Digital Transformation in MSME Human Resources Management: Adaptation Strategies Towards Sustainable Business

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Abstract. Digital transformation in human resource management (HR) is a challenge as well as an opportunity for MSMEs in an effort to realize business sustainability. This research aims to explore how the digital adaptation process is carried out in MSME HR management practices, as well as identify the challenges faced in its implementation. Using a qualitative approach through in-depth interviews with MSME actors in the creative sector, the data was analyzed thematically to reveal the patterns and dynamics of digital transformation. The results of the study show that most MSMEs have adopted simple technology such as WhatsApp, Google Form, and video tutorials in the process of recruitment, training, and performance recording. However, the limitations of digital literacy of the workforce and infrastructure are the main obstacles. These findings indicate that the digitization of human resources in MSMEs is still gradual and adaptive, and is highly dependent on individual readiness and external support. In conclusion, digital transformation in MSME human resources not only requires technology, but also strengthens human resource capacity and work culture that is inclusive of change. The implications of this study encourage the existence of digital literacy mentoring programs and collaborative policies between business actors, the government, and educational institutions to strengthen the competitiveness of MSMEs in a sustainable manner.

Keywords: Business Sustainability; Digital Literacy; Digital Transformation; HR Management; MSMEs

Abstrak. Transformasi digital dalam pengelolaan sumber daya manusia (SDM) menjadi tantangan sekaligus peluang bagi UMKM dalam upaya mewujudkan keberlanjutan bisnis. Penelitian ini bertujuan untuk mengeksplorasi bagaimana proses adaptasi digital dilakukan dalam praktik pengelolaan SDM UMKM, sekaligus mengidentifikasi tantangan yang dihadapi dalam implementasinya. Menggunakan pendekatan kualitatif melalui wawancara mendalam dengan para pelaku UMKM di sektor kreatif, data dianalisis secara tematik untuk mengungkap pola dan dinamika transformasi digital. Hasil penelitian menunjukkan bahwa sebagian besar UMKM telah mengadopsi teknologi sederhana seperti WhatsApp, Google Form, dan video tutorial dalam proses rekrutmen, pelatihan, dan pencatatan kinerja. Namun, keterbatasan literasi digital tenaga kerja dan infrastruktur menjadi kendala utama. Temuan ini menunjukkan bahwa digitalisasi sumber daya manusia di UMKM masih bersifat bertahap dan adaptif, serta sangat bergantung pada kesiapan individu dan dukungan eksternal. Kesimpulannya, transformasi digital pada sumber daya manusia UMKM tidak hanya membutuhkan teknologi, tetapi juga memperkuat kapasitas sumber daya manusia dan budaya kerja yang inklusif terhadap perubahan. Implikasi dari penelitian ini mendorong adanya program pendampingan literasi digital dan kebijakan kolaboratif antara pelaku usaha, pemerintah, dan lembaga pendidikan untuk memperkuat daya saing UMKM secara berkelanjutan.

Kata Kunci: Keberlanjutan Usaha; Literasi Digital; Manajemen SDM; Transformasi Digital; UMKM

1. INTRODUCTION

In the era of digital disruption, technological transformation has become an absolute necessity for the sustainability of various business sectors, including Micro, Small, and Medium Enterprises (MSMEs) (Syamsari et al., 2022). The development of information technology has changed the way companies manage human resources (HR), from manual

systems to digital-based systems that are more efficient and adaptive (Odebode & Ogunbayo, 2025). Digital transformation in HR management allows MSMEs to increase productivity, accelerate the recruitment process, optimize training, and strengthen employee engagement through digital platforms (Kumar et al., 2024). According to the World Economic Forum (Di Battista et al., 2023), digital transformation is one of the main factors shaping the future of work, with more than 75% of global companies accelerating the use of technology, including in HR management. Previous research has shown that digital transformation has a significant impact on the effectiveness of HR management in various organizations, including MSMEs (Azizah et al., 2024). Digitalization in recruitment, training, and performance appraisal processes has been shown to increase company efficiency and competitiveness (Marler & Boudreau, 2017). However, the success of this transformation is highly dependent on the digital readiness and competence of employees, where digital training plays an important role in supporting adaptation to new technologies (Bondarouk & Brewster, 2016). In the context of MSMEs, the adoption of digital technology in HR still faces challenges, such as limited infrastructure, digital skills, and resources (Susanti et al., 2023). However, a positive trend is seen in MSMEs that have begun to integrate digital HR systems, which show more adaptive and sustainability-oriented business performance (Mohammadian, 2022).

Although the benefits of digital transformation in HR management have been widely discussed, most studies still focus on large companies or formal organizations that have adequate technological infrastructure. This creates a knowledge gap regarding how MSMEs, with structural and financial limitations, practically carry out digital adaptation in their HR management (Sivathanu & Pillai, 2018). In addition, some studies are quantitative and have not explored much about the social dynamics, organizational culture, and contextual challenges faced by MSMEs in the digitalization process (Ben Slimane et al., 2022). In fact, digital transformation is not only a matter of technology, but also changes in the mindset, competence, and work patterns of human resources (Ghosh et al., 2022).

Previous research (Hendrawan et al., 2024) also noted the lack of studies that highlight the adaptive strategies of MSME HR in maintaining business sustainability amidst digital transformation. Therefore, a qualitative approach is needed to contextually explore how digital transformation in HR management is carried out by MSMEs, and how it contributes to the sustainability of their business (Hernita et al., 2021).

Based on the background and research gaps that have been described, this study aims to explore how MSMEs implement digital transformation in HR management as an adaptation strategy towards business sustainability. This study will specifically explore the experiences,

challenges, and adaptive strategies of MSMEs in managing HR amidst rapid technological change. The main contribution of this research is to provide a deeper and contextual understanding of digital-based HR management practices in the MSME sector, as well as presenting practical recommendations to support business sustainability and competitiveness in the digital era.

2. THEORETICAL STUDY

Basic Concept of Human Resource Management (HR) in MSMEs

Human Resource Management (HRM) is a strategic process in managing human assets so that they can provide optimal contribution to achieving organizational goals.(Liu et al., 2007). In the context of Micro, Small and Medium Enterprises (MSMEs), HR management has a vital role considering the limited resources and organizational structures that tend to be simple(Dundon & Wilkinson, 2018). Key functions such as recruitment, training, performance appraisal and employee retention are often performed informally and not yet digitized.(Cascio, 2014)

The characteristics of HR management in MSMEs reflect high flexibility but minimal documentation and formal systems(Angeles et al., 2022). For example, the recruitment process is usually carried out based on personal recommendations or family relations, not through a structured system. This results in limitations in accountability and effectiveness of employee management.

However, the flexibility possessed by MSMEs can also be a potential strength in implementing management innovation, including digital transformation(Aminullah et al., 2024). The ability to adapt quickly without complicated bureaucratic procedures allows MSMEs to be more responsive to external changes, such as the demands of digitalization in HR management.

Digital Transformation

Digital transformation refers to the integration of digital technologies into all aspects of business operations to improve efficiency, productivity, and competitiveness(Butt, 2020). In the context of MSMEs, digital transformation is not just about using software or applications, but also about changing the way of thinking, organizational culture, and work processes(Leso et al., 2023).

The scope of digital transformation in MSMEs covers various fields, ranging from digital marketing, digital finance (fintech), to technology-based HR management(Rialti &

Zollo, 2023). With the help of simple devices such as smartphones, cloud storage, and free applications, MSMEs can start implementing digitalization in their daily operational activities.

Digitalization enables MSMEs to expand market reach, optimize work processes, and increase transparency and efficiency(Chanchaichujit et al., 2023). Therefore, a thorough understanding of digital transformation and its relevance in small businesses is crucial to drive MSME growth and sustainability.

Digitalization in HR management includes the adoption of technology to simplify the recruitment process, training, performance management, to attendance and payroll systems. The use of social media, survey applications, and cloud-based management systems is becoming increasingly common among MSMEs to support these activities.

Digital recruitment, for example, can be done through platforms such as WhatsApp, Google Form, or LinkedIn to reach a wider range of potential employees(Schwarz-Musch et al., 2025). Meanwhile, employee training can be done online through video tutorials, webinars, or other digital learning platforms, saving costs and time.

Performance management has also undergone a transformation through the use of simple applications such as Google Sheets or Trello to monitor work achievements. This makes it easier for MSME owners to manage HR more systematically, even without the need for expensive software. This transformation accelerates the process of adaptation and professionalization of HR management in the informal sector.

Adaptation of HR to the digital era requires the development of employee capacity in digital literacy and utilization of information technology. Strategies that can be implemented include internal training, mentoring, and collaboration with educational institutions or digital communities for knowledge transfer.

It is important for MSMEs to create a work culture that is open to change and continuous learning. Employees are encouraged to actively explore new technologies that can support work productivity. This can start from simple things, such as using digital recording applications or archiving documents in the cloud.

MSME owners also play an important role in creating an inclusive digital ecosystem. By adopting a bottom-up approach, where HR needs and capacities are the basis of the digitalization strategy, adaptation to the digital era can be more effective and with minimal resistance.

3. RESEARCH METHOD

Data sources

The main data sources in this study were obtained from 15 MSME actors. The number of these respondents is as stated by (Creswell & Poth, 2016) Considering the principle of data saturation with the ideal number of informants ranging from 10 to 20 people. It consists of MSME actors, especially owners, managers, and employees who are directly involved in the human resource management process. The information collected includes the digitalization strategies implemented, the forms of adaptation in human resource management, the various challenges faced, and their implications for business sustainability. Data was obtained through in-depth interviews, direct observation at the business site, and relevant internal documentation. In addition, literature studies in the form of scientific journals, research reports, and policy documents related to digital transformation and human resource management are also used as secondary data sources to strengthen the analysis.

Data Collection Procedures

Data collection is carried out with a qualitative approach through semi-structured interview techniques (Kallio et al., 2016). Interviews are conducted in person or online, depending on the condition of the participants (Peasgood et al., 2023). The selection of informants is carried out purposively, that is, selecting individuals who are considered to have knowledge and experience relevant to the research topic (Alam, 2021). In addition to interviews, the researcher also conducted field observations on HR management practices and the use of digital technology in MSME operations (Kumar et al., 2024). Documentation such as SOPs, digital HR systems (if any), and management records are also analyzed as supporting data. All data is systematically recorded, transcribed, and stored for further analysis purposes(Neale, 2016).

Data Analysis Procedure Data

analysis is carried out using a thematic analysis approach (thematic analysis)(Joffe, 2011). The steps used include: (1) transcription of interview and observation data, (2) thorough reading to understand the context, (3) initial coding of important topics, (4) identification of key themes emerging from the data, and (5) interpretation of results in the context of HR management theory and digital transformation(Neuman, 2014). The validity of the data is maintained through triangulation techniques of sources and methods, as well as member checking with informants to ensure the accuracy of the researcher's interpretation (Varpio et al., 2017).

4. RESULTS AND DISCUSSION

Results

Based on the results of interviews and observations of several MSME actors who have implemented digitalization in human resource management, several important findings were found that are categorized into three main themes, namely: (1) Application of Technology in Recruitment and Training, (2) Digitalization of Performance Management Systems, and (3) Challenges of Adaptation and Digital Capacity of Human Resources.

Application of Technology in Recruitment and Training

The application of technology in recruitment and training is starting to be seen significantly among MSMEs, including in the creative industry sector such as batik. Based on the results of interviews with several MSME actors, most of the informants stated that the recruitment process for new employees is no longer carried out conventionally, but through social media such as Facebook, Instagram, and WhatsApp. In addition, some of them have started using Google Forms to collect applicant data, such as CVs and work portfolios, as a form of efficiency in the initial selection process.

In terms of training, it was found that most MSMEs have adopted an online training model that is practical and efficient. The most widely used form of training is video tutorials, both created by yourself and sourced from the YouTube platform. In addition, some MSMEs took part in free webinars provided by the cooperative office, the business community, or the private sector. This method is considered more flexible because it allows employees to learn at any time without having to leave the workplace, while reducing the cost of formal training. The pattern of use of digital media in recruitment and training arises due to limited resources and the need for efficiency. MSMEs generally do not have a structured HR division, so they choose technology that is easily accessible and does not require high technical expertise. Platforms such as WhatsApp and Google Form are considered very helpful because they do not require additional costs and are already part of the communication routine of business actors. In training, videos are chosen because they are able to convey material visually and practically, and can be repeated according to employee needs.

The application of this technology indirectly began to form a more modern HR management system among MSMEs. Although it is still simple, the use of digital platforms makes the recruitment process more organized and documented. Video-based training is also considered more effective in transferring certain technical skills than traditional oral methods. This shows that digitalization has the potential to increase professionalism in the management

of MSME human resources, as long as it is supported by increasing digital literacy for owners and employees.

These findings are in line with previous research by (Rahman et al., 2022) which shows that MSMEs are starting to utilize social media in the recruitment process in response to cost limitations and access to formal recruitment agencies.

Digitization of Performance Management Systems

The application of digitalization in the performance management system has begun to be adopted by some MSMEs, although it is still limited and simple. One of the forms found in this study is the use of digital attendance recording applications such as Google Forms, WhatsApp Check-in, and the use of Google Sheets to monitor the achievement of daily production targets. These systems are not as thoroughly integrated as in large companies, but they already show an early effort towards more structured and documented performance management.

The data pattern shows that MSMEs that are more active in digitizing performance management are generally businesses that have more than 10 employees, or already have experience participating in digitalization training organized by cooperative offices or local business communities. They recorded daily attendance online, compared work output to production targets, and provided regular feedback through internal WhatsApp groups. This pattern also reflects that technology use initiatives are driven more by the need for efficiency and limited human resources in conducting direct supervision.

The adoption of this digital system was carried out for several reasons. First, business owners find it difficult to monitor employee activities directly, especially when the business is starting to grow. Second, manual recording often leads to scattered information, is not well documented, and makes it difficult to evaluate performance. Therefore, digital technologies like Google Sheets are chosen because they are free, easy to use, and can be accessed from anywhere. This initiative emerged independently or as a result of mentoring the MSME community that encourages digital transformation as part of business adaptation.

When compared to previous studies, this study enriches the findings of the (Melo et al., 2023) which only mentions the importance of a performance evaluation system in MSMEs without describing the digital approach used. Research by (Vilarinho et al., 2018) noted that the use of a simple dashboard system has not been widely carried out by MSMEs. Thus, these results make a new contribution by revealing how MSME actors adapt free applications to meet performance management needs, even without a formal HR system. Overall, it can be

concluded that the digitalization of performance management among MSMEs is in the early stages but shows great potential. Although not completely systematic, these steps pave the way for the strengthening of a more transparent and measurable work culture. With the support of training and increasing digital literacy, this system can be improved to create more professional and sustainable MSMEs in their human resource management.

Challenges of Human Resource Digital Adaptation and Capacity

One of the most real challenges faced by MSMEs in the process of digital transformation of human resource management is the low digital literacy of the workforce. This is especially felt in employees who come from the older generation, who are generally not used to using digital devices and applications. Some MSME actors stated that training on the use of technology often does not run optimally because some employees feel anxious or reluctant to adapt to the new system. These obstacles cause delays in the implementation of digitalization of work processes such as recruitment, training, and performance reporting.

Data shows that the pattern of adaptation to technology varies greatly among MSMEs, depending on the age of the workforce, education level, and support from management. MSMEs with young employees or have digitally savvy business owners tend to be faster and more efficient in adopting technology. On the other hand, MSMEs with a dominant workforce from the senior generation need longer time and a more persuasive approach in the digital training and mentoring process. This pattern shows that there is an internal digital divide that is a serious challenge in the transformation process.

In addition to the human resource factor, infrastructure limitations are also a significant obstacle. Several informants said that unstable internet connections and the lack of digital devices such as computers or tablets hindered the smooth digitization process. In rural areas, this is a double challenge because the technological infrastructure is not fully evenly distributed. This condition is exacerbated by the additional costs that MSMEs must bear to buy or update technological devices.

This condition is in line with the findings of the (Ayinla & Adamu, 2018) which states that the digital divide is the main barrier for MSMEs in implementing a technology-based management system. Study by (Aminullah et al., 2024) also mentioned that without continuous training and government or community support, the digital adaptability of MSME human resources will be left behind. This shows the importance of an inclusive digital literacy program, as well as incentives for improving technology infrastructure. By understanding these challenges, it is important for MSMEs to develop existing capacity-based strategies, such as

peer-to-peer learning, gamification approaches in training, and utilizing user-friendly digital applications. Digital transformation is not only a matter of technology, but also of human readiness to change. Therefore, increasing the digital capacity of human resources is the key to making this process fair and sustainable, not only efficient but also inclusive and humane.

Discussion

The above findings indicate that the digital transformation process in HR management in MSMEs is still taking place gradually and is adaptive. This is in line with the findings (Aminullah et al., 2024) which states that digitalization in MSMEs in Indonesia often starts from simple operational aspects such as recruitment or attendance recording.

However, the implementation of human resource digitalization has strategic potential in increasing organizational efficiency and productivity. As expressed by (Conte & Siano, 2023), Digital HRM can improve data-driven decision-making as well as strengthen employee engagement in the organization. The digital literacy challenges found in this study are also in line with the research results (Li et al., 2018)   which states that the digital transformation of MSMEs will be effective if accompanied by increasing the digital capacity of workers through training and mentoring.

Therefore, digital transformation in HR management in MSMEs not only requires technological readiness, but also work culture transformation and improving human resource digital competence. A gradual, collaborative, and local needs-based approach is a relevant strategy in this context to achieve the long-term goal of business sustainability.

CONCLUSION AND IMPLICATIONS

Digital transformation in MSME human resource management shows positive developments, although it is still in its early stages and is adaptive. The recruitment, training, and performance recording process began to shift to simple digital platforms such as WhatsApp, Google Forms, and Google Sheets. This proves that MSMEs in Indonesia have realized the importance of using technology in improving the efficiency and effectiveness of workforce management.

The application of digital technology has been proven to simplify HR administration, speed up the recruitment process, and expand access to training. In addition, the digital performance management system supports more structured and transparent supervision of work targets. However, the limitations of digital literacy, especially among the elderly

workforce, and the uneven digital infrastructure are significant obstacles to the expansion of the adoption of this technology.

This research shows that to realize a sustainable digital transformation of human resources, an approach that focuses not only on the provision of technology, but also on human capacity building is needed. Mentoring, digital literacy training, and strengthening an organizational culture that is adaptive to change are strategic steps that must be strengthened.

Practically, the results of this study provide implications for MSME owners and managers to be more active in adopting technology based on local needs and available resources. In addition, collaboration with training institutions, universities, and the government can be a solution in bridging the digital workforce gap.

From the academic side, this research contributes to the enrichment of literature on the digitalization of human resource management in the MSME sector, especially in the context of developing countries such as Indonesia. Further research is suggested to explore more deeply the relationship between human resource digitalization and MSME business performance quantitatively and examine the effectiveness of community-based digital literacy training models.

REFERENCE LIST

Alam, M. K. (2021). A systematic qualitative case study: Questions, data collection, NVivo analysis and saturation. Qualitative Research in Organizations and Management: An International Journal, 16(1), 1–31.

Aminullah, E., Fizzanty, T., Nawawi, N., Suryanto, J., Pranata, N., Maulana, I., Ariyani, L., Wicaksono, A., Suardi, I., & Azis, N. L. L. (2024). Interactive components of digital MSMEs ecosystem for inclusive digital economy in Indonesia. Journal of the Knowledge Economy, 15(1), 487–517.

Angeles, A., Perez-Encinas, A., & Villanueva, C. E. (2022). Characterizing organizational lifecycle through strategic and structural flexibility: Insights from MSMEs in Mexico. Global Journal of Flexible Systems Management, 23(2), 271–290.

Ayinla, K. O., & Adamu, Z. (2018). Bridging the digital divide gap in BIM technology adoption. Engineering, Construction and Architectural Management, 25(10), 1398–1416.

Azizah, S. N., Suradi, Koeswinarno, Fakhruddin, M., & Yuliani, I. (2024). The influence of digital transformation in speeding up the empowerment of the Muslim women's economy to improve the performance of micro, small, and medium enterprises (MSMEs) in Ponorogo. In Strategic Islamic Business and Management: Solutions for Sustainability (pp. 71–107). Springer.

Ben Slimane, S., Coeurderoy, R., & Mhenni, H. (2022). Digital transformation of small and medium enterprises: A systematic literature review and an integrative framework. International Studies of Management & Organization, 52(2), 96–120.

Bondarouk, T., & Brewster, C. (2016). Conceptualising the future of HRM and technology research. The International Journal of Human Resource Management, 27(21), 2652–2671.

Butt, J. (2020). A conceptual framework to support digital transformation in manufacturing using an integrated business process management approach. Designs, 4(3), 17.

Cascio, W. F. (2014). Leveraging employer branding, performance management and human resource development to enhance employee retention. In Vol. 17 (pp. 121–128). Taylor & Francis.

Chanchaichujit, J., Balasubramanian, S., Shukla, V., Upadhyay, A., & Kumar, A. (2023). Enablers and benefits of supply chain digitalization: An empirical study of Thai MSMEs. In Industry 4.0 Technologies: Sustainable Manufacturing Supply Chains: Volume II—Methods for transition and trends (pp. 113–131). Springer.

Conte, F., & Siano, A. (2023). Data-driven human resource and data-driven talent management in internal and recruitment communication strategies: An empirical survey on Italian firms and insights for European context. Corporate Communications: An International Journal, 28(4), 618–637.

Creswell, J. W., & Poth, C. N. (2016). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). Sage Publications.

Di Battista, A., Grayling, S., Hasselaar, E., Leopold, T., Li, R., Rayner, M., & Zahidi, S. (2023). Future of jobs report 2023. World Economic Forum. https://www.weforum.org/reports/the-future-of-jobs-report-2023

Dundon, T., & Wilkinson, A. (2018). HRM in small and medium-sized enterprises (SMEs). In Human resource management (pp. 194–211). Routledge.

Ghosh, S., Hughes, M., Hodgkinson, I., & Hughes, P. (2022). Digital transformation of industrial businesses: A dynamic capability approach. Technovation, 113, 102414.

Hanelt, A., Busse, S., & Kolbe, L. M. (2017). Driving business transformation toward sustainability: Exploring the impact of supporting IS on the performance contribution of eco-innovations. Information Systems Journal, 27(4), 463–502.

Hendrawan, S. A., Chatra, A., Iman, N., Hidayatullah, S., & Suprayitno, D. (2024). Digital transformation in MSMEs: Challenges and opportunities in technology management. Jurnal Informasi dan Teknologi, 141–149.

Hernita, H., Surya, B., Perwira, I., Abubakar, H., & Idris, M. (2021). Economic business sustainability and strengthening human resource capacity based on increasing the productivity of small and medium enterprises (SMEs) in Makassar City, Indonesia. Sustainability, 13(6), 3177.

Joffe, H. (2011). Thematic analysis. In Qualitative research methods in mental health and psychotherapy: A guide for students and practitioners (pp. 209–223). Wiley-Blackwell.

Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. Journal of Advanced Nursing, 72(12), 2954–2965.

Kumar, M., Raut, R. D., Mangla, S. K., Ferraris, A., & Choubey, V. K. (2024). The adoption of artificial intelligence powered workforce management for effective revenue growth of micro, small, and medium scale enterprises (MSMEs). Production Planning & Control, 35(13), 1639–1655.

Leso, B. H., Cortimiglia, M. N., & Ghezzi, A. (2023). The contribution of organizational culture, structure, and leadership factors in the digital transformation of SMEs: A mixed-methods approach. Cognition, Technology & Work, 25(1), 151–179.

Li, L., Su, F., Zhang, W., & Mao, J. Y. (2018). Digital transformation by SME entrepreneurs: A capability perspective. Information Systems Journal, 28(6), 1129–1157.

Liu, Y., Combs, J. G., Ketchen Jr, D. J., & Ireland, R. D. (2007). The value of human resource management for organizational performance. Business Horizons, 50(6), 503–511.

Marler, J. H., & Boudreau, J. W. (2017). An evidence-based review of HR analytics. The International Journal of Human Resource Management, 28(1), 3–26.

Melo, I. C., Queiroz, G. A., Junior, P. N. A., de Sousa, T. B., Yushimito, W. F., & Pereira, J. (2023). Sustainable digital transformation in small and medium enterprises (SMEs): A review on performance. Heliyon, 9(3), e13917.

Mohammadian, H. D. (2022). Mapping the future global SMEs growth via hybrid SMEs/SME 5.0/Tomorrow's SMEs concept through the 5th wave, i-Sustainability Plus and DCT theories. In Management and information technology in the digital era (Vol. 29, pp. 173–206). Emerald Publishing Limited.

Neale, J. (2016). Iterative categorization (IC): A systematic technique for analysing qualitative data. Addiction, 111(6), 1096–1106.

Neuman, D. (2014). Qualitative research in educational communications and technology: A brief introduction to principles and procedures. Journal of Computing in Higher Education, 26, 69–86.

Odebode, A. A., & Ogunbayo, O. T. (2025). The potential of digital-based technology in improving organizational performance. Journal of Management Development.

Peasgood, T., Bourke, M., Devlin, N., Rowen, D., Yang, Y., & Dalziel, K. (2023). Randomised comparison of online interviews versus face-to-face interviews to value health states. Social Science & Medicine, 323, 115818.

Rahman, M., Aydin, E., Haffar, M., & Nwagbara, U. (2022). The role of social media in e-recruitment process: Empirical evidence from developing countries in social network theory. Journal of Enterprise Information Management, 35(6), 1697–1718.

Rialti, R., & Zollo, L. (2023). Digital transformation of SME marketing strategies. https://doi.org/10.1007/978-3-031-33646-1

Schwarz-Musch, A., Tauchhammer, A., & Guetz, B. (2025). Social media advertising. In Digital advertising in the post-cookie era: Strategic campaign planning across the customer journey (pp. 85–124). Springer.

Sivathanu, B., & Pillai, R. (2018). Smart HR 4.0 – How Industry 4.0 is disrupting HR. Human Resource Management International Digest, 26(4), 7–11.

Susanti, E., Mulyanti, R. Y., & Wati, L. N. (2023). MSMEs performance and competitive advantage: Evidence from women's MSMEs in Indonesia. Cogent Business & Management, 10(2), 2239423.

Syamsari, S., Ramaditya, M., Andriani, I., & Puspitasari, A. (2022). Selecting priority policy strategies for sustainability of micro, small, and medium enterprises in Takalar Regency. Sustainability, 14(23), 15791.

Varpio, L., Ajjawi, R., Monrouxe, L. V., O'Brien, B. C., & Rees, C. E. (2017). Shedding the cobra effect: Problematising thematic emergence, triangulation, saturation and member checking. Medical Education, 51(1), 40–50.

Vilarinho, S., Lopes, I., & Sousa, S. (2018). Developing dashboards for SMEs to improve performance of productive equipment and processes. Journal of Industrial Information Integration, 12, 13–22.