaitseva (2023) assert that the professional training of prospective scientific and pedagogical workers using digital technologies poses several challenges, mainly due to the lack of motivation and knowledge regarding digital competencies. These challenges serve as a significant barrier to the effective incorporation of digital technologies in the training of these workers. Therefore, organisations must address these barriers to provide the necessary support to ensure an adequately trained future workforce with the digital competencies required in their respective fields.

Another challenge is that some corporations may perceive employee training highly costly. In this sense, Musarat *et al*. (2024) [17] highlight the significant challenges in implementing digital solutions with high initial costs associated with technology, standards, and specifications. These expenses often include purchasing new hardware and software, hiring IT professionals, and training employees to adapt to the new system.

These costs can be a significant barrier for businesses. Furthermore, extra costs associated with maintaining and upgrading the system over time can add to the overall cost of digital implementations. Contrarily, Nwokeocha (2024) [19] highlights the significance of workforce training and development for businesses. According to the author, this aspect is not just an expenditure but an incalculable investment that can bring about significant benefits for companies. Businesses can improve their productivity, enhance their competitiveness, and ultimately increase their profitability by investing in the training and development of their workforce. The motive is that a well-trained and skilled workforce can contribute to the growth and success of a business, helping organisations adapt to changing market trends and technological advancements. Therefore, companies need to view workforce training and development as a valuable investment that can yield long-term benefits rather than a futile expense.

Interestingly, Gunawardane *et al*. (2022) [8] bring to light the challenges faced by the HR sector in the era of the 4IR. In particular, the obstacles encountered by micro, small, and medium enterprises (MSMEs) in implementing Human Resources Information Systems (HRIS) are noteworthy, including costs, technical know-how, and management support. Addressing these challenges is vital to developing solutions to help MSMEs overcome these barriers (Gunawardane *et al*., 2022) [8]. Notably, the challenge of employee training expenses could exacerbate the financial pressures of digital implementation, making prioritisation essential in this scenario. MSMEs need to recognise the significance of HRIS in the 4IR era and make informed decisions that balance their financial constraints and long-term business goals while considering assisting employee training with technological challenges to ensure the effective implementation of digital technologies. Moreover, the restricted availability of technology is among the primary challenges faced in implementing technology, particularly in regions with insufficient internet networks and technology infrastructure, posing a significant obstacle in implementing technology integration in Islamic education (Zebua, 2023) [29].

Generally, implementing and keeping up with the latest technological advancements is essential for organisations to remain relevant. However, implementing technology-based training programmes can be a challenging endeavour. From both practical experience and research, it is evident that these limitations must be addressed effectively to ensure the success of such programmes. These challenges can vary from organisation to organisation, ranging from inadequate infrastructure, lack of technical know-how, resistance to change, and difficulty measuring Return on Investment (ROI). Ignoring these challenges can have a detrimental impact on the organisation, its employees, and its customers. Therefore, organisations must identify and resolve these obstacles, guaranteeing the successful implementation of technology-based training programmes. Accordingly, organisations can improve their efficiency, effectiveness, and competitive edge, benefiting all stakeholders involved in the process by embracing and advancing technology.

3.5 Role of human resource development in promoting technological advancements

The HRD in promoting technological advancement cannot be overlooked and underestimated. HRD provides the

necessary skills and knowledge to individuals, allowing them to develop and implement new technologies. It also ensures that employees are qualified with the latest technological tools and resources to perform their job functions effectively. HRD facilitates technological advancement by identifying and addressing the skills gap, often a bottleneck. Furthermore, HRD is crucial in fostering a culture of innovation and creativity critical for developing and implementing new technologies. It also helps organisations to attract and retain top talent by offering a supportive work environment that promotes continuous learning and development. Briefly, HRD is a critical component of any organisation's strategy for promoting technological advancement.

According to Mishra *et al*. (2024) [14], HRD is critical in fostering innovation and creativity within organisations, and talent management and development are the key aspects that highlight the significance of HRD in leading companies toward success in the current business landscape. This initiative can be achieved by establishing a conducive environment that offers essential skill training and encourages employees to contribute their distinct perspectives to the organisation's growth and prosperity (Mishra *et al*., 2024) [14]. In this context, digital-based HRM gained significant momentum and attention to promote the increasing volume of developing digital skills among the workforce (Amalia, 2024) [2]. This shift towards digitalisation in HR management marks a crucial juncture in developing HR practices. As more companies embrace this trend, it becomes increasingly important for employees to acquire digital skills that can help them stay relevant in the rapidly changing digital terrain of the modern workplace.

Another strand of literature reinforces the significance of HRM in coordinating human capital strategies with organisational objectives, cultivating employee commitment and growth, and upholding conformity with legal and ethical standards (Groenewald *et al*., 2024) [7]. Regardless, (Nawaz *et al*., 2024) [18] warn that although AI has immense potential to drive HRM initiatives by adapting technology, integrating AI into HR processes can pose challenges. One such challenge is that AI can be advantageous only when provided and fed high-quality data, similar to humans. However, there is a potential risk of confidential documents and policies shared by organisations misused while incorporating AI into HR processes (Nawaz *et al*., 2024) [18]. As a result, organisations must undertake necessary measures to secure their sensitive information while utilising AI in HR processes. Similarly, Hidayat and Basuil (2024) [12] advised that organisations must prioritise implementation challenges, including resistance to change, technological tension, and predicting employees' skills requirements. These issues require careful consideration and strategic planning to overcome.

The role of HRD in facilitating technological development within organisations has been widely recognised and realised. However, experts in the field cautioned that organisations must be wary and deliberate in executing this exercise. Failure to do so could result in unnecessary pitfalls that might restrain them from effectively fulfilling this role. As such, the onus is on organisations to identify potential obstacles unique to their specific contexts and take appropriate measures to address them accordingly. This is especially important in rescuing the workforce, particularly low-skilled workers, who are often most exposed to displacement owing to technological advancements. Therefore, organisations must adopt a strategic approach that considers the needs and concerns of all stakeholders, including employees, customers, and shareholders. With this approach, they can ensure that technological development is integrated and advanced in a manner that is sustainable, equitable, and ultimately beneficial to all parties involved. Organisations reached a page in a book where they must recognise the significance of this matter regarding low-skilled employees and act accordingly.

3.6 The international proportion of low-skilled workers in various nations in 2020 and 2030

Low-skilled workers around the globe are confronted with tribulations based on their labour-intensive jobs, which are mostly affected by technology, leaving them struggling to adapt to the changing job market. As such, this study analysed the percentage of workers engaged in low-skilled occupations across various economies worldwide for 2020 and the projected figures for 2030. This information can help policymakers, businesses, and individuals make informed decisions about workforce training, education, and career paths, ultimately contributing to a more skilled and productive workforce. Nevertheless, it is imperative to note that the researchers retrieved data to construct the below graph from Statista (2024) [24]. Figure 1 below shows the global workforce in low skilled occupations in 2020 and 2030.
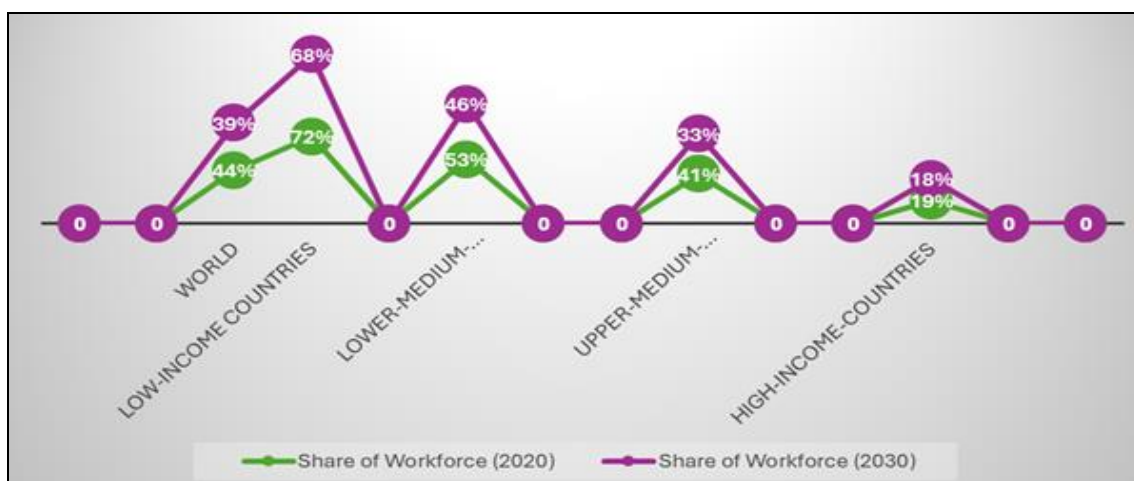

Fig 1: Global workforce in low skilled occupations in 2020 and 2030

The graph provides a comprehensive analysis of the global workforce composition, focusing on the distribution of workers in low-skilled occupations in 2020 and 2030 by the economy. According to the data, in 2020, low-skilled workers constituted a significant portion of the global workforce, with a percentage of 44%. However, the graph predicts a downward trend in this figure, with the percentage expected to decrease to 39% in 2030. This data suggests a positive shift in the distribution of workers, with a possible increase in the number of skilled workers in the workforce in the coming years. In terms of low-income countries, low-skilled workers made up a substantial proportion of the workforce, accounting for 72% in 2020. However, the graph predicts a gradual decline in this figure, with the percentage expected to decrease to 68% in 2030. This data indicates a gradual shift and need towards increased skill development and education in low-income countries, potentially leading to improvements in the quality of life of individuals and communities.

According to the graph, in 2020, the workforce composition for Lower-Medium Countries was 53%. However, the graph predicts a decline in this figure to 46% in 2030. This data signifies that there will be a significant shift in the demographic makeup of the workforce in the coming years. Similarly, for Upper-Medium-Countries, the graph shows that in 2020, the workforce composition was 41%, and is expected to decline to 33% in 2030. This analysis indicates that there will be a noticeable change in the workforce distribution in these countries as well. Finally, the graph displays that in 2020, the workforce composition for high-income countries was 19%. This percentage is expected to experience a slight decline, with the percentage predicted to be 18% in the year 2023. This data suggests that the demographic makeup of the workforce in high-income countries is relatively stable compared to that of Lower-Medium and upper-medium countries.

The analysis exhibits that the advent of technology has brought about a worldwide decline in low-skilled jobs. As such, this study contends that organisations are not doing enough to train employees to reduce the chances of being replaced by technology. Therefore, corporations must focus more on training and developing their workforce to mitigate the risk of job replacement. Accordingly, this study highlights the need for an increased emphasis on training and development, which would help reduce the declining trend of low-skilled jobs worldwide.

4. Materials and Methods
This study relied on a theoretical analysis as the primary research method. This approach necessitated an extensive investigation of various theories, concepts, and ideas relevant to the topic under scrutiny. This technique enabled the researchers to investigate the subject matter more in-depth and gain a deep understanding. Theoretical analysis, as an approach, also allowed the researchers to draw informed conclusions based on the critique of the literature gathered for the study. This method was highly efficient in exploring existing literature as the researchers examined the subject matter in detail to acquire a comprehensive understanding with readily unrestricted and reliable data online, saving costs for the researchers while achieving the study's objectives.

5. Findings
▪ **Organisations fail to train low-skilled employees to reduce job losses attributable to technology**
Many organisations across various industries fail to provide adequate training to their low-skilled employees, resulting in job losses attributable to the rise of technology. With the rapid advancement of technology, many jobs previously performed by humans are now automated, causing a shift in the job market, and leading to a loss of employment opportunities for individuals who lack the necessary skills to adapt to this change. Unfortunately, instead of investing in training programmes to upskill their workforce, many organisations opt for cost-cutting measures such as layoffs, exacerbating the problem.

▪ **Human resources development is incapacitated to balance training with technological advancement**
HRD is confronted with the oversized limitations of staying abreast of technological headway while ensuring that employee training remains balanced. These obstacles may encompass a scarcity of critical resources, tools, and expertise in training personnel on the latest industry technologies and instruments. Such inadequacies can result in employee skill gaps, negatively impacting organisational productivity and performance and leading to job loss for the affected workers, particularly low-skilled workers.

▪ **The global workforce is losing a balance between low-skilled and high-skilled employees owing to technology**
The rapid technological advancement profoundly impacts the global workforce, leading to a gradual shift in the balance between low-skilled and high-skilled employees. With the increasing automation of routine tasks, many jobs that require low to moderate skill levels are becoming obsolete. At the same time, there is a growing demand for workers with advanced technological skills who can manage, develop, and innovate new technologies. This trend is causing a significant disparity in the job market, posing a challenge for HRD professionals, change management specialists, policymakers, academics, and industries to ensure that the workforce can adapt and acquire the necessary skills to remain competitive in a constantly changing world.

▪ **Human resource development stimulates technological advancements**
Although HRD lacks the capacity to balance technological advancement, undoubtedly, it is an essential element of any organisation. It plays a crucial role in promoting technology with little resources at its disposal to advancement by enhancing the skills and knowledge of the workforce. HRD includes various training programmes, workshops, certifications, and other learning opportunities to improve employee capabilities. Organisations can equip their workforce with the latest technical skills and knowledge, driving innovation and growth by providing such resources. Furthermore, HRD also fosters a culture of continuous learning and development, which is essential for the long-term success of any organisation. As such, it must use and balance its role to advance low-skilled employees.

6. Discussion
The discussion focuses on the issue of organisational failure to provide adequate training to upskill low-skilled jobs, leading to job losses due to technological development. This

dilemma has become a critical HRD crisis in contemporary times. The lack of investment in training programmes and the failure to adapt to technological advancements cause a significant skill gap in the workforce, leading to layoffs, unemployment, and a reduction in the country's overall economic growth. This crisis requires a comprehensive solution that involves collaboration between governments, corporations, and educational institutions to create training programmes that fill the skill gap and help workers adapt to the rapidly changing job market. Table 1 presents a few studies similar to the current research, which investigated digital methods with different variables.

Table 1: Selected Studies Similar to the current study

Study	Research Method	Results
Popa, *et al*. (2024) [20] investigated the relationship between employees competencies and effectiveness in the use of artificial intelligence tools.	A questionnaire was developed and administered to a sample of 209 Romanian employees. One of the key strengths of this approach is that it allowed for a systematic and structured collection of data, which made it possible to analyse and draw meaningful conclusions from the responses. Additionally, a questionnaire enabled a high level of consistency and standardisation in the data collection process, enhancing the reliability and validity of the findings.	The findings revealed a direct correlation between the employees' skills and the efficacy of utilising artificial intelligence tools.
Analysis: The study's narrow focus on employee competency and AI effectiveness failed to consider the crucial correlation between technology and low-skilled employees. This oversight reinforces the need for conducting the current study to address this critical issue.		
Rulianti and Nurlilah (2021) [23] examined the relationship between career development and job satisfaction mediated by work motivation.	A total of 92 respondents were obtained through the sampling technique with saturated samples. An online survey was created using Google Forms to collect data. The study's strength lies in using a comprehensive and efficient data collection method that allows for gathering a large amount of data within a short period. Moreover, utilising an online platform eliminates the need for physical interaction, making it more convenient and accessible for participants to respond.	According to the research, job satisfaction is impacted by career growth. The study reveals that career development has a positive and significant effect on job satisfaction; meanwhile, work motivation is positively influenced by career growth.
Analysis: The study mainly explored the relationship between career development and job satisfaction mediated by work motivation. However, it neglected the significant relationship between technology and low-skilled employees. This gap in the literature is a crucial issue that the current study identified and aims to address		
Qureshi *et al*. (2021) explored the relationship between digital technologies in education 4.0 and the effectiveness of learning.	A systematic literature review was conducted to collect relevant data from reputable journals in the Scopus database. The PRISMA Statement 2015 was employed to select the final 47 studies for the review process, ensuring a comprehensive and impartial selection process. Bibliometric analysis was conducted to determine keyword frequency. This study's strengths are based on its vigorous selection process and using an established methodology to analyse the data. The researchers drew sound conclusions from the data and contributed meaningfully by leveraging these techniques.	The study revealed a significant disparity between the employees' current competencies and the necessary skills pertinent to tackling the obstacles presented by AI technologies.
Analysis: The study disregarded the connection between technology and low-skilled workers despite its focus on exploring the impact of digital technologies in education 4.0 on learning effectiveness. Such negligence validates the current study's problem statement.		
Bukliv, Kuchak, and Vasylyuk-Zaitseva (2023) analysed the connection between the professional training of potential scientific and pedagogical workers and the continuous trend of digitalising education.	The article presents a comprehensive overview of theoretical and empirical research undertaken over several stages. The study consists of two major parts: a theoretical and empirical. The theoretical section of the study was based on general scientific methods, including analysis and synthesis. Furthermore, the researchers utilised the dialectical method to explore the phenomenon of students' professional training, considering it a constantly changing and actively developing process. The strengths of this study include its detailed analysis, thorough examination of the relevant literature, and the use of various research methods to arrive at meaningful conclusions.	The findings reveal that prospective scientific and pedagogical professionals with digital tools are plagued with various challenges, such as insufficient motivation and expertise in digital competencies.
Analysis: The study thoroughly investigated the correlation between the professional development of potential scientific and pedagogical workers and the ongoing trend of digitalising education. Yet, the study overlooked the crucial nexus between technology and low-skilled employees. This grave omission emphasises the significance of the current study's contribution to its field.		
Amalia (2024) [2] analysed the impact of the digital revolution on Human Resource Management.	This study was conducted through a systematic literature review. The researcher used 20 journal articles as primary sources to gather data. The study draws its strengths from its thoroughness, as the researcher analysed and synthesised the information from various sources to provide an in-depth exploration of the topic.	The findings indicate that HRM is a critical strategic partner in managing organisational changes during the digital era 4.0.
Analysis: The study's failure to examine the relationship between technology and low-skilled employees is a significant gap in its analysis of the impact of the digital revolution on Human Resource Management. This oversight strengthens the implication and relevance of the current study's objective.		

Table 1 presents a comprehensive overview of a few studies that explored the diverse applications of modern technology across a wide range of contexts, countries, and sectors. Despite the abundance of research in this area, it is worth noting that none of these studies specifically examined the impact of technology on low-skilled workers. As a result, there was a critical need to conduct further research to address the issue of low-skilled workers to address workforce inequality, inclusivity, and imbalance in the future workplace.

The current study strives to contribute to a more comprehensive understanding of social justice challenges in

the workplace by investigating the relationship between technology and low-skilled workers. Similar to previous research that pointed out significant concerns regarding youth unemployment, gender disparities, and affirmative action, employment equity in the workforce, the current study emphasises the critical issue of low-skilled workers, grossly overlooked by HRD. This study highlights the extent of creating a balanced workforce that does not discriminate against any group of workers. This research contributes to a more equitable and inclusive workforce, promoting social justice and reducing inequality by addressing the needs of low-skilled workers.

7. Conclusion
The study concludes that organisations are not doing enough to upskill low-skilled employees to prevent job losses due to technological advancements. The study highlights the crucial need for low-skilled employees' training and development to manage the changes brought about by technology, as they are the most vulnerable group regarding redundancy. However, it is not sufficient for these employees to rely on organisations to assist them in their predicament; they must also take accountability and responsibility to ensure they remain in the labour market. Furthermore, the study acknowledges that HRD faces challenges adapting to and effectively implementing technology in its training and development programmes. While it is critical to address the issue of job losses resulting from technological advancements, it is equally crucial to ensure that the employees they are trying to upskill are adequately equipped and willing to handle these changes. Therefore, the study strongly advocates for a more proactive approach by HRD in implementing technology and training programmes that cater to the needs of low-skilled employees. Notwithstanding, the study examined numerous technological techniques, challenges, benefits, and risks across various sectors and countries. However, it is imperative to note that the analysis presented in the study cannot be applied universally to all industries or nations. Therefore, organisations, via HRD, are urged to conduct their research and determine what approach will work best for them.

8. References
1. Abrahams TO, Ewuga SK, Dawodu SO, Adegbite AO, Hassan AO. A review of cybersecurity strategies in modern organizations: Examining the evolution and effectiveness of cybersecurity measures for data protection. Computer Science & IT Research Journal. 2024;5(1):21-25.
2. Amalia MR. The impact of digital era 4.0 transformation on human resources management. Management Studies and Business Journal (Productivity). 2024;1(1):89-98.
3. Anwar G, Abdullah NN. Inspiring future entrepreneurs: The effect of experiential learning on the entrepreneurial intention at higher education. International Journal of English Literature and Social Sciences, 2021, 6.
4. Bhakuni S, Saxena S. Exploring the link between training and development, employee engagement and employee retention. Journal of Business and Management Studies. 2023;5(1):173-180.
5. Chatterjee S, Chaudhuri R, Vrontis D, Thrassou A, Ghosh SK. Adoption of artificial intelligence-integrated CRM systems in agile organizations in India. Technological Forecasting and Social Change. 2021;168:120783.
6. Gadzali SS, Gazalin J, Sutrisno S, Prasetya YB, Ausat AMA. Human resource management strategy in organisational digital transformation. Jurnal Minfo Polgan. 2023;12(1):760-770.
7. Groenewald CA, Groenewald E, Uy F, Kilag OK, Abendan CF, Pernites MJ. Adapting HRM practices to globalization: Strategies for success in a borderless economy. International Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence (IMJRISE). 2024;1(3):142-149.
8. Gunawardane Y, Sathiyakumar J, Sivalingam K, Rasathurai B, Rajapakshe W, Kumarapperuma C. Impact of the challenges in implementing human resource information systems in Sri Lankan MSMEs. SLIIT Business Review. 2022;2:59-88.
9. Harahap MAK, Kraugusteeliana K, Pramono SA, Jian OZ, Ausat AMA. The role of information technology in improving urban governance. Jurnal Minfo Polgan. 2023;12(1):371-379.
10. Harahap MAK, Sutrisno S, Fauzi F, Jusman IA, Ausat AMA. The impact of digital technology on employee job stress: A business psychology review. Jurnal Pendidikan Tambusai. 2023;7(1):3635-3638.
11. Hendriati Y, Sufa SA, Telaumbanua E, Uhai S. Analysis of the impact of organizational culture, employee training, and internal communication on employee retention: A case study in the manufacturing industry in Indonesia. International Journal of Business, Law, and Education. 2024;5(1):644-656.
12. Hidayat M, Basuil DA. Strategic human resource planning in the era of digital transformation. Management Studies and Business Journal (Productivity). 2024;1(1):130-137.
13. Jayaraman VK, Pandya M, Malhotra M, Patki SM. AI in the context of OCB: One step forward or two steps back? In: Organizational Citizenship Behaviour (OCB) in India: Emerging Trends and Future Directions. Singapore: Springer Nature Singapore; c2024. p. 177-193.
14. Mishra TK, Bhavya B, Tayade M, Rajlakshmi PV, Hemalatha TM, Mohideen AS. A pragmatic study on role of HRD in supporting, stimulating sustaining creativity and innovation. Migration Letters. 2024;21(S1):942-952.
15. Mohammed AB, Al-Okaily M, Qasim D, Al-Majali MK. Towards an understanding of business intelligence and analytics usage: Evidence from the banking industry. International Journal of Information Management Data Insights. 2024;4(1):100215.
16. Mukherjee S, Baral MM, Chittipaka V, Nagariya R, Patel BS. Achieving organizational performance by integrating industrial Internet of things in the SMEs: A developing country perspective. The TQM Journal. 2024;36(1):265-287.
17. Musarat MA, Alaloul WS, Zainuddin SM, Qureshi AH, Maqsoom A. Digitalization in Malaysian construction industry: Awareness, challenges and opportunities. Results in Engineering. 2024;102013.
18. Nawaz N, Arunachalam H, Pathi BK, Gajenderan V. The adoption of artificial intelligence in human

resources management practices. International Journal of Information Management Data Insights. 2024;4(1):100208.

19. Nwokeocha IM. Rationalizing training and development in corporate organisation: Is staff development worth it? Journal of Pedagogical Inventions and Practices. 2024;29:15-23.

20. Popa I, Cioc MM, Breazu A, Popa CF. Identifying sufficient and necessary competencies in the effective use of artificial intelligence technologies. The amfiteatru economic Journal. 2024;26(65):31-33.

21. Prastyaningtyas EW, Ausat AMA, Muhamad LF, Wanof MI, Suherlan S. The role of information technology in improving human resources career development. Jurnal Teknologi Dan Sistem Informasi Bisnis. 2023;5(3):266-275.

22. Purwanto MB. Professional growth and staff development (How to encourage employees to pursue professional development). International Journal of Technology and Education Research. 2023;1(01):153-165.

23. Rulianti E, Nurlilah M. Pengaruh Pengembangan Karir Terhadap Kepuasan Kerja Yang Di Mediasi Oleh Motivasi Kerja. Jesya (Jurnal Ekonomi Dan Ekonomi Syariah). 2021;4(1):211-220.

24. Statista. Share of global workforce working in low skilled occupations in 2020 and 2030, by economy; c2024. Available from: https://www.statista.com/statistics/1171289/global-workforce-low-skilled-occupations/. Accessed 07 May 2024.

25. Sulintang A, Saragih T, Pramasanti A, Mahaganti F, Fitriani K, Augustin E, *et al*. Bibliometric analysis of Indonesia's labor dynamics: Future works, digital transformations, and contemporary employment landscape shifts. International Journal of Data and Network Science. 2024;8(2):679-688.

26. Tanriverdiyev E. The state of the cyber environment and national cybersecurity strategy in developed countries. Studia Bezpieczeństwa Narodowego. 2022;23(1):19-26.

27. Turyadi I, Zulkifli Z, Tawil MR, Ali H, Sadikin A. The role of digital leadership in organizations to improve employee performance and business success. Jurnal Ekonomi. 2023;12(02):1671-1677.

28. Varma P, Nijjer S, Kaur B, Sharma S. Blockchain for transformation in digital marketing. In: Handbook of Research on the Platform Economy and the Evolution of E-Commerce. IGI Global; c2022. p. 274-298.

29. Zebua RS. Analysis of challenges and opportunities for teachers in the digital era. Journal of Informatics and Educational Technology. 2023;3(1):21-28.

30. Zhu J, Baker JS, Song Z, Yue XG, Li W. Government regulatory policies for digital transformation in small and medium-sized manufacturing enterprises: An evolutionary game analysis. Humanities and Social Sciences Communications. 2023;10(1):11-18.