

Investigating electronic human resource management systems, sustainable innovation, and organizational agility on sustainable competitive advantage in the manufacturing industries

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ABSTRACT

This research aimed to analyze the relationship between electronic human resources (e-HRM) and sustainable competitive advantage, organizational agility and sustainable competitive advantage, and sustainable innovation and sustainable competitive advantage in the manufacturing industry in Indonesia using a quantitative approach. The population of this research was managers of manufacturing companies in Indonesia. A total of 800 online questionnaires were sent using a simple random sampling method and 540 valid questionnaires were received. The questionnaire contains statement items using a Likert scale from 1 to 7. To measure the structural model and to test research hypotheses, the research used the PLS-SEM method with WarPLS 7.0 software. The stages of data analysis in this research were reliability and validity tests, significance tests and hypothesis testing. This research concludes that e-HRM had a positive and significant relationship with sustainable competitive advantage, Organizational Agility had a positive and significant relationship with sustainable competitive advantage and sustainable innovation has a positive and significant relationship with sustainable competitive advantage. The research emphasizes that e-HRM practices encourage sustainable innovation and organizational agility to achieve competitive advantage. The study also provides a more comprehensive understanding that e-HRM practices contribute to sustainable competitive advantage by driving continuous innovation and strengthening organizational agility. The research emphasizes the importance of utilizing digital technology for human resource management (HRM) processes, organizations must implement digital transformation by adopting e-HRM practices to increase manufacturing efficiency and effectiveness thereby increasing performance and competitiveness. This research encourages companies to increase continuous innovation to increase sustainable competitiveness.

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1. Introduction

The change in the industrial era from 4.0 to 5.0 is currently causing many organizations to be unable to survive and compete. Competition continues to increase and coupled with consumer demands that are so fast in following changes, this will make every organization have to be able to adapt quickly too (Abdulraheem et al., 2020). Electronic human resource management (e-HRM) is the decentralization of human resource (HR) functions for management and employees, but at the same time, the use of e-HRM which has various functions can be carried out with technology to develop its full potential. In general, e-HRM

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is believed to provide several key benefits to organizations, such as increasing efficiency and reducing costs associated with human resource management (HRM), facilitating a shift in the role of HR to a more strategic level and improving client service, from administrative handling of entities using paper and pencil and HR tasks labor intensive (Malkawi, 2018). e-HRM applications can be used to carry out various functions in HRM such as recruitment, selection, performance management, and payroll administration. Most studies on e-HRM were carried out by various researchers in developed countries (Al Mashrafi et al., 2020). The large gap in the market environment and management mechanisms between developed and developing countries may lead to different findings on e-HRM. To respond to the gap in the literature, this study examines the factors that influence users' continued use of e-HRM by trying out alternative models. We propose that e-HRM continued use intention is not only influenced by satisfaction, but also by other factors such as perceived innovativeness, and other factors.

One of the most common ways a manufacturing company can use to determine its advantage over its competitors is by comparing profits. If one manufacturing consistently outperforms its competitors, it may have a sustainable advantage over them and competitive advantage is what a manufacturing or department provides for doing better than others (Alabaddi et al., 2020). The sustainable part refers to the ability to continue doing those things over the long term. Companies can have more than one advantage and can also develop other advantages. Sustainable competitive advantage is an organizational strength that is unique to an organization. Competitive advantages are not easy to create or imitate. If they are easy to create or copy, they may be a growth opportunity (Adomako et al., 2020). Sustainable competitive advantage is long-term, which means it takes time for competitors to copy it. Continuous innovation is the key to ensuring a responsible and sustainable future. Without these innovations, we may face the uncontrolled impacts of climate change, biodiversity decline, and social disharmony. Sustainable investment has been increasing in recent years (Alkerdawy et al., 2016). This increase in investment reflects the global public's interest in the efforts of companies and governments to achieve sustainability goals. Therefore, sustainable innovation is receiving increasing attention as an important tool for achieving sustainable development goals. Nowadays, sustainability issues are increasingly becoming a major concern for various parties, including business actors. Future challenges related to environmental and sustainability issues in the energy sector are also a concern. This is inseparable from increasing awareness of the importance of preserving the environment and the social impacts caused by business activities (Girisha et al., 2019). This research aims to analyze the relationship between e-HRM and sustainable competitive advantage, organizational agility and sustainable competitive advantage, sustainable innovation, and sustainable competitive advantage in the manufacturing industry in Indonesia.

2. Literature Review and Hypothesis Development

2.1 *Electronic – Human Resource Management (EHRM)*

e-HRM is a web-based tool that automatically supports human resources processes (Davoudi & Fartash, 2012). Choochote et al. (2015) explained that e-HRM is a set of innovative methods that function to overhaul traditional systems in organizations to improve human resource performance and provide a competitive advantage for the organization. Meanwhile according to Girisha et al. (2019), e-HRM is an administrative support for the human resources function in an organization using information and communication technology. Another definition of e-HRM is an application of information and communication technology that supports quality human resource activities and helps organizations improve business processes and competitive advantages (Gupta et al., 2013). Based on several definitions of e-HRM, it can be concluded that e-HRM is a tool or method based on new information and communication technology which aims to implement human resource strategies, policies and practices in organizations that can help the organization improve its business processes and competitive advantage. In practice, this involves planning, implementing, and using information systems that have the function of helping people involved in human resource management (Choochote et al., 2015). The use of information technology is increasingly popular and is considered important for automation, replacing traditional methods of using paper with a more efficient and faster method. This allows companies to respond quickly to changes, earn more profits, and create the necessary competitive advantage (Girisha et al., 2019).

2.2 *Sustainable Competitive Advantage*

Sustainable competitive advantage is an organizational strength that is unique to an organization (Huang et al., 2015). This is a differentiating strength from competitors. The competitive advantage is a client's strength or rationale. Competitive advantages are not easy to create or imitate. If they are easy to create or copy, they may be a growth opportunity. Sustainable competitive advantage is long-term, which means it takes time for competitors to copy it. Sustainable competitive advantage is very important to face increasing free market competition in the business world (Haseeb et al., 2019). Companies have several types of strategies, such as product excellence, customer closeness, and operational excellence, which can encourage competitive advantage. The strategy must be sustainable to be able to drive customers and be loyal in the long term. The long-term strategy must be based on a core idea about how manufacturing can best compete in the market. This approach to theories and concepts gives Competitive Advantage an understanding, namely better and more efficient production capabilities, production capabilities at lower costs, the existence of abundant resource support factors, or the existence of competitive price factors and product differentiation so that overall Competitive Advantage can be achieved. is defined as a manufacturing's ability to create advantages to achieve the best position in an industry compared to other companies (Lin, 2011).

Competitive Advantage is something that companies cannot ignore, and competitive advantage can be maintained in the long term, then the manufacturing does not just have a Competitive Advantage but has a Sustainable Competitive Advantage where the manufacturing can continuously create more economic value from that advantage (O'Shannassy et al., 2008). Manufacturing is said to maintain a competitive advantage sustainable when applying a value creation strategy is not simultaneously applied by competitors and other companies cannot duplicate this strategy. This sustainable competitive advantage can be achieved in two ways, namely the first by continuously using to changing trends and external activities and capabilities, competencies, and internal resources, and the second by using, applying and assessing various strategies that can further strengthen these factors. A competitive advantage is an advantage over competitors obtained by delivering greater customer value, through lower prices or by providing more benefits commensurate with higher pricing. Hatch et al. (2004) classify excellence strategies into three categories, namely cost leadership, differentiation, and focus. The cost advantage is how a manufacturing sets the lowest price compared to its competitors but still does not compromise the quality of its products or services. Differentiation is how a manufacturing can create products or services that are different from those of its competitors. Focus means that the manufacturing must focus on a particular segment in more detail. Porter's strategy requires different organizational arrangements, control procedures and intensive systems. Large companies with access to large resources usually compete based on cost leadership or differentiation, while small companies often compete based on focus. In this research, there are several indicators used in measuring competitive advantage, namely product and service differentiation advantages, market segmentation advantages, and market entry advantages (Hall et al., 1993).

2.3 Sustainable innovation

According to Adomako et al. (2020), sustainable innovation is a process of change that occurs in a manufacturing or industry to maintain an existing position, as well as improve the quality or efficiency of the products or services offered. Sustainable innovation is usually characterized by the emergence of small improvements or enhancements to existing products or services. Continuous innovation is one way for companies or industries to continue to compete and increase their competitive advantage. Sustainable innovation can help the manufacturing or industry to improve the quality of the products or services offered, as well as reduce production costs by increasing the efficiency of the production process (Huang et al., 2015). Continuous innovation can also help the manufacturing or industry to continue to improve customer satisfaction by offering better products or services. Therefore, continuous innovation is an important way for companies or industries to continue to compete and increase their competitive advantage in the market. Continuous innovation is key to ensuring a responsible and sustainable future. Without these innovations, we may face the uncontrolled impacts of climate change, biodiversity decline, and social disharmony. Innovation is an important part of the competition because it can bring advantages to a manufacturer through the creation of new ideas, new processes, and new products, or by improving current business conditions. So, one of the goals of innovation is to create new conveniences for human life through discoveries or developments from innovative ideas that have been successfully realized (Wang et al., 2023).

Sustainable innovation is an approach that aims to create social and environmental value in addition to economic benefits (Calik et al., 2016). This requires a collaborative process involving many actors and knowledge flows to be successful. To guide the collaboration process with internal and external actors and support the decision-making process, a structured methodology is needed. However, existing literature has so far focused more on analyzing the determinants and drivers of sustainable innovation development, while the process perspective has been less discussed several studies by Boons et al. (2013) have proposed frameworks and approaches to support the development of sustainable innovation. For example, one study proposed a methodological framework to guide collaborative processes in the early phases of sustainable innovation. This framework relies on a combination of qualitative research and multicriteria decision aid methods. Another study proposed collaborative sustainable business modelling (CSBMing) as a participatory multi-actor approach aimed at value network innovation to accelerate sustainability transitions (Adomako et al., 2020). Collaboration is a key aspect of sustainable innovation, and several studies have explored the impact of collaborative innovation capabilities and emotional intelligence on sustainable innovation performance. The study by Boons et al. (2013) found that a positive and significant relationship was found between organizational culture, emotional intelligence, and collaborative innovation capability on sustainable innovation performance. In short, sustainable innovation requires a collaborative approach involving many actors and knowledge flows. A structured methodology is needed to guide the collaboration process with internal and external actors and support the decision-making process. Several studies by Asbari et al. (2023) proposed some frameworks and approaches to support the development of sustainable innovation, including collaborative sustainable business modelling and agent-based modelling.

2.4 Agile organizations

An agile organization is an organization that can respond to changing demands and challenges faced and is easy to adapt quickly to changing circumstances (Razini et al., 2014). This concept, agile organization, is one of the right steps for organizations to be ready to face changes from industry 4.0 to 5.0. So, by becoming an agile organization, companies can face various kinds of shocks and pressures. Organizations that have implemented agile will work effectively, efficiently and consistently (Purwanto et al., 2023). The focus of an agile organization is to provide the best service in any situation. Business agility is an organization's ability to meet rapidly changing customer demands. The function in business of deciding on product

design, implementation and delivery of the product or service is very important in the customer satisfaction equation. Patri and Suresh (2017) explain that organizational agility is the ability of an organization to change and make business rules more effective and efficient when dealing with various types of changes that occur within the manufacturing. This capacity makes organizations more responsive, flexible and innovative. This understanding is in line with Bouguerra et al. (2021) found that organizational agility is a core competency, competitive advantage and differentiator that requires strategic thinking, an innovative mindset, taking advantage of change and the constant need to adapt and be proactive. Meanwhile, according to Razini et al. (2014), organizational agility is the ability of an organization to respond quickly and innovatively to changes that suddenly appear in the business environment and utilize changes as opportunities for growth and prosperity. An agile organization can adapt appropriately and quickly to changes and challenges faced in its environment. Oliva et al. (2018) Organizational Agility in this research is an assessment made by individuals regarding their organization's ability to react appropriately and respond to changes in the environment around their business with the main capabilities, namely responsiveness, competency, quickness and flexibility. Employees who assess their organization's ability to adapt to various changes positively will be motivated to be involved and adapt to innovations, especially if management involves employees in all changes that occur.

2.5 The relationship between e-HRM and sustainable competitive advantage

e-HRM includes the use of information technology to simplify processes in human resource activities in an organization (Gupta et al., 2013; Bag et al., 2022). Sustainable competitive advantage shows an organization's capability to compete to maintain its business benefits. e-HRM automates HR tasks such as payroll, administration, and employee records to improve operational efficiency (Hamidianpour et al., 2016; Groenewald, 2004). e-HRM can make decisions more quickly, as well as increase employee satisfaction. Utilizing EHRM in organizations can maximize the potential and productivity of their employees. Kamarudin et al. (2024) further explained that technology plays an important role in HRM, enabling easy interaction and communication between employees and managers. e-HRM is very important for organizations to achieve sustainable competitiveness. e-HRM has a positive and significant relationship to sustainable competitive advantage. e-HRM has a contribution to organizations to increase organizational competitiveness Hamidianpour et al. (2016). Based on this, the following hypothesis is formulated:

Hypothesis 1: *e-HRM has a positive and significant relationship to sustainable competitive advantage.*

2.6 The relationship between organizational agility and sustainable competitive advantage

Organizations that have agility can quickly adapt to changes in market fluctuations, customer changes, changes in new technology and competitive dynamics, making it possible to take advantage of new opportunities (Huang et al., 2015). By responding to market fluctuations, organizations can maintain a competitive advantage over their competitors. There is no research on the effect of organizational agility on employee satisfaction. This research is in line with research by Oliver et al. (1997) which states that an organization's ability to adapt to changes that occur has a direct effect on competitiveness. Organizational agility is one of the determining factors for job satisfaction, especially about colleagues/work teams. Although organizational agility may not be the main determinant of job satisfaction it contributes to increasing competitiveness. Agile organizational characteristics must be pursued because they are an important factor for sustainable business success (Clemons et al., 1986). Agile organizations will create teams tasked with creating profitable and innovative solutions to solve problems, designing better businesses or developing advanced technologies that support new offerings (Fahy et al., 2002). The formation of this team will help the manufacturing transform by developing an agile organizational system, especially in creating leaders who have an agile mindset in achieving goals (Huang et al., 2015). Organizational agility has a positive and significant relationship to sustainable competitive advantage. Based on this, the following hypothesis is formulated:

Hypothesis 2: *Organizational agility has a positive and significant relationship to sustainable competitive advantage.*

2.7 The relationship between sustainable innovation and sustainable competitive advantage

Sustainable innovation will encourage differentiation for organizations, by introducing innovative products, services and processes it will encourage customer loyalty so that it will increase sustainable competitive advantage (Adomako et al., 2020). Sustainable innovation will respond quickly to market demand and stakeholder expectations so that it will gain competition (Varadarajan, 2017). Sustainable innovation will maintain trust in stakeholders and create a competitive advantage (Calik et al., 2016). Apart from that, sustainable innovation will open new markets and business prospects for organizations, overcome environmental and social challenges, and build new sources of income, by leading sustainable innovation organizations can gain a strong market. Sustainable innovation has a positive and significant relationship to sustainable competitive advantage (Shen et al., 2020). Based on this, *the following hypothesis is formulated:*

Hypothesis 3: *Sustainable innovation has a positive and significant relationship to sustainable competitive advantage.*

3. Method

This research uses a quantitative approach. The population of this research is managers of manufacturing companies in Indonesia. A total of 800 online questionnaires were sent using a simple random sampling method and 540 valid questionnaires were received. The questionnaire contains statement items using a Likert scale of 1 to 7. To measure the structural model and test research hypotheses, this research uses the PLS-SEM method with WarPLS 7.0 software. The stages of data analysis in this research are reliability and validity tests, significance tests and hypothesis testing. The independent variables in this research are e-HRM, Organizational agility and sustainable innovation while the dependent variable is sustainable competitive advantage.

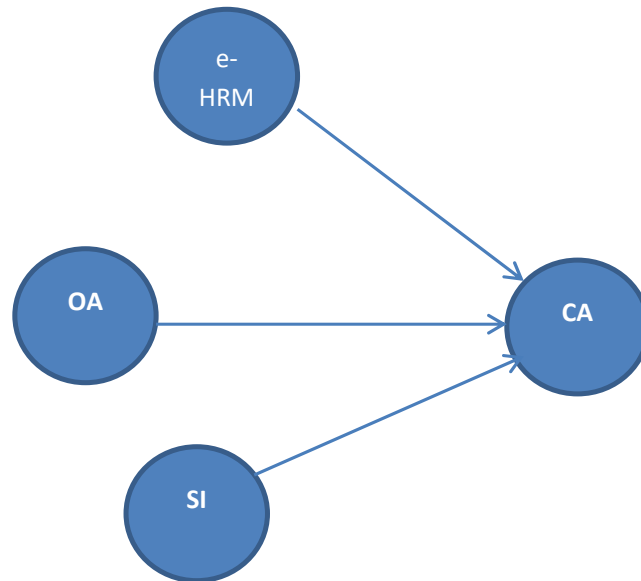


Fig. 1. Research Model

4. Results and discussion

4.1 Validity and Reliability Testing

From the data analysis, it was obtained that the factor loading value was greater than 0.50 and the Cronbach Alpha reliability and Composite reliability values were more than 0.70, this shows good reliability. An AVE value greater than 0.50 means that the validity of the construct is good and can be continued with further analysis as shown in Table 1.

Table 1
Validity and Reliability Testing

	Loading	P value	VIF	CR	CA	AVE	VIF
Electronic Human Resource Management	-	-	-				
E-HRM1	0.712	0.000	1.623				
E-HRM2	0.772	0.000	1.754				
E-HRM3	0.808	0.000	2.098	0.812	0.876	0.578	3.212
Sustainable competitive advantage (SCA)							
SCA1	0.872	0.000	2.176				
SCA2	0.850	0.000	2.112	0.823	0.812	0.612	3.123
SCA3	0.794	0.000	1.654				
Sustainable innovation (SI)							
SI1	0.802	0.000	2.098				
SI2	0.833	0.000	2.138				
SI3	0.809	0.000	2.654	0.817	0.831	0.612	1.984
SI4	0.826	0.000	2.189				
Organizational agility (OA)							
OA1	0.846	0.000	2.453				
OA2	0.857	0.000	2.465	0.876	0.812	0.612	2.345
OA3	0.836	0.000	2.744				

Discriminant validity is a way of assessing how different a construct is from other constructs, which can be determined by comparing the AVE value of the two constructs with the squared value of the correlation between the two constructs being tested. Discriminant validity can be seen from the cross-loading value with the construct, each indicator in a construct has a

difference from indicators in other constructs which can be shown with higher loading values than the construct itself. Based on the results of the cross-loading values between indicators and constructs in the table, it can be concluded that each indicator in a construct has differences from indicators in other constructs as indicated by a higher loading score in its construct, so it can be said that the instrument used in this research has met the validity criteria (See Table 2).

Table 2
Discriminant Validity Testing

	SCA	eHRM	SI	OA
Sustainable competitive advantage	0.801	0.723	0.578	0.645
Electronic human resource management	0.675	0.823	0.567	0.718
Sustainable innovation	0.543	0.543	0.843	0.654
Organizational agility	0.654	0.675	0.678	0.817

Heterotrait-Monotrait (HTMT) ratio of correlations. In short, HTMT is the ratio of correlation between traits to correlation within traits. HTMT is the meaning of all indicator correlations across constructs measuring different constructs (i.e., Heterotrait-Heteromethod correlations) relative to the (geometric) mean of the average correlations of indicators measuring the same construct. The validity results of the HTMT analysis are less than 0.90, indicating that the results confirm satisfactory validity as shown in Table 3.

Table 3
HTMT Testing

HTMT Ratios (Good if <0.90, Best if <0.85)	SCA	eHRM	SI	OA
Sustainable competitive advantage				
Electronic human resource management	0.804			
Sustainable innovation	0.821	0.732		
Organizational agility	0.834	0.787	0.732	
p values (one-tailed) for HTMT ratios	SCA	eHRM	SI	OA
Sustainable competitive advantage				
Electronic human resource management	0.021			
Sustainable innovation	<0.001	<0.000		
Organizational agility	0.004	0.001	<0.000	

4.2 Model fit and quality index

This study met all the requirements for model fit and quality indices as shown in Table 4.

Table 4
Model fit and Quality Indices

Criteria	Assessment	Criterion	Supported/Rejected
Average block VIF (AVIF)	2.463	acceptable if ≤ 5 , ideally ≤ 3.3	Supported
Average full collinearity VIF (AFVIF)	2.435	acceptable if ≤ 5 , ideally ≤ 3.3	Supported
Tenenhous GoF	0.454	small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36	Supported

4.3 Hypothesis testing

Hypothesis testing was carried out using the bootstrapping technique. The data used for bootstrapping is data that has been carried out in the Measurement stage.

Table 5
Hypothesis testing

Hypothesis	Path Coefficient	T Value	P value	Result
e-HRM \rightarrow CA	0.356	3.564	0.000	Supported
OA \rightarrow CA	0.401	5.345	0.000	Supported
SI \rightarrow CA	0.532	3.543	0.000	Supported

Hypothesis testing is included in the Structural Model and shows the hypothesized relationships with simulation practice. This bootstrapping test also aims to determine the direction of the relationship and the significance of the relationship for each latent variable. Hypothesis testing is carried out by carrying out predetermined t-statistic or t-count comparisons. The t-count produced in the bootstrapping test must be greater than the one-tail t-table, namely 1.65 for a standard error of 5% or a p-value below 0.05.

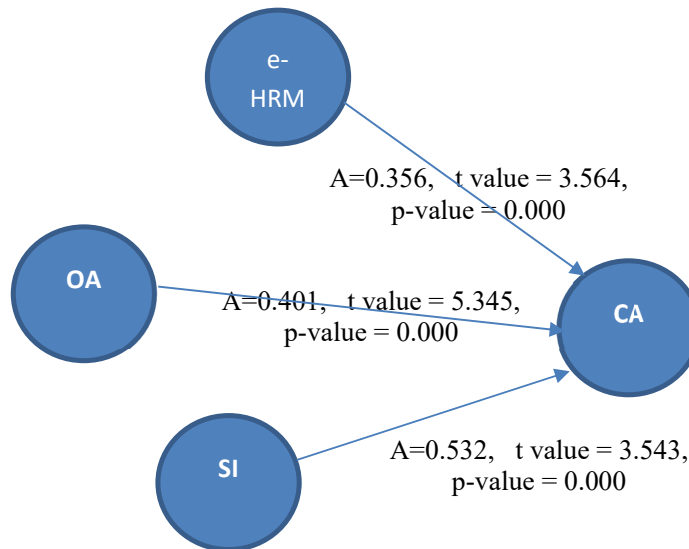


Fig. 2. Hypothesis testing

4.4 The relationship between e-HRM and sustainable competitive advantage

Based on the results of the analysis, the p-value of 0.000 is smaller than 0.050, so it can be concluded that e-HRM has a positive and significant relationship to sustainable competitive advantage. e-HRM includes the use of information technology to simplify processes in human resource activities in an organization. Nyathi et al. (2023) Sustainable competitive advantage shows an organization's capability to compete to maintain its business benefits. e-HRM automates HR tasks such as payroll, administration and employee records to improve operational efficiency. e-HRM HRM can make decisions more quickly, as well as increase employee satisfaction. Apart from that, the presence of EHRM makes it easier for employees to access information regarding their duties and obligations, as well as access data and process data related to personal data such as information regarding salaries, employee personal data, performance management, training, recruitment, and others (Bondarouk et al., 2009). EHRM also improves and improves the quality of organizational services to the public. The implementation of E-HRM has a positive impact on organizations. E-HRM in organizations can maximize the potential and productivity of their employees. Yusoff and Ramayah (2012) further explained that technology plays an important role in human resources, enabling easy interaction and communication between employees and managers. Based on several opinions regarding the benefits of E-HRM above, it can be concluded that the application of E-HRM provides several benefits such as providing time and cost efficiency, providing convenience in business processes, increasing organizational interaction and communication, optimizing human resource development and productivity.

4.5 The relationship between organizational agility and sustainable competitive advantage

Based on the results of the analysis, the p-value of 0.000 is smaller than 0.050, so it can be concluded that organizational agility has a positive and significant relationship to sustainable competitive advantage. There is no research on the effect of organizational agility on employee satisfaction. This research is in line with research by O'Shannassy et al. (2008) which states that an organization's ability to adapt to changes that occur has a direct effect on competitiveness. Organizational agility is one of the determining factors for job satisfaction, especially about colleagues/work teams. Although organizational agility may not be the main determinant of job satisfaction it contributes to increasing competitiveness. Agile organizational characteristics must be pursued because they are an important factor for sustainable business success (Hatch et al., 2004). Agile organizations will create teams tasked with creating profitable and innovative solutions to solve problems, designing better businesses or developing advanced technologies that support new offerings. Organizational Agility in this research is an assessment made by individuals regarding their organization's ability to react appropriately and respond to changes in the environment around their business with the main capabilities, namely responsiveness, competency, quickness, and flexibility (Oliver et al., 1997). Employees who assess their organization's ability to adapt to various changes positively will be motivated to be involved and adapt to innovations, especially if management involves employees in all changes that occur.

4.6 *The relationship between sustainable innovation and sustainable competitive advantage*

Based on the results of the analysis, the p-value of 0.000 is smaller than 0.050, so it can be concluded that sustainable innovation has a positive and significant relationship to sustainable competitive advantage. Sustainable innovation will encourage differentiation for organizations, by introducing innovative products, services and processes it will encourage customer loyalty so that it will increase sustainable competitive advantage. Sustainable innovation will respond quickly to market demand and stakeholder expectations so that it will gain a competitive advantage. Sustainable innovation will maintain trust in stakeholders and create a competitive advantage (Shen et al., 2020). Apart from that, sustainable innovation will open new markets and business prospects for organizations, overcome environmental and social challenges, and build new sources of income, by leading sustainable innovation organizations can gain a strong market. Sustainable business model innovation is the analysis and planning of transformation to a more sustainable business model or from one sustainable business model to another business model (Kneipp et al., 2019). Several types of sustainable business model innovation include sustainable entrepreneurial start-ups, sustainable business model transformation, sustainable business model diversification, and sustainable business model acquisition. Hami et al. (2015) Implementation of sustainable business model innovation faces several challenges, namely fundamentals, mindset, resources, technological innovation, external relations, methods, and tools. Sustainable business has three main triggers in the development of existing business models, namely digitalization and technology as opportunities, changes in consumer lifestyles, and sustainability issues (Varadarajan et al., 2017).

Even though the implementation of E-HRM provides positive benefits for the organization if it is not planned well and implemented wisely, this will cause problems and obstacles for the organization (Stone & Lukaszewski, 2009; Stone et al., 2015). Several studies show that there are negative impacts that result if organizations implement EHRM unwisely and without careful planning. Blom et al. (2019) in their research found that there were obstacles in implementing E-HRM in the form of (1) technical obstacles which include internet networks (2) unattractive designs and the level of complexity in operating the application (3) and (4) strong traditional culture in carrying out tasks and work. by employees, making it difficult to switch to new ways of working through E-HRM. Further findings regarding the forms of problems in implementing E-HRM were complemented by Bahadorifard et al. (2021) and Yusoff and Ramayah (2012) who found and explained that problems or negative impacts in implementing EHRM by organizations were caused by (1) a lack of socialization of use which had an impact on knowledge personal so that employees find it difficult to accept and take a long time to adapt to the E-HRM system that is implemented (2) the size and facilities of the organization or manufacturing are inadequate to implement E-HRM so that the implementation of this system actually brings losses because it cannot be used optimally and wise which has an impact on decreasing employee performance (3) support and perception from colleagues is also one of the factors that determine the success of implementing E-HRM into an organization or manufacturing (Yusoff & Ramayah, 2012). Acceptance and desire to use E-HRM by individuals in the organization will become a reference for other individuals, apart from that, the help and support provided to other users will influence the extent to which someone wants to use an application. The attitude and acceptance of E-HRM implemented by an employee will be a reflection and basis for consideration for other employees in determining their attitude to accept and use E-HRM implemented in the organization. Even though the implementation of E-HRM provides positive benefits for the organization, if it is not planned well and implemented wisely, this will cause problems and obstacles for the organization. Several studies show that there are negative impacts that result if organizations implement E-HRM unwisely and without careful planning (Nyathi et al., 2023).

Competitive advantage is an advantage achieved through a strategy to increase the use value of a good or service to consumers and can also be interpreted as something that competitors do not have, doing something better than other companies or being able to do something that other companies are not able to do (Bahadorifard et al., 2021). Competitive advantage is anything that a manufacturer can do much better when compared to competing companies (Shen et al., 2020). When a manufacturer can do something that competing companies cannot do or has something that competing companies want then that can represent a competitive advantage. Implementing and assessing various strategies that further strengthen these factors. these factors. A Sustainable Competitive Advantage Strategy is a strategy that positions the manufacturing strongly against competitors and provides the strongest strategic advantage for the manufacturing sustainably. Sustainable competitive advantage also prioritizes the number one service to consumers (Bernardo et al., 2024). Internal Services are provided to employees, employees are Internal Customers. A collaborative approach is critical in driving sustainable innovation and addressing socio-economic challenges. Collaborative and team-based learning can provide relevant, innovative, and generative approaches to addressing real, pressing and complex social, environmental and economic problems. Collaborative and participatory approaches are increasingly recognized as a prerequisite for smart and sustainable development, where local resources and digital technologies are used in new ways that drive economic growth, increase social integration and well-being, and improve environmental conditions (Siswanto et al., 2023). Participatory design innovation can solve challenges in rural areas, ensuring that solutions are integrated into the social, economic, and cultural landscape of the community while providing solutions that are effective and have a sense of community ownership (Bondarouk et al., 2009).

The use of an E-HRM system has the potential to contribute to business continuity because this system is strategically able to make manufacturing more flexible and can provide the information needed to move the business cycle. continuous improvement. Employee participation in E-HRM implementation also greatly influences the achievement of the goals of E-HRM implementation, namely reducing costs, increasing the efficiency of HR management functions, and developing and

progressing the manufacturing's strategic orientation. Implementing E-HRM can reduce costs in terms of recruitment standardization by utilizing a system that helps HRM recruit employees more precisely so that employee turnover is low. It is hoped that the use of e-HRM in managing manufacturing HR can be done efficiently well, that the reward and punishment system becomes clearer so that employees feel they are treated fairly and equally. The transformation of E-HRM as part of the managerial decision-making process allows companies to achieve continuous sustainable development. An integrated E-HRM system causes the flow of information to be delivered more quickly and on target as a basis for strategic decision-making. This causes companies to be able to adapt more quickly to external changes and become more flexible in facing challenges. Companies can maintain a competitive advantage through the ability to deliver new goals and innovate products and services that enable companies to maximize profits and exploit new opportunities to maintain excellence. competitive. The business environment encourages companies to implement e-HRM to create competitive advantages and flexibility in facing challenges. e-HRM is a key driver of HR management service quality. Management changes can affect HR information systems. So that the implementation of e-HRM in the environment is successful Companies cannot be separated from the role of employees as general users of the implementation of e-HRM. Employees who can use and utilize e-HRM well tend to have faster and more efficient performance. With the right e-HRM, HR staff enable employees to make their own benefits updates and address changes, freeing up HR staff for more strategic functions. The use of e-HRM technology is thought to be very significant in supporting manufacturing operations, easy access to information and communication is an advantage that can help employee performance be more effective and efficient amidst limitations in meeting face-to-face with management and superiors. Working is more flexible in terms of time for employees because Employees will be informed and called to work when work is needed. Companies will also save costs due to the efficient use of labor.

In an Agile Organization, change is considered a constant, not just a challenge. This involves a paradigm shift from traditional management models to ones more open to collaboration, experimentation, and continuous iteration. Organizations that adopt this approach strive to create an environment that can adapt to rapidly changing external dynamics, respond quickly to feedback, and produce innovative solutions by utilizing the strengths of teams within the organization. Agile Organizations emphasize forming cross-functional teams that are independent, able to work collaboratively and make decisions at the level closest to the action. The application of agile principles, such as iteration, rapid response to change, and open communication, helps organizations reduce bureaucracy, increase operational efficiency, and create a dynamic culture of innovation.

5. Theoretical and practical implications

The results of this research contribute to the theory that e-HRM practices have an influence and impact on sustainable competitive advantage. This research emphasizes that e-HRM practices encourage sustainable innovation and organizational agility to achieve competitive advantage. This research provides a more comprehensive understanding that e-HRM practices contribute to sustainable competitive advantage by driving continuous innovation and strengthening organizational agility. This research emphasizes the importance of utilizing digital technology for HRM processes, organizations must implement digital transformation by adopting e-HRM practices to increase manufacturing efficiency and effectiveness thereby increasing performance and competitiveness. This research encourages companies to increase continuous innovation to increase sustainable competitiveness.

6. Conclusion

This research concludes that e-HRM has a positive and significant relationship to sustainable competitive advantage, Organizational Agility has a positive and significant relationship to sustainable competitive advantage and sustainable innovation has a positive and significant relationship to sustainable competitive advantage. The results of this research contribute to the theory that e-HRM practices have an influence and impact on sustainable competitive advantage. This research emphasizes that e-HRM practices encourage sustainable innovation and organizational agility to achieve competitive advantage. This research provides a more comprehensive understanding that e-HRM practices contribute to sustainable competitive advantage by driving continuous innovation and strengthening organizational agility. This research emphasizes the importance of utilizing digital technology for HRM processes, organizations must implement digital transformation by adopting e-HRM practices to increase manufacturing efficiency and effectiveness thereby increasing performance and competitiveness. This research encourages companies to increase continuous innovation to increase sustainable competitiveness. This research investigates the variables e-HRM, organizational agile, sustainable innovation and sustainable competitive advantage, for further research to explore other variables. For further research, use the mediation and moderation relationship model and for further research, use other methods such as qualitative or mixed methods and expand the research area and increase the number of respondents.

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