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Digital Talent Management for Enhancing Organizational Agility in Manufacturing

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| Abstract	In the era of rapid digitalization, manufacturing companies are under pressure to enhance organizational agility to remain competitive and responsive to market dynamics. This study analyzes how digital talent management strategies strengthen agility in manufacturing firms. A mixed-method approach was employed: quantitative data were gathered from 150 employees via structured surveys, and qualitative insights were obtained from in-depth interviews with HR managers in leading Indonesian manufacturing companies. The research examines four key digital HR practices—digital recruitment, e-learning platforms, performance analytics, and workforce planning. Findings reveal that comprehensive implementation of digital talent management significantly improves organizational flexibility, responsiveness, and adaptability, while integration with strategic planning aligns human resource capabilities with organizational objectives. The study contributes empirical evidence on the relationship between digital HR practices and organizational agility in emerging markets. Practically, it provides actionable recommendations for HR managers and executives to design digital talent strategies that enhance workforce performance, support innovation, and accelerate decision-making. This study offers a novel contribution by presenting a holistic framework of digital talent management in the Indonesian manufacturing context.
Keywords:	Digital Talent Management, Organizational Agility, Manufacturing Companies, Human Resource Management, Digital HR

INTRODUCTION

Manufacturing companies in Indonesia face a major challenge in improving organizational agility to remain competitive amid rapid and uncertain global market dynamics. Digital transformation is a key enabler of flexibility and responsiveness, particularly in addressing shifting market demands, technological disruption, and global competition. According to data from the Indonesian Manufacturing Industry Survey (2023), the percentage of manufacturing companies adopting electronic HR systems (e-HRM) increased from 35% in 2019 to 68% in 2023, while companies providing digital training programs increased from 28% to 62% during the same period (Table 1).

Table 1. Trends in the Adoption of e-HRM and Digital Training in Indonesian Manufacturing Companies (2019–2023)

Year	e-HRM (%)	Digital Training (%)
2019	35	28
2020	42	33
2021	50	41
2022	61	55
2023	68	62

According to the Ministry of Communication and Information of the Republic of Indonesia, the government targets to produce 100,000 digital talents by 2025 through the Digital Talent Scholarship (DTS) program. This growth illustrates increasing awareness of digitalization in HR, yet the partial and fragmented implementation highlights the opportunity for a more integrated digital talent management strategy to enhance organizational agility.

Human resources are a vital factor in supporting agility. Organizations that leverage digital HR practices—such as electronic recruitment, online training, and performance analytics—can enhance efficiency and responsiveness. However, empirical studies focusing on Indonesian manufacturing remain scarce. Priyanto et al. (2025) reveal that effective talent management strengthens digital leadership competencies through learning organizations in state-owned enterprises.

Figure 1. Trend of e HRM Adoption and Digital Training in Indonesian Manufacturing Companies (2019-2023)
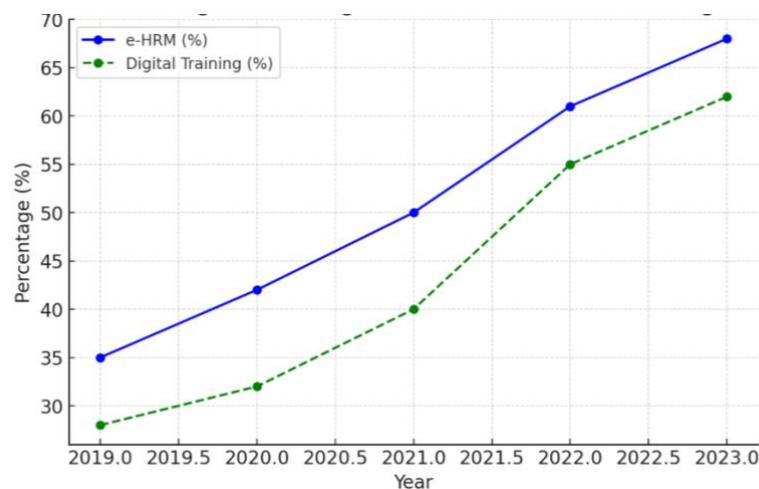
Previous research emphasizes that digital HR and digital leadership play an important role in improving organizational agility. A study by Aminudin et al. (2024) shows that the implementation of electronic HR systems supports continuous innovation and competitive advantage. Meanwhile, Zhu & Yu (2024) emphasize the role of digital leadership in building employees' adaptive capacity to technological change. Nevertheless, most research isolates technology or leadership as separate dimensions, without integrating them into a comprehensive digital talent management framework to enhance agility holistically.

Research Gap and Novelty: This study addresses the gap by proposing an integrative framework that unites technology-driven HR practices with leadership development. Unlike

prior studies that treat e-HRM and digital leadership in isolation, this research emphasizes their combined role in shaping organizational agility in Indonesian manufacturing. This novelty positions the study as a unique contribution to both theory and practice.

The focus includes digital recruitment, e-learning, performance analytics, and technology-based workforce planning. A mixed-method approach was adopted, combining survey data from 150 employees with in-depth interviews with HR managers from leading Indonesian manufacturing companies. This design is expected to yield a comprehensive view of best practices and barriers in digital talent strategy implementation.

The objective of this study is to empirically analyze how digital talent management strategies enhance agility and to identify the most effective practices in manufacturing. Additionally, the study explores the dynamic relationship between digital HR practices, talent management strategies, and organizational responsiveness in uncertain markets.

The contributions are both theoretical and practical. Practically, the study provides HR managers and executives with actionable guidance for developing digital talent strategies that improve agility. Theoretically, it enriches literature on the nexus of digital talent management and organizational agility in emerging economies. By incorporating empirical data in the form of tables and graphs, this study strengthens the foundation for a strategic framework applicable across industries—supporting innovation, rapid decision-making, and long-term competitiveness in the digital age.

METHOD
Types and Approaches to Research

This study uses a mixed-method *approach* with an explanatory sequential model. This approach was chosen because it can combine the advantages of quantitative methods in measuring the relationship between variables with qualitative methods that are able to explore a deeper understanding of the context of digital talent management practices (Creswell & Plano Clark, 2021; Fetters, 2020).

Population and Sample

The research population is employees of manufacturing companies in Indonesia that have implemented digital-based *Human Resource* (HR) practices. From this population, 150 employee respondents were selected through purposive sampling *techniques* (Etikan, 2020). Sample criteria include:

1. Have worked for a minimum of two years in a manufacturing company.
2. Be involved in processes or policies related to digital HR management.

In addition, in-depth interviews were conducted with 5 HR managers from leading manufacturing companies who were selected using expert sampling *techniques*, because they were considered to have relevant knowledge and experience on digital talent management strategies (Palinkas et al., 2021).

Research Instruments

1. The quantitative instrument is a structured questionnaire consisting of a Likert scale of 1–5 to measure indicators: digital recruitment, e-learning platforms, performance

analytics, and digital workforce planning. This scale was chosen because it effectively measures respondents' attitudes and perceptions (Joshi et al., 2021).

2. The qualitative instrument is a semi-structured interview guide used to explore the experiences, strategies, and challenges of HR managers in implementing digital talent management practices (Kallio et al., 2021).

Data Collection Techniques

1. An online survey of 150 employees using Google Forms to facilitate the distribution and efficiency of data collection (Wright, 2022).
2. In-depth interviews with HR managers using Zoom/Google Meet media recorded with the permission of the resource person (Archibald et al., 2021).
3. Documentation in the form of internal company reports and official publications related to the implementation of digital HR as supporting secondary data.

Research Procedure

1. Preparation stage: preparation of questionnaire instruments and interview guides, as well as content validity tests by two HR management experts.
2. Data collection stage: distribution of questionnaires to employees and conduct interviews with HR managers.
3. Data analysis stage: quantitative data is analyzed first, then the results are deepened through qualitative data to gain a comprehensive understanding.
4. Triangulation stage: comparing survey results, interviews, and documentation data to improve the validity of the research (Fusch et al., 2022).

Data Analysis Techniques

1. Quantitative Analysis: Data from 150 questionnaires were processed using the Statistical Package for the Social Sciences (SPSS). The analysis included validity, reliability, descriptive analysis, and multiple linear regression tests to see the influence of digital talent management strategies on organizational agility (Hair et al., 2022).
2. Qualitative Analysis: Interview data were analyzed by thematic analysis *techniques* through the stages of transcription, categorization, coding, and drawing of the main theme (Braun & Clarke, 2021).
3. Data integration is carried out by combining quantitative and qualitative results to provide a comprehensive picture of digital talent management practices and their impact on organizational agility (Plano Clark & Ivankova, 2022).

Research Ethics

This study adhered to research ethics principles to ensure the protection of participants. Informed consent was obtained from all respondents prior to participation, clearly explaining the purpose of the research, procedures, and the voluntary nature of involvement. Confidentiality was maintained by anonymizing personal information and ensuring that data were used solely for academic purposes. Participants were also informed of their right to withdraw from the study at any stage without any consequences. Ethical clearance was sought

from the institutional review board to guarantee compliance with academic and professional standards (Resnik, 2020).

RESULTS AND DISCUSSION
Research Results
Characteristics of Respondents

A total of 150 employees from five manufacturing companies in Indonesia participated in this study. Respondents consisted of 81 males (54%) and 69 females (46%), with the majority aged 25–35 years (58%). As many as 42% of employees have worked for more than 5 years, which shows that respondents relatively understand the organizational conditions and practices of digital HR management. In terms of positions, 63% are operational staff, 27% are supervisors, and 10% are line managers.

These findings confirm that the sample represents cross-level perceptions in manufacturing companies, providing a solid foundation for analyzing digital HR practices in relation to organizational agility.

Table 2. Distribution of Respondents by Demographic Characteristics

Variable	Category	Frequency	Percentage (%)
Gender	Man	81	54
	Woman	69	46
Age	25–35 years old	87	58
	36–45 years old	40	27
	>45 years old	23	15
Long Time Working	< 2 years	35	23
	2–5 years	53	35
	> 5 years	62	42
Position	Operational staff	95	63
	Supervisor	41	27
	Line manager	14	10

Implementation Rate of Digital HR Practices

The survey results show that the implementation of digital HR practices is relatively good. Digital recruitment obtained the highest score (M = 4.21), followed by performance analytics (M = 4.05), e-learning platforms (M = 3.95), and digital workforce planning (M = 3.82).

The ranking suggests that companies prioritize talent acquisition and performance monitoring, while investment in workforce planning lags behind. This uneven adoption highlights the need to integrate all dimensions to maximize organizational agility.

Table 3. Digital HR Practice Average Score (Scale 1–5)

Indicators	Average	Category
Digital Recruitment	4.21	Tall
Platform E-learning	3.95	Quite High
Performance Analytics	4.05	Tall
Workforce Planning	3.82	Quite High

Analysis of the Relationship with Organizational Agility

The results of multiple linear regression showed that the four digital HR indicators had a significant effect on organizational agility ($p < 0.05$). The digital recruitment variable had the greatest influence ($\beta = 0.312$), followed by performance analytics ($\beta = 0.298$), e-learning platforms ($\beta = 0.285$), and workforce planning ($\beta = 0.244$).

These findings indicate a clear hierarchy: recruitment and analytics are the most immediate enablers of agility, while workforce planning remains underdeveloped but still significant. The comparison shows that fast talent acquisition (recruitment) and informed decision-making (analytics) complement longer-term strategies such as learning and workforce planning.

Table 4. Regression Analysis Results

Independent Variables	β (Beta)	Sig.	Interpretation
Digital Recruitment	0.312	0.000	Have a significant positive effect
Platform E-learning	0.285	0.002	Have a significant positive effect
Performance Analytics	0.298	0.001	Have a significant positive effect
Workforce Planning	0.244	0.004	Have a significant positive effect

In-Depth Interview Findings

The results of interviews with five HR managers enriched the quantitative analysis. The three main themes that emerge are:

1. **Integration of Digital HR with Business Strategy**
   Managers emphasize that digital HR dashboards provide real-time information on performance, attendance, and turnover. This allows for quick decision-making that aligns with production needs.
   "With a digital HR system, we can immediately see trends in productivity and attendance, so that labor allocation decisions are more accurate and faster." (HR Manager A, Interview, 2025)

2. **Implementation Challenges**
   The main barriers are the digital literacy of lower-level employees and the cost of developing the system. Some companies have to repeat the training for adoption to be effective.
   "The problem is not the technology, but the readiness of human resources. There are employees who are still digital stuttering, so intensive assistance is needed." (HR Manager B, Interview, 2025)

3. **Impact on Organizational Agility Digital**
   HR helps to adjust the workforce faster when market demand fluctuates. For example, a digital workforce planning system is able to accelerate employee shift rotations as production volumes increase.
   "When demand surges, the system immediately simulates the need for additional labor. It makes us more responsive to the market." (HR Manager D, Interview, 2025)

Discussion

Digital Recruitment as a Driver of Organizational Agility

The results of this study show that digital recruitment is the most dominant factor in increasing organizational agility, with a β coefficient value of 0.312 and a significance of

0.000. This indicates that the higher the level of technology utilization in the hiring process, the greater its contribution to the organization's agility in responding to market dynamics. Technology-based recruitment systems allow manufacturing companies to acquire candidates with appropriate competencies in a relatively short time, so that companies can quickly adapt workforce capacity to changes in production demand.

In addition to quantitative data, the results of interviews with HR managers also confirm the benefits of digital recruitment. One of the managers stated that the use of *the Applicant Tracking System* (ATS) speeds up the selection process, from file screening to online interview scheduling. This process not only saves time, but also improves the quality of candidates entering the final stage of selection. Thus, HR can focus more on the strategic aspect, while the digital system handles the administrative aspect of hiring.

These findings are in line with the research of Priyanto et al. (2025) which emphasized that technology-based talent management is able to improve digital leadership competencies through accelerating the selection and placement process of employees. The research of Aminudin et al. (2024) also strengthens this argument by showing that the implementation of e-HRM systems promotes the sustainability of innovation and increases competitive advantage. In a global context, a study by Bondarouk & Brewster (2022) confirms that digital recruitment is the main strategy for companies to maintain competitiveness, especially in sectors with fluctuating labor needs such as manufacturing.

The practical implication of these findings is that manufacturing companies need to allocate greater investment to digital-based hiring systems. By improving ATS capabilities, integrating *AI-based recruitment tools*, and expanding the use of online platforms, companies can accelerate the acquisition of quality talent. This in turn will strengthen the agility of the organization, as the company is able to respond to market demands with human resources that are in accordance with their competencies and ready to adapt.

The Role of E-Learning in Improving Employee Competencies

The survey results show that the e-learning platform obtained an average score of 3.95, which is in the category of quite high. This figure shows that manufacturing companies are starting to seriously utilize technology-based learning to improve employee skills. However, this score is still lower than digital recruitment and performance analytics, indicating that the implementation of e-learning is not yet fully optimal. Some companies are still in the transition stage, where conventional training still dominates, even though it is equipped with online modules.

From the results of the interviews, the majority of HR managers emphasized that e-learning provides easy access to flexible learning. Employees can take part in training at any time without having to leave operational duties in the factory. However, digital literacy constraints among operational staff are the main obstacles. An HR manager mentioned that the training had to be repeated several times because some employees had difficulty using the system. This condition shows that technology alone is not enough; The success of e-learning is also highly determined by the readiness of human resources.

These findings are supported by research by Zhu & Yu (2024) which confirms that digital leadership plays an important role in building employee adaptation capacity through technology-based learning. The Navas-Bonilla et al. (2025) study also shows that

technology-based education encourages digital inclusion and expands access to new competencies, especially in organizations with diverse workforces. In addition, Noesgaard & Ørngreen (2021) emphasize that the effectiveness of e-learning is strongly influenced by interactive instructional design, not just the availability of digital platforms. Thus, the adoption of e-learning in the context of manufacturing should not stop at the provision of systems, but should be accompanied by the right pedagogical strategy.

Practically, e-learning has great potential to strengthen organizational agility if it is strategically integrated. Manufacturing companies need to ensure that training materials are appropriate to the latest competency needs, such as basic digital skills, technology-based work safety, and the use of production analytics tools. In addition, top management's support in creating a culture of continuous learning will accelerate the adoption process. With this strategy, e-learning not only improves individual skills, but also contributes to the resilience of organizations in the face of rapid market changes.

Performance Analytics and Decision-Making Speed

Quantitative results show that performance analytics have a significant influence on organizational agility ($\beta = 0.298$; $p = 0.001$). This value shows that the use of digital employee performance data helps manufacturing companies in accelerating decision-making processes related to HR management. A digital dashboard that contains information on productivity, attendance, and turnover rates allows HR and line managers to get a complete picture in no time. This becomes important when companies face sudden changes in market demand and must immediately adjust labor capacity.

The interview findings also reinforce these quantitative results. HR managers say that the use of HR analytics makes it easier to identify low-performing employees so that training or repositioning interventions can be provided immediately. In addition, the analytics system helps project the labor needs for short-term projects. One of the managers emphasized that data analytics not only provides historical information, but also serves as the basis for predicting future labor needs. Thus, HR analytics becomes a strategic instrument that strengthens the organization's responsiveness.

The results of this study are in line with previous literature. Wirtz et al. (2023) affirm that HR analytics supports continuous innovation because it allows organizations to more accurately identify performance patterns and skill needs. Margherita's (2021) research also shows that data-driven decision-making improves organizational agility because it reduces reliance on mere intuition. In addition, the Minbaeva study (2022) found that organizations that integrate HR analytics with business strategies experienced an increase in the speed of response to market uncertainty. This shows that performance analytics is not just an administrative tool, but also a strategic foundation of agility.

Practically, manufacturing companies in Indonesia can leverage performance analytics to strengthen their HR planning processes. For example, the use of predictive analytics to project labor needs in peak production seasons can help companies adjust the number of employees more precisely. However, the successful implementation of performance analytics is highly dependent on the quality of the data available and the competence of managers in interpreting the results. Therefore, investment in data governance and improving data literacy among HR managers needs to be a priority for performance analytics to truly function as a driver of organizational agility.

Digital Workforce Planning for Operational Flexibility

The survey results show that digital workforce planning obtained the lowest average score (M = 3.82) compared to the other three dimensions of digital HR. However, regression analysis proved that this variable still significantly affected organizational agility (β = 0.244; p = 0.004). This means that even though its implementation has not been maximized, technology-based workforce planning systems have an important contribution to increasing the flexibility of manufacturing companies. This data indicates that companies are beginning to realize the importance of technology integration to manage employee allocation, although it still faces limitations in terms of full adoption.

From the interviews, HR managers emphasized that digital systems help to create more adaptive work schedules, especially when there is a surge in production demand. One of the managers explained that the digital planning system provides a simulation of additional labor needs when production volume increases, so that companies can immediately add shifts or redistribute employees. This speeds up the organization's response and reduces the risk of production delays. However, the obstacles that arise are the cost limitations to develop the system as a whole, as well as the resistance of some employees to changes in technology-based work patterns.

These findings are in line with research by Bamel et al. (2021) which confirms that technology-based workforce planning improves the organization's ability to anticipate market fluctuations. Research by Rahman & Putri (2022) also found that companies in developing countries face barriers in fully integrating digital planning systems, mainly due to limited financial resources and traditional organizational culture. Meanwhile, the study by Shamim et al. (2020) shows that the integration of digital workforce planning supports organizational agility by creating a workforce that is more flexible and adaptable to changing business needs.

The practical implication of these findings is that manufacturing companies need to develop a phased strategy in the implementation of digital workforce planning. Investing in cloud-based workforce management systems as well as training to improve employees' digital literacy will accelerate successful adoption. In addition, top management support in integrating this system with organizational strategic planning is indispensable for workforce flexibility to truly become a competitive advantage. Thus, although digital workforce planning is still in its early stages, its potential to increase organizational agility is very large if managed systematically and integrated

CONCLUSION

This research proves that digital talent management strategies play a significant role in increasing organizational agility in manufacturing companies in Indonesia. Quantitative results show that all four dimensions of digital HR practices—digital recruitment, e-learning, performance analytics, and digital workforce planning—have a positive effect on organizational agility, with the largest contributions coming from digital recruitment and performance analytics. Qualitative findings from in-depth interviews reinforce these results by confirming that the implementation of digital HR accelerates decision-making, increases the flexibility of labor allocation, while supporting innovation in HR management.

Theoretically, this study adds empirical evidence regarding the relationship between digital HR practices and organizational agility in the context of developing countries,

particularly in the manufacturing industry. This research complements previous studies that tended to separate the focus on the technology or digital leadership aspects, by offering a holistic perspective on digital talent management strategies.

In practical terms, the findings highlight important managerial implications. HR managers and executives should prioritize investments in digital recruitment systems and data-driven performance analytics, while simultaneously building a culture of continuous learning through e-learning and strengthening workforce planning capabilities. At the policy level, governments and industry associations can play a role by providing digital literacy programs and subsidizing technology adoption to accelerate transformation in the manufacturing sector.

Theoretically, this study contributes by integrating technological and leadership perspectives into a unified framework of digital talent management, thereby enriching the discourse on organizational agility within emerging economies. The findings support and extend the Resource-Based View and Dynamic Capability Theory by demonstrating how digital HR practices can serve as strategic assets that enhance resilience and competitiveness.

However, this research is not without limitations. The sample size is limited to 150 employees and five HR managers from Indonesian manufacturing firms, which may restrict the generalizability of the findings across different industries or countries. The cross-sectional design also limits the ability to capture changes in agility over time. Future studies could adopt longitudinal methods, expand the sample to include diverse sectors, and explore comparative perspectives between developed and developing markets.

With the implementation of an integrated strategy, manufacturing companies can not only increase flexibility and responsiveness, but also build organizational resilience that is able to maintain a competitive advantage in a complex and dynamic business era. Overall, this study underscores that digital talent management is no longer an option but a strategic imperative, both for sustaining competitiveness and for shaping the future of work in Indonesia's manufacturing industry.

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