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Human Capital and Readiness for Digital Innovation: The Mediating Role of Thriving at Work and The Moderating Role of Perceived Organizational Support

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Abstract

Background/ problem: Competition in the logistics and courier industry is growing increasingly intense, prompting state-owned service companies to consistently innovate, particularly in the application of technology.

Objective/ purpose: This study proposed that thriving at work acts as a mediator in the relationship between human capital 4.0 and readiness for digital innovation, while perceived organizational support serves as a moderating factor.

Design and Methodology: Data were collected from 302 managers across various branch offices of a logistics and courier company in Indonesia. The data were analyzed using PLS-SEM.

Results: The results indicated that human capital 4.0 plays a significant role in increasing readiness for innovation through digitalization ($\beta = .35, p = .00$). Human capital 4.0 also has a strong positive effect on thriving at work ($\beta = .73, p = .00$). Additionally, thriving at work has a significant positive effect on readiness for digital innovation among multiple managers ($\beta = .23, p = .00$). Furthermore, the findings show that thriving at work moderates the effect of human capital 4.0 on managers' readiness for digital innovation ($p = .00$). However, perceived organizational support did not amplify the effect of human capital 4.0 on managers' readiness for digital innovation ($p = .31$).

Conclusion and Implications: The study recommends that human resource practices should enhance support for managers and work creativity. Further, management should provide opportunities for development for each individual in order to boost their performance and productivity.

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Industry 4.0, with its distinct characteristics, present both advantages and disadvantages. Notably, it can enhance economic efficiency, workforce flexibility and intelligence, while also reducing production costs and boosting return on investment (Sima et al., 2020). The increasing number of competitors entering the Indonesian market makes the competition tight in the logistics industry; further it makes government-owned logistics companies unable to compete with the private sector. Masyhuri et al. (2024) showed that state-owned logistics and courier companies hold only an 8% market share compared to 32% for private companies. Furthermore, a study by Masyhuri et al. (2024) found that organizational innovation is the key factor in the development of today's logistics industry. Consequently, identifying solutions to tackle the lack of innovation within companies is essential.

Human capital is a sub-dimension of a company's internal resources, a concept derived from resource-based theory (Barney, 1991). Over time, understanding and research about human capital has evolved

significantly. For instance, Martiskova et al. (2020) suggested that human capital 4.0 must not only be creative but also exhibit ‘superhuman’ traits. Therefore, recent research aims to identify the precursors to human capital that are suitable for the Fourth Industrial Revolution.

This study proposed a model to examine the relationship between human capital, thriving at work, perceived organizational support, and readiness for digital innovation. It contributes to the human capital literature in several ways. For instance, prior research has shown that human capital can lead to outcomes such as firm competitiveness (Shafiee et al., 2024), quit quitting (Serenko, 2023), and innovation (Danta & Rath, 2024). However, previous studies (Setiawati et al., 2022) have not examined the role of human capital in thriving at work and readiness for digital innovation. Additionally, the concept of organizational readiness has not received sufficient attention in earlier literature, despite its importance in addressing fast-growing customer demand (Kurniawati et al., 2024). Notably, Straatmann et al. (2016) found that many ideas are never implemented because they lack adequate preparation. Therefore, this study investigates the effect of human capital 4.0 for digital innovation.

Secondly, this study explored possible links between thriving at work and readiness for digital innovation. According to Basinska and Rozkwitalska (2022), thriving in the workplace can lead to a stable psychological state, enabling managers to achieve greater goals. As a result, this study contributes to the existing body of literature by shedding light on the role of thriving at work in fostering readiness for digital innovation.

Thirdly, the study proposed a new model (Setiawati et al., 2022) that explains the mechanisms of thriving at work as a mediator and perceived organizational support as a moderator. Although some research has examined factors that can enhance readiness for digital innovation in the logistics and courier industry, these studies are relatively scarce. While some previous research has considered mediating roles like employee participation and leadership excellence (Mumtaz et al., 2024), this study specifically focuses on thriving at work and perceived organizational support. Moreover, while previous research in Indonesia found that digital innovation can improve the performance of the hospital service industry (Harni, 2022), this study highlights its potential benefits within the logistics and courier sector.

This study sought to make a meaningful contribution to behavioral science by examining ways to enhance readiness for digital innovation in the logistics and courier industry. The findings have implications for designing more effective human resource management strategies, such as incentive systems, employee training, and team leadership. Additionally, the study is expected to support resource-based theory (Barney, 1991), particularly as it relates to behavioral science. This contribution focuses on optimizing the utilization of company resources, including employees’ psychological factors that can foster innovation and creativity, ultimately leading to increased competitive advantage.

Furthermore, this study attempted to fill a research gap by examining the factors that drive readiness for digital innovation in Indonesian logistics and courier companies, from the viewpoint of management. This is particularly important because recent studies have focused on how managers respond to organizational change at the micro level (Straatmann et al., 2016). The primary objectives of this study was to analyze how human capital 4.0, thriving at work, and perceived organizational support affect readiness for digital innovation in Indonesia. Additionally, the study investigated the roles of thriving at work and perceived organizational support as mediating and moderating factors in the relationship between human capital 4.0 and readiness for digital innovation.

Literature Review

The literature review section delves into resource-based theory and examines existing research on human capital 4.0, thriving at work, perceived organizational support, and readiness for digital innovation. Additionally, hypotheses are formulated in this section to explore the influence of human capital 4.0 on readiness for digital innovation, the mediating effect of thriving at work, and the moderating effect of perceived organizational support on the relationship between human capital 4.0 and readiness for digital innovation.

Theoretical Background

The resource-based theory (Barney, 1991) provides a theoretical framework for understanding readiness for digital innovation. According to this theory, internal resources contribute to improving the efficiency and effectiveness of company operations. The core focus of resource-based theory is on the relationship between resources, capabilities, and competitive advantage. In this study, human capital represents a company's resources, while digital innovation represents its capabilities. The success of a company is determined by its internal resources and capabilities, allowing it to convert these assets into economic benefits that competitors do not possess.

The link between resource-based theory and the variables human capital and readiness to change is that these two variables can be important factors in determining how companies use their internal resources to achieve competitive advantage (Barney, 1991). By utilizing valuable human capital and having a high readiness to change, companies can optimize their potential to create added value and win market competition (Haffar et al., 2023). Based on this foundation, this study investigates human capital as an internal resource, with thriving at work as an effort to develop or motivate individual employees. In addition, perceived organizational support as an intangible resource and readiness for digital innovation as a benchmark for competitive advantage.

Resource based theory is commonly used in behavioral science. It posits that human capital can promote positive employee behavior, leading to higher productivity and having a significant effect on thriving at work (Basinska & Rozkwitalska, 2022). Thriving at work is a desired mental condition characterized by vitality and learning as a collective experience (Spreitzer et al., 2005). The resource-based theory provides a framework for examining a company's strengths and weaknesses by analyzing the uniqueness of its internal resources, which the company owns and controls (Barney, 1991). Moreover, thriving at work can also foster increased employee readiness for change (Wu et al., 2023). The capacity for readiness to change depends on managers' ability to adapt to new standards, guidelines, and goals (Kurniawati et al., 2024).

Various factors can boost readiness for change, including effective human resource management practices and strong affective commitment (Alqudah et al., 2022; Haffar et al., 2023). Additionally, perceived organizational support can directly enhance adaptability to change (Arnéguy et al., 2020). Based on this foundation, this study examines human capital as an internal resource, with thriving at work seen as a method to foster individual employee development or motivation. Furthermore, it considers perceived organizational support as an intangible resource and readiness for digital innovation as a key benchmark for achieving competitive advantage.

Human Capital 4.0 and Managers Readiness for Digital Innovation

The concept of organizational change is integrated into readiness for digital innovation using readiness theory (Lokuge et al., 2019). Readiness theory serves as the foundation for successful implementation of complex changes in businesses. According to Lokuge et al. (2019), readiness for digital

innovation refers to an organization's assessment of its preparedness for effectively developing, adopting, absorbing, and exploiting digital technology for innovation. Additionally, readiness for digital innovation entails the integration of innovation and technology into production or services. Furthermore, organizational readiness for change relies on managers' capacity to adapt to new standards, guidelines, and goals (Kurniawati et al., 2024). Moreover, Lokuge et al. (2019) examine three theoretical paradigms of readiness for digital innovation, focusing on contextual variables, change efficacy, and change valance. On the other hand, various factors influencing readiness for change include affective commitment to change (Haffar et al., 2023) and human resource management practices (Alqudah et al., 2022). However, there remains a need to investigate the antecedents of readiness for digital change among managers.

By leveraging resource-based theory (Barney, 1991), this study proposes that human capital can enhance readiness for digital innovation. Human capital, as an ever-evolving asset, provides companies with a competitive advantage due to its valuable, rare, unique, and irreplaceable characteristics (Sun et al., 2020). Human capital encompasses all internal resources owned by the company that can be optimized to increase productivity. Additionally, effective human capital management can reduce operational costs, thereby increasing a company's profits. Moreover, human capital 4.0 is the result of optimizing human resources to align with the advancements of the Fourth Industrial Revolution, offering unique features compared to traditional human capital. Anastasiu et al. (2020) conducted a study on human capital readiness for change, indicating that the stability and quality of human should be analyzed strategically to ensure readiness for unpredictable changes. Although human capital has been recognized as a significant factor in increasing readiness for change, prior research has yet to explore its role in boosting readiness for digital innovation.

Therefore, this study addresses this gap by examining readiness for digital innovation as an outcome of human capital 4.0. Consequently, the following hypothesis is proposed:

Hypothesis 1: Human capital 4.0 has a positive effect on readiness for digital innovation.

The Mediating Role of Thriving at Work

People tend to use their resources more effectively and focus on the positives rather than the negatives when working in a diverse environment (Basinska & Rozkwitalska, 2022). Kleine et al. (2019) note that when individuals encounter difficulties and setbacks at work, they tend to try harder, persevere longer, and learn more as they leverage each other's skills to solve problems. In other words, employees with robust behavioral, emotional, and cognitive skills are more likely to thrive at work. Certain fields of study, such as psychology, can foster cross-cultural learning, where people from various backgrounds collaborate, share knowledge, and grow both personally and professionally (Basinska & Rozkwitalska, 2022). Moreover, acquiring new skills and knowledge in the workplace significantly contributes to human resource development. According to this study, when a manager feels empowered to optimize their abilities, they are more likely to thrive at work, leading increased productivity. These findings align with previous studies, where thriving at work has been considered an outcome of various factors, including temporal leadership (Wang et al., 2024), enterprise social media affordance (Sun et al., 2024), and transformational leadership (Malik, 2024). Given these insights, it is evident that studies examining the role of human capital as a precursor to thriving at work are still relatively rare.

Thriving at work is a desirable mental state characterized by vitality and learning as shared experiences (Spreitzer et al., 2005). In addition, workplace development is critical because it addresses the psychological well-being of employees. Given that organizational change can be a challenging process, supervisors must be aware of all factors that might influence it (Gabutti et al., 2023). Furthermore, thriving is the key to building positive relationships within companies, families, communities. Besides its importance for interpersonal connections, thriving has been associated with significant personal outcomes such as

improved health, reduced fatigue, lower tension (Spreitzer et al., 2005). Despite its relevance, empirical studies on this topic remain relatively scarce. Therefore, this study examines how thriving contributes to the role of managers in driving digital innovation. Previous research has linked thriving at work to various outcomes, including work-family conflict (Huang & Zhou, 2024) and organizational change (Wu et al., 2023). Furthermore, recent studies by (Wang et al., 2024) have shown that thriving at work can improve emotional intelligence.

Thriving at work serves as a mediating variable between leadership styles and employee engagement in 294 hotel employees in Cambodia (Rabiul et al., 2023). Moreover, positive thriving can boost change-oriented organizational citizenship behavior (OCBC), which, in turn, improves service innovation performance in 374 hotel employees in Taiwan (Wu et al., 2023). Imran et al. (2020) found that thriving at work acts as a mediator between organizational support and engagement in 638 employees in Pakistan. Additionally, thriving at work can be categorized into two key dimensions: vitality and learning (Na-Nan et al., 2020). Vitality encompasses characteristics such as feeling energetic, enthusiastic, and prepared to work. Meanwhile, learning dimension involves seeking opportunities for growth, being open to new knowledge, and continuously striving for improvement. Moreover, thriving at work applies not only to lower-level employees but also to managers and other top-level personnel (Rai et al., 2024). Furthermore, a systematic literature review by Setiawati et al. (2022) indicated that one of the internal factors that can enhance competitive advantage is thriving at work, particularly when organizations leverage IT to facilitate decision-making. Building on these insights, this study proposes hypotheses derived from earlier research:

Hypothesis 2: Human capital 4.0 has a positive effect on thriving at work.

Hypothesis 3: Thriving at work has a positive effect on readiness for digital innovation.

Hypothesis 4: Thriving at work mediates the effect of human capital 4.0 and readiness on digital innovation.

The Moderating Role of Perceived organizational support

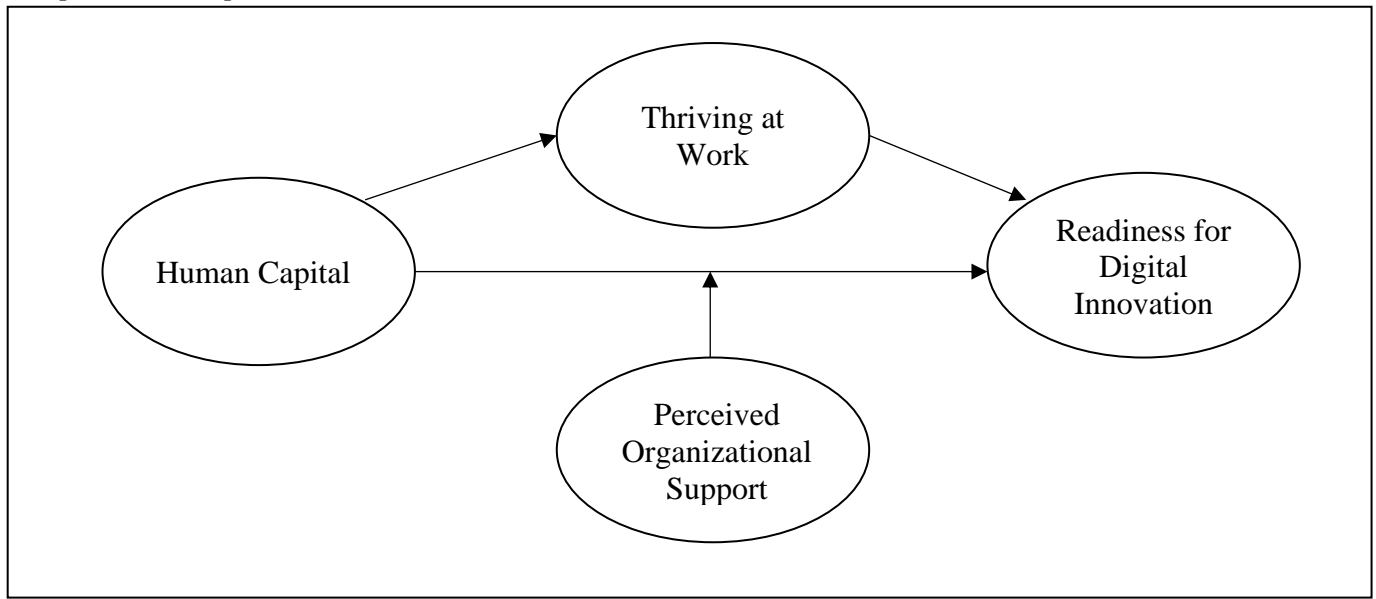
Organizational support refers to the perception among employees that their employer values their work and is concerned about their well-being (Eisenberger et al., 1990). Moreover, (Arnéguy et al., 2020) revealed that perceived organizational support can directly bolster adaptability to change among 230 US. employees. Similarly, perceived organizational support has been shown to increase readiness for change within the 359 employee in the Ethiopian revenue and customs authority (Kebede & Wang, 2022). Perceived organizational support can be broken down into support, attention, and concern in 3,240 clinical nurses from nine tertiary hospital in China (Li et al., 2020). Previous research has examined perceived organizational support as a moderating variable between job insecurity and emotional exhaustion in U.S. restaurant frontline employees (Chen & Eyoun, 2021). Additionally, Musenze and Mayende (2023) discovered that perceived organizational support positively influenced the effect of moral leadership and creative work practices in 291 academic staffs in Uganda's public colleges. Furthermore, a systematic literature review by Setiawati et al. (2022) highlighted the importance of organizational support, particularly top management support, in achieving competitive advantage. Given this background, this study proposed that perceived organizational support acts as a boundary condition influencing the relationship between human capital 4.0 and readiness for digital innovation. The hypothesis developed from this premise is as follows:

Hypothesis 5: Perceived organizational support moderates the influence of human capital 4.0 and readiness on digital innovation.

The Figure 1 shows the conceptual framework of the study.

Figure 1

Proposed Conceptual Framework



Method

Research Design

This study used a quantitative survey approach to test the proposed hypotheses, specifically examining the effect of human capital on readiness for digital innovation. Additionally, the study investigated the mediating role of thriving at work and the moderating role of perceived organizational support.

Participants/ Sample

This study focused on the largest logistics and courier company in Indonesia. A total of 372 questionnaires were distributed between December 2023 and January 2024, and 302 questionnaires were returned. The research was conducted across four Indonesian provinces: East Java, Bali, West Nusa Tenggara, and East Nusa Tenggara. These provinces were chosen because they have the most branch offices, making them representative of logistics and courier operations throughout Indonesia. The target population for this study was all managers in logistics and courier companies in Indonesia. Data collection employed a purposive sampling technique with several criteria. First, only managers with more than five years of experience in logistics and courier companies were selected, as this level of experience is assumed to correlate with a greater understanding of human resource management. Second, managers were randomly selected and had to be willing to participate in academic research. The choice to use managers as respondents was based on their broader perspective on human resources compared to lower-level employees (Kurniawati et al., 2024). This perspective is crucial in answering questions related to general company operations and human resource challenges.

Instruments

Data were collected using questionnaires with a five-point Likert scale ranging from 1 ('strongly disagree') to 5 ('strongly agree'). This study utilized four latent variables: Human capital 4.0, thriving at work, perceived organizational support, and readiness for digital innovation. To ensure accuracy and clarity, the questionnaire was translated into Indonesian by language proficiency experts.

1) Human capital 4.0 was measured by using twelve items adapted from Singh et al. (2022), which have been previously validated. Sample items include: 'Traditional and simple methods are no longer

effective in the context of advanced industry 4.0 technologies’ and ‘Collaboration among stakeholders is essential to realize the vision of human capital in industry 4.0’. The scale demonstrated a high level of reliability, with a Cronbach's alpha of .93.

2) Thriving at work was measured by using twelve validated items from Na-Nan et al. (2020), including statements such as ‘I am ready to put my physical energy into work’ and ‘I want to learn how to solve emerging problems and obstacles.’ The scale demonstrated a high level of reliability, with a Cronbach's alpha of .94.

3) Perceived organizational support was measured by using eight items adapted from Eisenberger et al. (1990), including ‘My organization takes my goals and values seriously’ and ‘My organization is willing to help me when I need a special favor.’ The scale demonstrated a high level of reliability, with Cronbach's alpha of .93.

4) Readiness for digital innovation was measured by using five validated items adapted from Lokuge et al. (2019), such as ‘My organization is flexible in allocating sufficient financial resources necessary to innovate with the IT portfolio’ and ‘Our organization is well-equipped to support various innovations.’ The scale demonstrated a high level of reliability, with a Cronbach's alpha of .90.

Procedure

Data were collected by distributing questionnaires to respondents through an online survey. Additionally, Structural Equation Modeling (SEM-PLS) was used to test the proposed hypotheses with the SmartPLS version 3 program. Structural equation modeling is suitable for this research because it can estimate complex models that incorporate mediation and moderation, making it ideal for variance-based relationships. Moreover, PLS-SEM is valued for its robustness in validating models and its ability to predict relationships between variables. Furthermore, PLS-SEM employed two types of analysis: algorithms-based tests, which include validity and reliability checks, and bootstrapping techniques, which are used to test both direct and indirect hypotheses (Hair et al., 2017).

Results

Sample Characteristics

Table 1 presents the demographic information for the 302 respondents from the online survey. The sample included 68.20% male and 31.80% female respondents, with a mean age of 35.02 years. Regarding education, 41% of participants had a postgraduate degree. Furthermore, the average job tenure among the respondents was 15.12 years.

Table 1

Demographic Characteristics of the Respondents (n = 302)

Profile	Description	Frequency	Percentage
Gender	Male	205	68.20
	Female	97	31.80
Age	< 30 years	45	14.80
	31 – 40 years	134	44.90
	41 – 50 years	73	23.90
	> 50 years	50	16.40
Education Level	Senior High School	110	36.00
	Diploma	70	23.00
	Postgraduate	122	41.00
Job Tenure	< 10 years	99	32.50
	11 – 20 years	112	36.70
	> 21 years	91	30.80

The validity testing shows that the loading factor for each item exceeds the minimum requirement of .70 (Sarstedt et al., 2021). Furthermore, the reliability testing demonstrates that the composite reliability scores meet the required threshold, with values of .94, .92, .94, and .93 for human capital 4.0, thriving at work, perceived organizational support, and readiness for digital innovation (see Table 2). Furthermore, the average variance extracted (AVE) values are .59, .72, .67, and .54, all above the acceptable level of .50, indicating that each variable meets the requirements for discriminant validity (Hair et al., 2017).

Table 2

Validity and Reliability of the Study Variables

Variables	Cronbach's Alpha	AVE	Composite Reliability
Human Capital 4.0	.93	.55	.94
Thriving at Work	.94	.59	.95
Perceived Organizational Support	.93	.67	.94
Readiness for Digital Innovation	.90	.72	.93

Table 3

Model Fit

Fit Index	Threshold Criteria	Saturated Model	Interpretation
SRMR	< .08	.07	Model Fit
NFI	> .90	.92	Model Fit
Chi-Square	< 5	3.42	Model Fit

Note. SRMR: Standardized Root Mean Squared Residual, NFI: Normed Fit Index.

In addition, the standardized root mean square residual (SRMR) value in this study is .07, which is lower than the recommended threshold of .08, indicating that the research model has a good fit (Hair et al. (2017)). The NFI values of .92 > .90 and Chi-Square are less than 5 (Hair et al., 2017). Thus, indicating that the research model was fit (see Table 3).

Furthermore, the heterotrait-monotrait (HTMT) ratio, along with the mean and standard deviation values, is examined. The HTMT value shows that each construct passes the discriminant validity test if its value is below .90 (Hair et al., 2017). Additionally, the adjusted R-square value for the dependent variable, readiness for digital innovation, is .67, suggesting that the independent variable explains 67% of the variation in managers' readiness for digital innovation. Meanwhile, the adjusted R-squared value for the mediating variable of thriving at work is .53, suggesting that the human capital variable accounts for 53% of the variation in thriving at work.

The goodness-of-fit index is used to assess the model fit by evaluating both the outer model and the inner model. This measure helps determine whether the structural models in PLS are suitable for analysis. The goodness-of-it is established through predictive relevance (Q^2) values, which are calculated as follows:

$$\begin{aligned}
 Q^2 &= 1 - (1 - R_1^2) (1 - R_2^2) \\
 Q^2 &= 1 - (1 - .53) (1 - .67) \\
 Q^2 &= 1 - .15 \\
 Q^2 &= .85
 \end{aligned}$$

The calculation results indicate a value of .85, suggesting that the model in this study has a high level of predictive relevance. This implies that the research model can explain 85% of the data variation, while the remaining 15% is attributed to variables outside the scope of this study.

Hypothesis Testing Results

Table 3

Hypotheses Testing

Hypotheses	Path	Std Beta	SE	<i>t</i> -value	Interpretation
H1	HC → RDI	.35***	.05	6.26	Significant Effect
H2	HC → TAW	.73***	.03	24.66	Significant Effect
H3	TAW → RDI	.23***	.06	3.87	Significant Effect
H4	HC → TAW → RDI	.17***	.04	3.66	Mediation Effect
H5	HC x POS x RDI	.04	.04	1.01	No Moderation Effect

Note. * $p < .05$. ** $p < .01$. *** $p < .001$; HC: human capital 4.0; RDI: readiness for digital innovation; TAW: thriving at work; POS: perceived organizational support.

Furthermore, the results of the hypothesis testing for direct influence are presented in Table 3, along with the tests for mediation and moderation effects. The findings show that readiness for digital innovation is significantly and directly impacted by human capital 4.0 ($\beta = .35, p = .00$), indicating that hypothesis H1 is approved. This suggests that better human capital management can increase managers' readiness for digital innovation. Similarly, hypothesis H2 is accepted, as human capital 4.0 has a positive and significant effect on thriving at work ($\beta = .73, p = .00$). This result indicates that the better the optimization of human capital potential, the more thriving at work is encouraged among managers. Moreover, H3 is accepted ($\beta = .23, p = .00$), confirming that thriving at work has a significant and favorable effect on managers' readiness for digital innovation. This implies that improved thriving at work can lead to a greater readiness for digital innovation among managers. Moreover, hypothesis H4 is accepted ($p = .00$), demonstrating that thriving at work is a boundary condition in the relationship between human capital 4.0 and managers' readiness for digital innovation. However, hypothesis H5 is not accepted ($p = .31$), indicating that perceived organizational support failed to amplify the influence of human capital 4.0 on readiness for digital innovation among managers.

Discussion and Conclusion

Discussion of Main Results

The results demonstrate that human capital 4.0 can influence managers' readiness for digital innovation in the logistics and courier industry. This finding supports the proposed hypothesis and aligns with previous studies by Sun et al. (2020) and Fonseca et al. (2019). Furthermore, Kurniawati et al. (2024) found that readiness to change depends on managers' capacity to adapt to new standards, guidelines, and goals. Similarly, Anastasiu et al. (2020) noted that the stability and quality of human capital must be strategically analyzed to ensure readiness for uncertain changes. These results also corroborate resource-based theory, which asserts that internal resources can improve the efficiency and effectiveness of company operations (Barney, 1991). Furthermore, human capital as an internal resource, can drive competitive advantage by promoting readiness for digital innovation. This suggests that effective management of human capital, in line with industry 4.0, should encompass information and technology skills, as well as the automation and optimization of digital processes, to maintain a competitive edge.

Moreover, human capital 4.0 has a significant effect on thriving at work. This finding aligns with Basinska and Rozkwitalska's (2022) conclusion that people can utilize their resources more effectively and derive greater satisfaction from positive experiences when working in a diverse environment. It suggests that when managers have the autonomy to optimize their skills, they are more likely to thrive in their roles, thereby enhancing productivity. Additionally, managers need a stable psychological state to acquire and develop new skills, excel at work, and support the company's success in an uncertain business environment.

Thriving at work also influences managers' readiness for digital innovation. This finding supports previous research by Wu et al. (2023), which suggests that employees who thrive at work can significantly boost managers' readiness for digital innovation over time. Thriving at work is particularly critical for employees in companies undergoing significant transformation. However, since it is an individual trait that is challenging to measure, organizations need to provide managers with the autonomy to maximize their potential as branch leaders, enabling them to better implement business strategies and foster digital innovation in their business units. These results reinforce Liu et al.'s (2020) research, which demonstrated that thriving at work has a significant effect on innovation. Managers can make their most valuable contributions when they are given the freedom to thrive in the workplace.

Furthermore, the effect of human capital 4.0 on readiness for digital innovation is mediated by thriving at work. This aligns with Rabiul et al. (2023), who discovered that thriving at work mediates the relationship between leadership style and employee engagement. These findings suggest that when managers in the logistics and courier industry thrive in their roles, they are more likely to be open to innovation and the utilization of digital technology. Additionally, this research aligns with Wu et al. (2023), who demonstrated that thriving at work mediates the relationship between leader-member exchanges and innovation. These results indicate that giving managers the autonomy to thrive can ultimately lead to improved readiness for digital innovation in the organization.

Perceived organizational support did not moderate the effect of human capital 4.0 on readiness for digital innovation. This indicates that strong organizational support does not necessarily enhance the influence of human capital 4.0 on managers' readiness to innovate digitally. This outcome could be because managers in the logistics and courier industry already possess a certain level of readiness to create new digital innovations, even without additional organizational support. For instances, Kurniawati et al. (2024) suggested that managers are more receptive to change if they receive direct support from the organization. However, in this study, when organizational support is combined with human capital 4.0, it does not seem to significantly strengthen managers' readiness for digital innovation. Moreover, field observations suggest that managers may not require additional organizational support if they already have the opportunity to grow through human capital 4.0 practices that align with the advancement of industry 4.0.

Limitations

This research has several contributions, as previously described. However, it is not without its limitations. Firstly, this research employed a cross-sectional design, suggesting that future researchers might consider a longitudinal approach, accounting for time differences in questionnaire distribution. Secondly, the research focused solely on the government-owned courier and logistics industry in Indonesia, indicating that future studies could examine private companies with a core focus on courier and logistics that use technology as part of their innovation strategy. Lastly, this study utilized PLS-SEM with organizational analysis units, limiting the scope of analysis. Future researchers could use different data analysis methods and various tests, such as, age, length of employment, and educational attainment, to yield more comprehensive results.

Implications for Behavioral Science

The study also contributes to behavioral science. Firstly, it identifies a significant relationship between human capital 4.0 and managers' readiness to innovate through digitalization. This finding adds to the intellectual capital literature by demonstrating how human capital can influence readiness for digital innovation, an area that requires further exploration. In addition, this finding supports resource-based theory by incorporating human capital as internal resources and readiness for digital innovation as a source of competitive advantage. Furthermore, this study investigates how companies can optimize their capabilities to increase competitive advantage, in line with resource-based theory (Barney, 1991). The research found that when managers are given opportunities to develop their potential, they are more likely to excel in the workplace.

Secondly, the study found that thriving at work serves as a partial mediator between human capital 4.0 and readiness for digital innovation. This aligns with previous research indicating that thriving at work is a key driver of successful organizational change (Wu et al., 2023). Moreover, thriving at work is important for managers, not just lower-level employees (Rai et al., 2024). Researchers suggest that managers need to adjust their skills to meet the demands of industry 4.0 (Masyhuri et al., 2024). Therefore, in the industry 4.0 era, human capital requirements are more complex, necessitating companies to identify the appropriate skills. Furthermore, companies should also guide their human resources on critical issues, assist them in recruiting, and establish suitable standards and evaluation criteria when selecting candidates.

Conclusion

The results indicate that human capital 4.0 is a key factor in fostering managers' readiness for digital innovation during a period of transformation at all levels of management in state-owned logistics enterprises over the past five years. Furthermore, the study revealed that thriving at work partially mediates the influence of human capital 4.0 on readiness for digital innovation. This indicates that thriving at work can serve as a bridge between human capital 4.0 and readiness for digital innovation, especially in preparing managers to deliver digital innovation that meets increasingly complex consumer demands. Moreover, it is essential to prepare top talent to adapt to the rapidly changing business environment by providing them with the freedom to develop their skills to achieve long-term company goals. Digital innovation in industry 4.0 is crucial for gaining a competitive edge and winning market share nationally.

Declarations

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Conflicts of Interest: The authors declare that they have no conflicts of interest.

Ethical Approval Statement: The study was conducted in accordance with the guidelines reviewed and approved by the Institutional Review Board of the Dean of the Faculty of Economics and Business at Brawijaya University, Malang, Indonesia (protocol code: 11814/UN10.F02/PT.01.04.1/2023, date of approval: August 18, 2023).

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