

ADAPTING HR DIGITALIZATION STRATEGIES IN TANAH LAUT'S MSMEs AMID THE FOURTH INDUSTRIAL REVOLUTION

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Abstract. *This study aims to examine the adaptation strategies of human resource (HR) digitalization in micro, small, and medium enterprises (MSMEs) in Tanah Laut Regency in response to the challenges of the Industrial Revolution 4.0. The research method employed is a literature review from various relevant scholarly sources that capture the real conditions of MSMEs in Tanah Laut. The findings indicate that the main challenges faced by MSME actors include low digital literacy, limited technological infrastructure, and resistance to change. Nevertheless, digital adaptation has begun through HR training, utilization of digital platforms, and support from local government policies. This analysis is reinforced by the application of technology adaptation theories such as the Technology Acceptance Model (TAM), Diffusion of Innovations (DOI), and the Unified Theory of Acceptance and Use of Technology (UTAUT). The study highlights the critical importance of synergy between human resource capacity building, digital infrastructure development, and adaptive regulations in promoting sustainable digital transformation in the MSME sector.*

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Keywords: *MSMEs, Digitalization, Human Resources, Industry 4.0, Technological Adaptation.*

Abstrak. Penelitian ini bertujuan untuk mengkaji strategi adaptasi digitalisasi sumber daya manusia (SDM) pada usaha mikro, kecil, dan menengah (UMKM) di Kabupaten Tanah Laut dalam menghadapi tantangan Revolusi Industri 4.0. Metode penelitian yang digunakan adalah tinjauan pustaka dari berbagai sumber ilmiah relevan yang menggambarkan kondisi nyata UMKM di Kabupaten Tanah Laut. Temuan penelitian menunjukkan bahwa tantangan utama yang dihadapi pelaku UMKM meliputi rendahnya literasi digital, keterbatasan infrastruktur teknologi, serta resistensi terhadap perubahan. Meskipun demikian, adaptasi digital telah mulai dilakukan melalui pelatihan SDM, pemanfaatan platform digital, dan dukungan kebijakan pemerintah daerah. Analisis ini diperkuat dengan penerapan teori adaptasi teknologi seperti *Technology Acceptance Model* (TAM), *Diffusion of Innovations* (DOI), dan *Unified Theory of Acceptance and Use of Technology* (UTAUT). Penelitian ini menekankan pentingnya sinergi antara penguatan kapasitas SDM, pengembangan infrastruktur digital, dan regulasi yang adaptif guna mendorong transformasi digital berkelanjutan di sektor UMKM.

Kata Kunci: UMKM, Digitalisasi, Sumber Daya Manusia, Industri 4.0, Adaptasi Teknologi.

INTRODUCTION

The era of the Fourth Industrial Revolution has fundamentally transformed how businesses operate through the integration of digital technologies such as cloud computing, big data, artificial intelligence, and the Internet of Things (IoT) into business processes. One of the most significantly affected areas is human resource (HR) management, where automation and human resource information systems have become key to organizational efficiency and competitiveness (Schwab, 2016). In Indonesia, the adoption of technology in HR management remains varied, depending on organizational readiness and regional characteristics. Tanah Laut Regency in South Kalimantan, as an economically growing region, provides an interesting case to observe how micro, small, and medium enterprises (MSMEs) respond to the challenges and opportunities of digitalization.

Empirical data show that MSMEs dominate the local economic structure in Tanah Laut. According to the Cooperative and MSME Agency of Tanah Laut Regency (2023), there are over 12,000 active MSME units, employing more than 60% of the local workforce. However, only around 25% of these enterprises have adopted digital technologies in HR management, such as payroll systems, online recruitment, or digital training platforms. This indicates a significant digital divide. Furthermore, a survey by Statistics Indonesia (BPS, 2022) revealed that limited digital infrastructure, low technological literacy, and resistance to change are the main barriers to digital transformation in the region.

According to Rogers' (2003) Diffusion of Innovations Theory, technology adoption is a gradual process consisting of five stages: knowledge, persuasion, decision, implementation, and confirmation. Most MSMEs in Tanah Laut remain in the initial stages of knowledge and persuasion, where understanding and attitudes toward technological innovation are still developing. This challenge highlights the need for adaptation strategies that are not only technical but also consider the social, cultural, and psychological aspects of business actors. Rogers also emphasized the importance of individual and environmental characteristics in determining the speed and success of innovation adoption.

Previous studies have primarily focused on HR digitalization in large-scale companies or urban areas where infrastructure and digital literacy are more advanced (Misbahudin & Wahyuni, 2021; Sari et al., 2020). Meanwhile, research on HR digital adaptation strategies among MSMEs in semi-peripheral regions like Tanah Laut remains scarce. This research gap underscores the importance of context-based digital adaptation strategies, considering that MSMEs differ significantly from large enterprises in terms of resources, managerial capacity, and technological readiness.

This study aims to identify and analyze HR digital adaptation strategies adopted by MSMEs in Tanah Laut Regency, and to uncover the supporting and inhibiting factors. Using a descriptive qualitative approach, this research seeks to offer practical contributions to local policy development and MSME empowerment, as well as enrich academic discourse in the field of region-based digital human resource management. The findings are expected to serve as a reference for designing inclusive and sustainable policy interventions and digital HR support programs.

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LITERATURE REVIEW

HR Digitalization in the Era of Technological Disruption

1. The Fourth Industrial Revolution: An Unstoppable Wave of Disruption

The Fourth Industrial Revolution is not merely a trend but a digital tsunami that is fundamentally reshaping the business landscape (Schwab, 2016). In Indonesia, this transformation has been accelerated by the COVID-19 pandemic, which forced businesses to either “swim or sink” in the tide of digitalization (McKinsey, 2021). As a region with an MSME-driven economy, Tanah Laut Regency faces a dilemma: transform or be left behind.

2. HR Digitalization: From “Traditional” to “Digital Native”

HR digitalization represents a leap from conventional management to an ecosystem powered by data and include AI (Marler & Boudreau, 2017). Concrete examples:

- a) Recruitment Revolution – A shift from newspaper ads to platforms like LinkedIn and JobStreet (Stone & Deadrick, 2015).
- b) Next-Gen Training – E-learning replacing traditional face-to-face training (Noe et al., 2017).
- c) People Analytics – HR decisions now rely on data, not gut feelings (Angrave et al., 2016).

A BPS (2023) study found that only 15% of MSMEs in Tanah Laut utilize digital tools in their HR management.

3. Technology Adaptation Theory: Why Do Entrepreneurs Struggle to “Move On”?

- a) According to Rogers (2003), technology adoption is both an emotional and rational journey:
- b) Skepticism Phase – “Digitalization is too complicated!”
Curiosity Phase – “Maybe I should give it a try...”
- c) Trial & Error Phase – “This app keeps crashing!”

Digital Awareness Phase – “This actually makes work easier!”

Davis (1989) emphasized that the key to technology adoption lies in perceived ease of use—meaning the real barrier is not the technology itself, but the mental block of the user.

4. Barriers to Digitalization: A Recurring Classic

1. *"I'm too old to learn digital tools"* – Reflecting resistance to change (Kotter & Schlesinger, 2008).
2. *"Mobile data is expensive!"* – A real issue tied to infrastructure gaps (World Bank, 2020).
3. *"My employees might get lazy"* – A persistent myth in traditional management paradigms.
5. Strategic Solutions: A 'Leapfrogging' Approach for Tanah Laut's MSMEs
 - a) *"Digitalization on the Go"* – Gradual adoption starting with simple tools like WhatsApp Business (Rogers, 2003).
 - b) Triple Helix Collaboration – Synergy between government, academia, and business actors (Etzkowitz & Leydesdorff, 2000).
 - c) Digital Cadre Development – Engaging youth interns as *"digital champions"* within MSMEs (BPS, 2023).

METHOD

Type of Research

This study employs a descriptive qualitative method through a literature review approach. The aim of this approach is to collect, analyze, and synthesize various sources related to the theme of human resource (HR) digitalization, technological adaptation strategies, and challenges in the era of the Fourth Industrial Revolution, particularly within the context of business actors in Tanah Laut Regency.

This method aligns with the guidelines of Zed (2004), who states that literature studies are intended to explore theories, concepts, and empirical data from written sources to support the arguments and findings of a study.

Data Sources

The data in this study are secondary in nature and obtained from the following sources:

1. Academic reference books
2. National and international scientific journals
3. Conference proceedings
4. Reports from official institutions (e.g., Statistics Indonesia/BPS, Ministry of Manpower, Ministry of Communication and Information Technology)
5. Policy analysis articles

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Criteria for selected sources:

1. Published between 2014–2024
2. Relevant to topics such as HR digitalization, technology adaptation, and the Fourth Industrial Revolution
3. Credible and academically recognized

Examples of key references used include:

1. Davis (1989) – Technology Acceptance Model (TAM)
2. Rogers (2003) – Diffusion of Innovations (DOI)
3. Venkatesh et al. (2003) – Unified Theory of Acceptance and Use of Technology (UTAUT)
4. Schwab (2017) – *The Fourth Industrial Revolution*

Data Collection Techniques

Data were collected through the following stages:

1. Literature Search conducted through databases such as:
 - a) Google Scholar
 - b) Scopus
 - c) Science Direct
 - d) DOAJ
 - e) Garuda (Ministry of Education, Culture, Research, and Technology – Indonesia)
2. Literature Selection based on inclusion criteria:
 - a) Focused on technology adaptation or HR digitalization
 - b) Case studies involving business actors or MSMEs
 - c) Strong theoretical grounding
3. Thematic Coding of relevant readings and quotations
4. Bibliographic Documentation in accordance with proper referencing standards

Data Analysis Techniques

The data were analyzed using content analysis with a thematic approach, involving the following steps:

1. Data Reduction – Filtering out irrelevant content from the literature
2. Thematic Categorization – Classifying data into key themes:

- a) Challenges in HR digitalization
 - b) Technology adaptation strategies by business actors
 - c) Regional context of Tanah Laut
3. Synthesis – Integrating findings within a theoretical framework using TAM, DOI, and UTAUT
 4. Conclusion Drawing – Based on patterns and insights derived from the analyzed literature

Theoretical Framework

This study utilizes three major theoretical models:

1. Technology Acceptance Model (TAM) by Davis (1989), which highlights perceived usefulness and perceived ease of use as key determinants of technology adoption.
2. Diffusion of Innovations (DOI) by Rogers (2003), which explains the innovation diffusion process based on elements such as innovation characteristics, communication channels, time, and social systems.

Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003), which expands on TAM by incorporating variables such as performance expectancy, effort expectancy, social influence, and facilitating conditions.

RESULT AND DISCUSSION

Literature Review Findings

Based on a review of various academic sources, several key findings have emerged regarding the challenges and strategies of human resource (HR) digitalization in Tanah Laut, analyzed through the lens of technology adaptation theories. The results are as follows:

1. Challenges in HR Digitalization in the Era of Industry 4.0

Literature shows that business actors, particularly in the MSME sector in regions such as Tanah Laut, face three primary challenges:

- a) Limited Digital Literacy Among HR

Many workers in rural areas are unfamiliar with digital tools and cloud-based work applications. This aligns with findings by Rahayu & Day (2017), who reported that HR digitalization among Indonesian MSMEs is

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hindered by low digital competence. In the context of Tanah Laut, Fitriyani et al. (2021) noted that MSME actors associated with the Library and Archives Office still require intensive training in digital financial management, indicating a lack of basic technical skills.

b) Limited Technological Infrastructure

Uneven internet coverage and the lack of adequate hardware and software are major obstacles to digitalization. According to BPS Tanah Laut (2023), more than 30% of microenterprise areas still lack access to stable internet. Permadi et al. (2020) reported that MSMEs participating in information system training (e.g., ordering systems) struggled due to poor network connectivity, which hindered the functionality of application-based systems.

c) Resistance to Technological Change

Some entrepreneurs struggle to adapt due to limited understanding of technology's benefits. According to the Technology Acceptance Model (TAM) by Davis (1989), perceived usefulness strongly influences user intention to adopt technology. This is supported by Bandi et al. (2022), who found that many MSME actors lack a digital orientation toward profit growth and are therefore less responsive to shifts in the digital market.

2. Digitalization Adaptation Strategies by Business Actors

Despite these challenges, some MSMEs in Tanah Laut have begun implementing adaptation strategies, including:

a) Training and Improving Digital Literacy

In collaboration with the Department of Manpower and the Department of Industry, several MSMEs have participated in training on digital marketing, cashier software, and inventory management systems. Fitriyani et al. (2021) highlighted financial management training programs aimed at supporting MSME digital transformation. Additionally, Permadi et al. (2020) emphasized the importance of initial training in using simple tools like FB-Hecool to promote basic technological literacy.

b) Utilization of Local and National Digital Platforms

Entrepreneurs have begun using platforms such as Tokopedia, Lazada, and Siplah to reach broader markets. This indicates an early adoption phase as described in the Diffusion of Innovations model (Rogers, 2003), where innovators and early adopters begin to influence local communities. Bandi & Amelia (2021) noted that MSMEs in Konyit Village have started calculating the cost-effectiveness of digital media promotions as a first step toward integrating digital strategies.

c) Provision of Technological Incentives by the Government

The local government, through digitalization programs, offers subsidies for software and internet access for microenterprises. Risal et al. (2022) showed that the development of BUMDes (village-owned enterprises) in Tanah Laut has been influenced by the availability of facilities and training support provided by academic institutions and local governments.

3. Relevance to Technology Adaptation Theories

a) TAM (Technology Acceptance Model)

Many business actors have begun accepting digital technology due to its direct impact on improving efficiency and sales (perceived usefulness), though perceived ease of use remains a barrier due to limited technical skills (Davis, 1989). This is reflected in the case of Berkot Motekar MSMEs, where Bahri et al. (2023) documented early engagement with digital marketing, albeit still reliant on external training.

b) DOI (Diffusion of Innovations)

Digitalization in the region follows a gradual diffusion pattern, with some MSMEs moving into the implementation and confirmation stages, while most remain in the persuasion phase (Rogers, 2003). This is evident in the study by Suryati et al. (2020), where entrepreneurs producing dragon fruit-based dodol began adopting digital branding and packaging methods, though at a limited scale.

c) UTAUT

Performance expectancy and facilitating conditions—such as government and community support—play a crucial role in accelerating technology adoption among MSMEs (Venkatesh et al., 2003). Purnomo et al. (2024)

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found that digital market perceptions of innovation strongly influence product success, requiring rapid adaptation by MSMEs, as seen in the case of local honey packaging preferences.

Discussion

HR digitalization has become a critical component in responding to the challenges of the Fourth Industrial Revolution. The literature indicates that the digitalization process is influenced not only by technical aspects such as infrastructure but also by the readiness of human resources, organizational culture, and supportive policies.

The geographical and socio-economic conditions of Tanah Laut significantly affect the pace of technology adoption. Therefore, digitalization strategies must be adapted contextually. This aligns with Schwab's (2017) argument that industrial transformation must be inclusive and based on local capabilities.

Furthermore, technology adaptation theories such as TAM, DOI, and UTAUT provide a strong analytical framework to understand the dynamics of technology acceptance among business actors. These perspectives can guide policymakers and stakeholders in formulating more targeted strategies to enhance human resource capacity in the digital era.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the findings from the literature review, it can be concluded that the process of human resource (HR) digitalization in the MSME sector in Tanah Laut Regency faces several challenges, including low digital literacy, limited technological infrastructure, and resistance to change. These factors serve as major barriers to the effective adoption of technology in the context of the Fourth Industrial Revolution.

Nevertheless, a number of MSME actors have begun implementing adaptation strategies through digital training, the use of online platforms, and local government support in the form of technological incentives. These strategies reflect the initial stages of innovation diffusion and an increasing acceptance of digital technology.

Using theoretical frameworks such as the Technology Acceptance Model (TAM), Diffusion of Innovations (DOI), and the Unified Theory of Acceptance and Use of Technology (UTAUT), it is evident that the success of digital transformation is highly

influenced by perceived usefulness, external facilitating conditions, and the internal readiness of business actors. Therefore, HR digitalization strategies in Tanah Laut must be designed in an integrated, contextual, and sustainable manner—engaging government, academia, and local communities as active partners in building the digital capacity of MSMEs.

Recommendations

Based on the results of the literature review and the discussion on HR digitalization in the MSME sector of Tanah Laut Regency, several recommendations can be proposed to support more effective and sustainable digital transformation:

1. **Enhance Digital Literacy Through Contextual Training Programs**

Continuous and targeted training initiatives should be developed to improve digital literacy among MSME human resources. These programs must be tailored to the specific needs and capabilities of local business actors, with an emphasis on basic digital skills, digital financial management, and the use of simple digital tools. Collaboration between the government, vocational institutions, and local universities is essential to ensure the effectiveness and scalability of these initiatives.

2. **Improve Technological Infrastructure and Accessibility**

Efforts to expand and strengthen internet connectivity, especially in underserved rural and coastal areas, are critical. Local governments should prioritize infrastructure development that enables equal access to digital resources for all business actors. In addition, access to affordable hardware and user-friendly software should be facilitated, possibly through public–private partnerships and technology subsidies.

3. **Foster a Positive Digital Mindset Among MSMEs**

Awareness campaigns and mentoring programs should be launched to increase the perceived usefulness of digital tools. Business actors need to be shown the tangible benefits of digitalization through success stories, peer learning networks, and practical demonstrations. This will help reduce resistance to change and promote a more innovation-oriented culture within the MSME community.

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4. Strengthen Government Support and Policy Alignment

Local policies must be aligned with national digital transformation agendas while taking into account the unique socio-economic conditions of Tanah Laut. Government support should not be limited to subsidies, but also include incentives for MSMEs that actively engage in digital adoption. Monitoring and evaluation frameworks should be established to assess the impact of these programs over time.

5. Integrate Theoretical Frameworks into Policy Design

Policymakers and program designers are encouraged to utilize theoretical models such as TAM, DOI, and UTAUT when crafting digital transformation strategies. These frameworks provide valuable insights into the behavioral, social, and contextual factors that influence technology adoption. Their application can lead to more targeted, evidence-based interventions.

6. Promote Collaborative Ecosystems

Building a supportive digital ecosystem requires active collaboration among stakeholders, including government agencies, academic institutions, technology providers, and MSME associations. Joint initiatives such as innovation hubs, digital incubators, and business clinics can provide ongoing support, mentorship, and capacity-building resources for MSMEs at different stages of digital maturity.

By implementing these recommendations, the digitalization of human resources in Tanah Laut's MSME sector can become more inclusive, adaptive, and sustainable—ultimately contributing to regional economic resilience in the era of Industry 4.0.

REFERENCES

- Amalia, R. R., & Hairiyah, N. (2019). Marketing strategy of Bepang UD. Cap Bunga products in Pelaihari District, Tanah Laut Regency. *Journal of Agro-Industrial Technology*, 6(1), 51–60.
- Asti, A. F., & Mayasari, D. (2023). Development strategies for coastal areas in Tanah Laut Regency, South Kalimantan Province. *Marina Socio-Economic Bulletin of Marine and Fisheries*, 9(1), 49–60.
- Badan Pusat Statistik. (2022). *Statistics of MSMEs in Indonesia*. BPS–Statistics Indonesia.

- Badan Pusat Statistik Kabupaten Tanah Laut. (2023). *Tanah Laut in figures 2023*. Pelaihari: BPS.
- Bandi, M. H., & Amelia, N. (2021). Promotion cost calculation for MSMEs in Kunyit Village, Tanah Laut Regency. *Journal of Community Service (MEDITEG)*, 6(2), 89–92.
- Bandi, M. H., et al. (2022). Strengthening independent and creative economic activities through dissemination of profit improvement strategies for MSMEs in Tanah Laut Regency. *Journal of Community Service (MEDITEG)*, 7(1), 53–56.
- Bahri, N. A., Anjardiani, L., & Rifiana, R. (2023). Business analysis of Berkat Motekar in Tanah Laut Regency. *Frontier Agribusiness*, 7(3), 238–243.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
<https://doi.org/10.2307/249008>
- Dinas Koperasi dan UKM Kabupaten Tanah Laut. (2023). *2023 annual report on MSMEs*. Pelaihari.
- Fitriyani, Y., et al. (2021). Financial management training for MSMEs at the Library and Archives Office of Tanah Laut by the Accounting Study Program. *Journal of Community Service (MEDITEG)*, 6(2), 71–76.
- Kementerian Ketenagakerjaan Republik Indonesia. (2022). *Annual report on Indonesia's HR digital transformation*. Ministry of Manpower, Republic of Indonesia.
- Kementerian Perindustrian Republik Indonesia. (2022). *Making Indonesia 4.0 roadmap*. Ministry of Industry, Republic of Indonesia.
- Misbahudin, & Wahyuni, T. (2021). HR digitalization and its impact on employee productivity in manufacturing companies. *Journal of Management*, 19(2), 45–58.
- Permadi, J., et al. (2020). Training on ordering information systems and FB-Hecool tools for Zona Kopi MSMEs in Tanah Laut Regency. *J-ADIMAS: Journal of Community Service*, 8(2), 114–120.
- Purnomo, R. C., Satriadi, T., & Rahmadi, A. (2024). Conjoint analysis of consumer preferences for Madu Wana Lestari sachet packaging in Tanah Laut Regency. *Journal of Tropical Forests*, 12(1), 53–58.

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- Rahayu, R., & Day, J. (2017). E-commerce adoption by SMEs in developing countries: Evidence from Indonesia. *Eurasian Business Review*, 7(1), 25–41. <https://doi.org/10.1007/s40821-016-0065-6>
- Risal, S., et al. (2022). Business scale development of BUMDes Tritunggal Mandiri through the utilization of Martadah Baru Village's potential in Tanah Laut Regency. *Formosa Journal of Community Service*, 1(3), 269–282.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Sari, R., Nugroho, Y., & Fadillah, M. (2020). Digital HRM practices in Indonesian start-ups: Challenges and opportunities. *Journal of Human Resource Management*, 8(1), 12–20.
- Schwab, K. (2016). *The fourth industrial revolution*. World Economic Forum.
- Schwab, K. (2017). *The fourth industrial revolution*. World Economic Forum.
- Suryati, E. D., Budiwati, N., & Fajeri, H. (2020). Value-added analysis of dragon fruit dodol (*Hylocereus polyrhizus*) in Pemuda Village, Pelaihari District, Tanah Laut Regency: A case study of Berkat Motekar MSME. *Frontier Agribusiness*, 4(2), 75–82.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- Zed, M. (2004). *Library research methods*. Yayasan Obor Indonesia.