



Optimising Human Resource Information Systems in the Context of MSME Technology Management

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Abstract

This research explores the implementation of the Human Resource Information System (HRIS) in managing MSMEs, aiming to enhance operations and business development. The focus includes understanding the challenges of HRIS implementation, flexible workforce management strategies, and the benefits of adopting current technology. This research is hoped to provide valuable insights for MSMEs in leveraging HRIS for their business growth and efficiency. The research methodology used is survey design. Data was collected through a survey instrument consisting of scales to gather quantitative responses from business owners. The population of this study includes all entrepreneurs in Makassar, South Sulawesi, Indonesia, both those who have participated in government empowerment programs and those who have not. A purposive sampling technique was used to select 75 participants based on various criteria such as business type and background. The research findings affirm that optimizing HRIS in MSMEs can improve efficiency, productivity, and organizational performance. Technology-based HRM strategies, such as cloud-based software, mobile applications, and web-based platforms, can streamline HR processes and enhance workforce productivity. Human resource competencies play a crucial role in MSME development, and leveraging HRIS can optimize product and service marketing, contributing to MSME growth. The research emphasizes the importance of optimizing HRIS in MSME management. The results indicate that technology-based HRIS usage can enhance operational efficiency and workforce productivity. It is recommended that MSMEs invest in the latest HRIS technology and provide adequate employee training. These steps will support the growth and success of MSMEs in the current digital era.

Keywords: HRIS, MSME, Technology Adoption, Operational Efficiency.

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1. Introduction

The ever-changing world is where new lives and technologies are constantly being developed. These changes require organizational leaders to be aware of various types of technology that can enhance organizational effectiveness [1]. Human Resource Information Systems (HRIS) have evolved dramatically since it was first introduced over 50 years ago; they have far surpassed their original purpose of transforming paper records into computer databases. In the modern era, HR/payroll systems can handle numerous HR functions [2]. According to Pratasik and Rianto's research [3], HR software now has extensive features and is self-sufficient, not just a known data storage system. In the past, companies used to track data on paper and spreadsheets. However, with technological advancements, many companies realize the need to implement more sophisticated computerized systems, such as Human Resource Management Information Systems.

Table 1. Contribution of MSMEs to the Indonesian Economy

Indicator	Year			
	2020	2021	2022	2023
GDP (Gross Domestic Product)	61,9%	61,7%	60,3%	61,9%
Employment	97%	97%	96,9%	97%

According to data from databoks.com, Indonesia recorded the most significant number of MSMEs among ASEAN countries in 2023, reaching 65,465,500 million MSMEs. Thailand ranked second, followed by Malaysia in third place. The rapid economic growth in Indonesia is inseparable from the contribution of MSMEs to

advancing the country's economy. The government recognizes the critical role of MSMEs and has taken steps to enhance their capacity to develop into medium-sized enterprises. The assistance provided by the government can range from financial support to non-financial support. The participation of MSMEs in the country's economy significantly impacts GDP (Gross Domestic Product) growth and employment absorption [4].

Based on Table 1, it can be seen that the contribution of MSMEs to the Gross Domestic Product (GDP) from 2020 to 2023 shows stability. The same is valid for employment absorption by MSMEs over the same period, indicating consistency. However, there was a decrease in 2022, triggered by the transitional period after the pandemic, which required MSME players to adapt. Nevertheless, MSMEs have successfully absorbed a significant amount of labor, which benefits the government greatly by helping to reduce unemployment rates. The presence of MSMEs in society is an essential initial step in efforts to reduce unemployment in Indonesia [5]. Optimizing the Human Resource Information System (HRIS) in the digital era has become increasingly important due to rapid technological changes and complex market demands. Many organizations have adopted the latest technology in their HRIS, such as cloud-based software, mobile applications, and web-based platforms. Adopting this technology enables easier access, scalability, and integration with other systems. The main issue faced by MSMEs is the low quality of human resources. This includes lacking the skills, knowledge, and abilities required to manage HRIS [6] effectively. MSMEs often face resource limitations, including capital, technology, and information. This can be a barrier to implementing HRIS, which requires initial investment and adequate technological understanding [7].

Optimizing Human Resource Information Systems (HRIS) in managing Micro, Small, and Medium Enterprises (MSMEs) is crucial for enhancing operational efficiency, strategic decision-making, and overall performance. Implementing HRIS in MSMEs can streamline human resource management processes such as recruitment, training, performance evaluation, and compensation [8]. By leveraging HRIS, MSMEs can improve workforce productivity, enhance employee engagement, and ensure compliance with labor regulations [9]. This research analyzes how optimizing HRIS in managing MSMEs involves leveraging technology to improve various aspects of business operations. It also indicates that the competence of human resources plays a crucial role in developing MSMEs. Implementing technology-based HR management strategies can optimize product and service marketing, aiding in the growth of MSMEs [10].

However, the current solutions relying on Human Resource Information Systems (HRIS) in the context of technology management for Micro, Small, and Medium Enterprises (MSMEs) can provide various benefits but still lack awareness among stakeholders that optimizing HRIS will enhance efficiency, productivity, and overall organizational performance. The state-of-the-art framework concept in this research is also related to exploring the development of new platform-based business models for HR management in MSMEs. This involves creating a platform that enables MSMEs to access HR services flexibly and affordably, such as HR outsourcing, payroll management, or online training. Research has shown that HRIS is critical in enhancing human resource service delivery and contributing to organizational success [11]. However, challenges in HRIS adoption, such as resistance to change and inadequate training, can hinder its effective implementation [12]. Understanding the determinants of successful HRIS implementation and addressing barriers can help MSMEs leverage HRIS to optimize their human resource management practices.

This research also examines the specific aspects of flexible management and remote work. The study may consider strategies and technologies supporting flexible and remote work management along with the increasingly popular remote work trend. This includes online collaboration tools, project management platforms, and HRIS that are accessible from a distance. Understanding how HRIS can support remote work and flexible arrangements is crucial for MSMEs to adapt to the evolving work environment [13]. Understanding the challenges MSMEs face in implementing HRIS, such as cost, technical knowledge, and management support, can help develop solutions to overcome these barriers [14]. The results of this research are projected to provide insights into how HRIS in the current digital era encompasses adopting the latest technology, efficiency and productivity improvements, data analytics, data security, flexibility, and skill development. Organizations that effectively leverage HRIS can gain a competitive advantage in managing HR and respond quickly to market changes.

2. Research Methods

This research is a survey study aimed at gathering data from all entrepreneurs in Makassar, South Sulawesi Province, both those who have participated in government empowerment programs and those who have not. The research sample comprises 75 entrepreneurs selected through purposive sampling, considering various criteria such as the type of business and their backgrounds.

Data collection for the research utilized two types of instruments. The first instrument was a scale used to obtain quantitative responses from business practitioners. This instrument was distributed to 75 business practitioners who were respondents to the study. The second instrument was an interview guide used to generate qualitative data to support the quantitative data. The interview process was conducted with several MSME entrepreneurs.

The collected data were then analyzed using two techniques for each data type. Quantitative data were analyzed using descriptive statistical approaches, while qualitative data were analyzed using qualitative descriptive approaches. After the data were collected through the mentioned methods, it was essential to examine the validity of the data to ensure that the obtained data were reliable as the basis for the research. In this study, source triangulation was the most appropriate technique for validating the data. The method used involved 1) comparing interview data with relevant documents and 2) comparing the researcher's observations with the opinions of others, even though they were studying the same object [15].

3. Results and Discussion

Table 2. The number of MSMEs in Makassar 2023

No	Subdistrict	Number of MSMEs
1	Mariso	677
2	Mamajang	181
3	Tamalate	237
4	Makassar	399
5	Ujung Pandang	514
6	Wajo	135
7	Bontoala	461
8	Ujung Tanah	68
9	Tallo	172
10	Panakkukang	376
11	Biringkanaya	143
12	Tamalanrea	125
13	Rapoccini	528
14	Manggala	453
15	Sangkarrang	75
	Total	4544

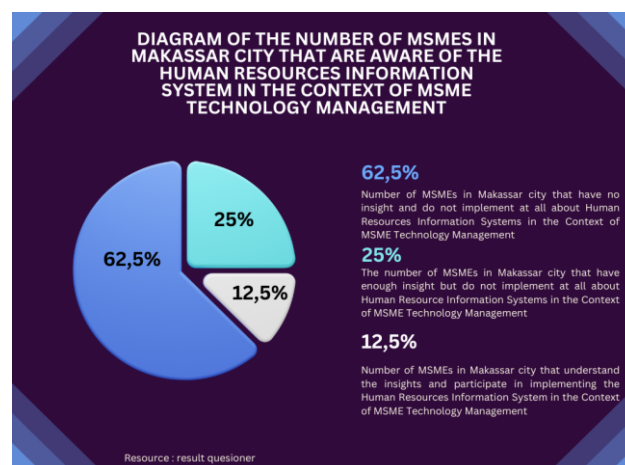


Figure 1. Diagram of the number of MSMEs aware of the Human Resource Information System in the context of MSME Technology Management

Micro, Small, and Medium Enterprises (MSMEs) have various criteria based on their development [16]; firstly, there are 'Livelihood Activities', which refer to MSMEs that serve as the primary source of income for their owners to make a living. Typically, these types of businesses are known as the informal sector, such as street vendors and similar occupations. Next, there is 'Micro Enterprise', which are MSMEs that tend to have craftsmanship characteristics but have not fully demonstrated entrepreneurial traits. Such businesses may operate on a small scale and focus on producing specific goods or services. Then, there are the 'Small Dynamic Enterprise', MSMEs with a robust entrepreneurial spirit capable of subcontracting work and entering export markets. Typically, these businesses are more dynamic and adaptable to market changes. Lastly, the 'Fast Moving Enterprise' is an MSME with a strong entrepreneurial spirit and the potential to grow into a large-scale business.

These businesses experience rapid growth and have strategies to expand their operations. Understanding the various criteria of MSMEs based on their development is essential in designing policies and empowerment programs that are suitable for the characteristics and needs of each type of business.

Table 3. Types of Business of Research Respondents

No	Type of Business	Quantity	Frequency
1	Food Stall	20	26,67%
2	Street Vendor	15	20%
3	Coffee Shop	10	13,33%
4	Clothing Boutique	20	26,67%
5	Printing Business	10	13,33%
	Total	75	100%

Table 4. Business Actors Based on Business Scale

No	Business Scale	Quantity	Frequency
1	Micro	25	33,33%
2	Small	13	17,33%
3	Medium	37	49,33%
	Total	75	100%

Table 5. Business Actors Based on Years of Establishment

No	Years	Quantity	Frequency
1	0-5 years	10	13,33%
2	6-10 years	45	60%
3	>11 years and above	20	26,67%
	Total	75	100%

Table 6. Business Actors Based on Number of Employees

No	Employees	Quantity	Frequency
1	>5 Employees	15	20%
2	6-10 Employees	10	13,33%
3	11-15 Employees	35	46,67%
4	16-20 Employees	7	9,33%
5	>20 Employees	8	10,67%
	Total	75	100%

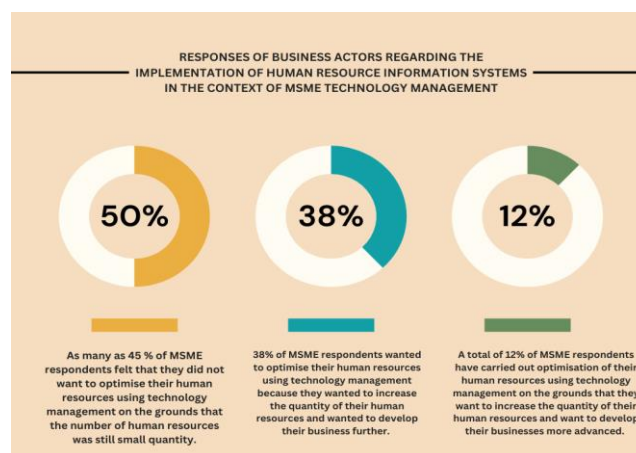


Figure 2. Business Owners' Responses Regarding the Implementation of Human Resource Information Systems in the Context of MSME Technology Management

The Importance of Human Resource Information System Optimization in MSMEs

Based on the findings of this research, it can be explained that the importance of optimizing Human Resource Information Systems (HRIS) in Micro, Small, and Medium Enterprises (MSMEs) lies in the fact that optimized HRIS can enhance the operational efficiency of MSMEs by automating various HR-related processes such as payroll, employee administration, attendance management, and employee data management. This reduces administrative workload and allows for greater focus on core business activities. The research also identifies a phenomenon of low awareness among MSME operators regarding productivity levels; while providing easy and fast access to information related to employees, training, and performance, an optimal HRIS helps improve workforce productivity in MSMEs. Well-organized information enables managers to make quicker and more accurate decisions.

Analysis of this research provides information that by providing comprehensive data and analysis regarding employees and HR policies, optimized HRIS assists MSME managers in making better decisions. They can use this data to effectively plan employee development strategies, performance evaluations, and human resource allocation. Furthermore, a sound HRIS system greatly supports employee development in MSMEs by providing training tracking, competency management, and performance evaluation features. This helps enhance employee motivation and engagement, ensuring they have the necessary skills and knowledge to achieve company goals.

Compliance with regulations by providing features such as secure employee data management, company regulation management, and optimized HRIS helps MSMEs comply with various HR-related rules and laws. This reduces the risk of legal issues and penalties arising from regulatory violations. Finally, by optimizing HRIS, MSMEs can enhance their competitiveness in the market by having a more efficient, skilled, and organized workforce. This helps them to grow and sustain themselves in an increasingly competitive business environment.

Optimizing human resource information systems (HRIS) in micro, small, and medium enterprises (MSMEs) significantly enhances their performance and competitiveness. Various studies emphasize the crucial role of information systems in different aspects of MSMEs. For example, accounting information systems can provide comprehensive and structured information about MSMEs' business and finances [17]. The use of information systems in the era of globalization is crucial for enhancing micro, small, and medium enterprises, especially in an environmentally friendly context [18]. Additionally, the implementation of information systems can assist MSMEs in improving product sales through web-based e-commerce. With optimal information systems, MSMEs can expand market reach and increase production, revenue, and operational efficiency [19]. The importance of accounting information systems is also reflected in improving profitability, company performance, operational efficiency, quality of financial reports, and efficiency in budgeting and financial reporting [20]. Therefore, optimizing HRIS in MSMEs helps operational efficiency and enhances the competitiveness and overall business growth.

Integration between HR and Technology

Based on the observations of this research, the integration between Human Resource Information Systems (HRIS) and technology encompasses the use of information and communication technology (ICT) to support HR management functions. Integrating human resources (HR) and technology in micro, small, and medium enterprises (MSMEs) is crucial to enhancing competitiveness and operational efficiency. Various studies highlight the importance of this integration in the context of MSME development. For example, research indicates that information and communication technology can support entrepreneurial strategic orientation in MSMEs to innovate and compete competitively [21].

The application of information technology can also assist MSMEs in facing business challenges in the digital era, where MSMEs need to adapt and be dynamic in technological developments to remain relevant and competitive [22]. Furthermore, information technology can enhance the digital marketing of MSMEs, such as through digital marketing and e-commerce, which can help MSMEs expand market reach and increase product sales [23].

The integration between HR and technology can also be observed from the aspect of supply chain management. Information technology in supply chain integration can improve the overall chain performance [24]. Additionally, information technology can aid in information exchange and supply chain integration, enhancing the performance of MSME supply chains. Therefore, the integration between HR and technology in MSMEs helps improve operational efficiency and competitiveness, expands market access, increases sales, and enhances overall supply chain performance.

Optimization Strategies for Human Resources in MSMEs

Research observations show that in a competitive business environment, Micro, Small, and Medium Enterprises (MSMEs) need to have skilled and competent teams to compete effectively. Human resource (HR) optimization strategies can help enhance employees' skills and knowledge, improving the company's competitiveness. HR optimization strategies can also help shape a positive company culture where employees feel valued, supported, and motivated to contribute maximally. Various methods can be implemented to improve human resources in MSMEs based on findings from several studies. One crucial aspect is the development and utilization of digital tools and platforms. This includes enhancing digital marketing models [25], providing training in Facebook marketing, implementing product photo content strategies [26], and integrating digital marketing for product information and promotion [27].

Furthermore, government support and policies are crucial in optimizing MSMEs. The vital role of political willingness in the endeavors of local governments is to enhance MSMEs [28]. Additionally, continuous government support is paramount in fortifying MSMEs as the cornerstone of national economic development [29]. Enhancing human resource management is pivotal for ensuring the sustainability of MSMEs.

In conclusion, a multi-dimensional approach involving digitization, government support, and human resource development strategies is crucial for optimizing human resources in MSMEs. By implementing these strategies, MSMEs can enhance competitiveness, adaptability, and overall performance in a challenging business environment. HR optimization strategies can help shape a positive company culture where employees feel valued, supported, and motivated to contribute maximally. In an ever-changing era, MSMEs must have adaptive and flexible human resources to face market, technological, and regulatory changes. HR optimization strategies can help prepare employees for these changes.

Challenges and Opportunities in Implementing Human Resource Information System Optimization within the Context of Technology Management for MSMEs

In the realm of human resource management in micro, small, and medium enterprises (MSMEs), various challenges and opportunities arise through optimizing human resource information systems (HRIS) within the technology management framework. Implementing HRIS in MSMEs must address technical barriers, privacy issues, government regulations, and social skepticism related to technology adoption [30]. Additionally, technical issues and implementation challenges can result in failures in Enterprise Resource Planning (ERP) systems in MSMEs [31]. However, proactive MSMEs can leverage resources and capabilities to accelerate the implementation of Industry 4.0 technology, maximizing its benefits.

Overall, implementing HRIS in MSMEs within the domain of Technology Management poses challenges that can be overcome through proactive steps and utilization of available resources. By understanding and mitigating these challenges, MSMEs can harness the opportunities of Industry 4.0 technology and enhance their overall and sustainable performance. The findings of this research summarize the challenges and opportunities identified from data analysis and previous research studies as follows:

Implementing human resource information system optimization (HRIS) in the context of technology management for MSMEs brings unique challenges and opportunities. Here are some of them:

Table 7. The Challenges of Implementing HRIS in Technology Management for MSMEs

Challenges		
1	Resource Limitations	MSMEs often face limited budgets and technological infrastructure, making implementing HRIS a significant challenge.
2	Lack of Technological Skills	Many MSMEs lack personnel trained in information technology; thus, adopting HRIS requires additional training and skill development investment.
3	Data Security Concerns	In managing sensitive employee information, such as salaries and personal data, MSMEs must ensure that their HRIS system has adequate security protection.
4	Employee Acceptance Level	Implementing HRIS can trigger resistance from employees unfamiliar with technology or concerned about its impact on their jobs.
5	Alignment with Business Needs	Each MSME has unique needs, and HRIS should be designed and configured in such a way as to align with their specific business requirements.

Table 8. The Opportunities of Implementing HRIS in Technology Management for MSMEs

Opportunities		
1	Enhanced Efficiency and Productivity	HRIS can help MSMEs automate HR administrative processes such as attendance management, payroll, and performance evaluations, thus enhancing overall efficiency and productivity.
2	Data-Driven Decision Making	With HRIS, MSMEs can collect and analyze employee data, enabling better and more strategic decision-making.
3	Accessibility of Cloud Solutions	Cloud-based HRIS solutions can be affordable for MSMEs, as they eliminate the need for expensive physical technology infrastructure.
4	Scalability and Flexibility	HRIS can quickly scale with MSME growth, allowing companies to adjust the system according to their current and future needs.
5	Improved Employee Experience	Through HRIS, MSMEs can enhance employee experience by providing self-service access to important information about company policies, benefits, and career development opportunities.
6	Enhanced Communication and Collaboration	Through HRIS, MSMEs can enhance employee experience by providing self-service access to important information about company policies, benefits, and career development opportunities.

By taking into account the challenges faced and leveraging existing opportunities, MSMEs can successfully implement HRIS in their technology management to enhance efficiency and productivity and improve employee satisfaction.

4. Conclusion

Based on the research findings, it can be concluded that the Human Resource Information System (HRIS) plays a vital role in enhancing efficiency and overall organizational performance, especially in the context of Micro, Small, and Medium Enterprises (MSMEs). MSMEs significantly impact economic growth and employment absorption in Indonesia, and government support is crucial to facilitate the development of MSMEs into medium-sized enterprises through financial and non-financial assistance. Although essential, MSMEs face several challenges in adopting HRIS, such as resource limitations and low human resource quality. However, with modern technologies such as cloud-based software and mobile applications, the accessibility and integration of HRIS can be improved. The success of HRIS implementation requires a deep understanding of success determinants and addressing potential barriers, such as resistance to change. Flexible management and remote work trends are becoming increasingly popular, and online collaboration tools and HRIS accessible from a distance can support MSMEs' adaptation to changes in the work environment. Therefore, developing appropriate solutions for the MSMEs' conditions is essential, considering limitations such as costs and management support. By effectively utilizing HRIS, organizations can achieve a competitive advantage in managing human resources and responding quickly to market changes.

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