**TRƯỜNG ĐẠI HỌC HẢI PHÒNG**

KỶ YẾU HỘI THẢO KHOA HỌC QUỐC TẾ

# PHÁT TRIỂN KINH TẾ BỀN VỮNG: CƠ HỘI VÀ THÁCH THỨC

INTERNATIONAL CONFERENCE

# SUSTAINABLE ECONOMIC DEVELOPMENT: OPPORTUNITIES AND CHALLENGES

NHÀ XUẤT BẢN HÀNG HẢI - 2024

# MỤC LỤC

# SỰ SẴN SÀNG CHUYỂN ĐỔI SỐ TRONG QUẢN TRỊ NHÂN SỰ CỦA CÁC DOANH NGHIỆP NHỎ VÀ VỪA: PHÁT TRIỂN THANG ĐO

# DIGITAL TRANSFORMATION READINESS IN HUMAN RESOURCE MANAGEMENT OF SMALL AND MEDIUM-SIZED ENTERPRISES: DEVELOPMENT OF A SCALE MEASUREMENT

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**Tóm tắt:** Xu thế chuyển đổi số nói chung và chuyển đổi số trong quản trị nhân sự (QTNS) nói riêng đang diễn ra mạnh mẽ trong các doanh nghiệp nhỏ và vừa ở Việt Nam. Để quá trình này thành công, các doanh nghiệp cần thiết lập đủ sự sẵn sàng của tổ chức để thay đổi. Tuy nhiên, vấn đề đánh giá sự sẵn sàng chuyển đổi số trong quản trị nhân sự lại chưa được quan tâm. Do vậy, nghiên cứu này được tiến hành thực hiện phát triển thang đo đánh giá sự sẵn sàng chuyển đổi số trong quản trị nhân sự của các doanh nghiệp nhỏ và vừa tại Việt Nam. Nghiên cứu sử dụng số liệu khảo sát từ 206 doanh nghiệp nhỏ và vừa khu vực Thừa Thiên Huế để kiểm định thang đo thông qua phân tích độ tin cậy, phân tích nhân tố khám phá EFA và phân tích nhân tố khẳng định CFA. Nghiên cứu đã nhận diện 6 thành phần để đánh giá sự sẵn sàng chuyển đổi số trong quản trị nhân sự, bao gồm: nền tảng công nghệ số trong QTNS, chiến lược CĐS trong QTNS, lãnh đạo số trong QTNS, năng lực số của bộ phận nhân sự, văn hoá số trong QTNS và điều kiện thuận lợi cho chuyển đổi số trong QTNS. Nghiên cứu đã khẳng định được vai trò quan trọng của các nguồn lực trong sự phát triển của mỗi doanh nghiệp theo lý thuyết dựa trên nguồn lực, đồng thời, đóng góp công cụ tham khảo quan trọng cho các doanh nghiệp nhỏ và vừa hiểu rõ hơn về mức độ sẵn sàng chuyển đổi số trong QTNS của mình.

***Từ khóa:*** *sự sẵn sàng chuyển đổi số, quản trị nhân sự, doanh nghiệp nhỏ và vừa, phát triển thang đo.*

**Abstract:** Digital transformation has become an inevitable trend in general and particularly in the area of human resource management (HRM) in Vietnam. Businesses need to build up their readiness for this transformative change. With the aim to develop a measurement scale for the digital transformation readiness in HRM, this study utilised a

mixed-method approach, including in-depth interviews with eight experts in digital transformation and HRM, followed by a survey of 206 small and medium-sized enterprises in Thua Thien Hue, Vietnam. The findings suggest six dimensions to measure digital transformation readiness in human resource management, including: digital technology platform in HRM, digital transformation strategy in HRM, digital leadership in HRM, digital capacity of HRM department, digital culture in HRM and favorable conditions for digital transformation in HRM. The study has confirmed the important role of resources in the development of each enterprise according to resource-based theory, and contributes an important reference tool for small and medium-sized enterprises to better understand the readiness level for innovation in their HRM.

***Keywords:*** *digital transformation readiness, human resource management, small and medium-sized enterprises, scale measurement.*

## 1. Introduction

Digital transformation has recently been emerging in many meetings, seminars, conferences, action programs, decisions, and academic research. Not an exception to that trend, Vietnamese businesses are increasingly applying digital technology in business operations in general and human resource management (HRM) in particular. To date, HRM can become a driving force for global innovation, leading organisations to change (Vardarlier & Ozsahin, 2021). There are many benefits that digital transformation can bring to HRM, such as enhancing the operation of the HRM system, applying automation, simplifying processes, providing many quick ways of working, and many optimal solutions for the human resources department. However, due to small scale, limited resources, insufficient capacity and constraints in the digital transformation process, small and medium-sized enterprises (SMEs) face higher barriers to digital innovation than large enterprises (Zhang et al., 2022). In addition, the readiness of SMEs in digital transformation is also lower than that of large firms (Rafiah et al., 2022). Thus, it is very challenging to SMEs to conduct the digital transformation activities.

There are several factors that could contribute to the effectiveness of implementing organisational changes. A typical example is that some leaders do not have sufficient organisational readiness for change (Kotter, 1996). When organisational readiness is high, staff members are more likely to initiate change, exert more efforts, demonstrate more persistence, and exhibit more cooperative behaviour, making the change proposal more

achievable (Weiner, 2009). In contrast, when organisational readiness is low, staff members are more likely to view change as undesirable and avoid or even resist planning the effort and engaging in the change process (Shea et al., 2014).

With a high number of transformations that fail, there is quite a few different models to assess the digital transformation maturity (Silva et al., 2022) such as DTRA model (Stoianova et al., 2020), DORAM model (Silva et al., 2022) or IMPULS model (Lichtblau et al., 2015). In Vietnam, there are two models, including Model for assessing the digital transformation readiness of Vietnamese SMEs (Hoa & Tuyen, 2021) and Framework for assessing the level of readiness in digital transformation (Ministry of Planning and Investment, 2023). However, the models have not focused much on small and medium-sized enterprises, especially not going deep into each area of business operations such as human resource management. It means that there is currently no tool to measure digital transformation readiness in HRM.

According to Bansal et al. (2023), the HR function is experiencing significant and inevitable disruptions, represented by the digital workforce, digital workplace and digital human resource management activities. As such, the main aim of this article is to develop a scale to measure the level of digital transformation readiness in HRM of SMEs.

## 2. Literature review

### *2.1. Digital transformation in HRM*

According to Varadaraj & Al Wadi (2021), digital transformation in HRM is upgrading human resource management through mobile phones, electronic media, the internet and information technology. Bansal et al. (2023) indicated that innovation in HRM is the process of digital upgrading of human resource processes. This multidimensional structure brings innovation to the organisation through infrastructure integration, digital architecture, individual capabilities, and creativity. Digital transformation in HRM is the deployment and application of information technology to the digitalisation process in operations and HRM at enterprises to improve capacity, simplify and optimise the enterprise's human resources department (Tran & Pham, 2022). It can be understood that digital transformation in HRM is changing how an organisation works and manages human resources in a digital environment with digital technology applications.

When implementing digital transformation in HRM, this process also occurs in other functions such as: labor compensation, training and development, recruitment, performance management and information management (Vardarlier, 2020).

### *2.2. Digital transformation readiness in HRM*

According to Weiner, 2009, the concept of readiness refers to "a state of being both psychologically and behaviorally prepared to act (in other words, be ready and able)". Lokuge et al. (2019) indicated that organisational readiness for digital transformation is "an organisation's assessment of its state of readiness to produce or effectively apply, assimilate and exploit digital technologies for innovation".

Thus, digital readiness in HRM can be defined as a state of psychological and behavioural preparation to deploy and apply digital technology and digital environment into operations and HRM at enterprises to improve capacity, streamline and optimise the enterprise's human resources department.

### *2.3. Resource-based theory*

Resource-based theory views an organization as a collection of resources and capabilities; a system of tangible and intangible assets and the ability to combine internal perspectives (phenomena within an organization) and external perspectives (competitive environment). According to the assumptions of this theory, firms within an industry may differ due to the strategic resources they use. According to Barney (1991), resources are controlled by a firm and enable the firm to form and implement strategies that enhance its efficiency and effectiveness. Resources lead to capabilities which are then a source of competitive advantage. Such types of resources are indicated as: qualified human resources, knowledge, reputation, company's technical equipment, technology and technological resources, financial resources, physical resources, organizational attributes, and other factors that enable the development and implementation of strategies that increase effectiveness of those resources.

To assess an organization's readiness to adapt to digital transformation, it is necessary to consider the contributions of the resource-based view of the company. The lack of certain resources or dynamic capabilities can hinder an organization from adopting or developing digital technologies.

### *2.4. Models of digital transformation readiness*

There are many models for evaluating digital transformation readiness proposed by Vietnam and international researchers or organisations, as follows:

***Table 1: Summary of some models related to digital transformation readiness***

| Authors | Model | Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Organization** | **Technology/Infrastructure** | **Strategy** | **Management** | **People** | **Culture** | **Process** | **Products/Customers** |
| *(Lichtblau et al., 2015)* | IMPULS | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| *(Deloitte, 2017)* | *Conversion model* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| *(Schumacher et al., 2016)* | *Industry 4.0 readiness and maturity model* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| *(Pirola et al., 2020)* | *Digital readiness assessment model 4.0* | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| *(Hoa & Tuyen, 2021)* | *Model for assessing the digital transformation readiness of Vietnamese SMEs* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| *(Stoianova et al., 2020)* | *DTRA* | ✓ | ✓ | | ✓ | ✓ | ✓ | | |
| *(Silva et al., 2022)* | *DORAM* | ✓ | | ✓ | ✓ | ✓ | | ✓ | |
| (*Ministry of Planning and Investment*, 2023) | *Framework for assessing the level of readiness in digital transformation* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

*Sources: Authors' summarisation*

According to the research frameworks presented in Table 1, most studies evaluate organisational readiness for digital technology based on six main pillars: Organization, Technology/Infrastructure, Strategy, Management, People and Culture.

Digital transformation in HRM is also a part of the digital transformation strategy at SMEs. Therefore, this study will also use the six pillars mentioned above to evaluate digital transformation readiness in HRM of SMEs in Vietnam.

### *2.5. Digital technology platform in HRM*

Weiner (2009) notes that the ability to implement change depends in part on knowing what actions are needed, what types of resources are needed, how much time it

will take, etc. Organisational readiness includes assessing the adequacy of resources, including information technology infrastructure (Lokuge et al., 2019). Advanced technology is the key factor in deciding whether digital transformation should be conducted (Hang, 2022).

Digital transformation in general and HRM requires many technological resources (Chwiłkowska-Kubala et al., 2023). With a good digital technology foundation, businesses can conduct digital transformation easily, accurately and save many costs in HRM. However, many risks also come from technology. For example, data and personal information stored online make businesses vulnerable to data theft. Therefore, to be ready for digital transformation in HRM, the level of digital technology of an enterprise is a factor that needs to be highly prioritised.

### *2.6. Digital transformation strategy in HRM*

Many studies have shown the urgent role of digital transformation strategy in businesses' successful digital transformation process (Bumann & Peter, 2019). If businesses develop an effective, clear, and reasonable strategy, it will make the business's digital transformation process as seamless as possible, thereby increasing the operating efficiency of businesses (Chien, 2023). A digital transformation strategy is like a personalised map, which can bring great value during business transformation. Building and implementing a digital transformation strategy has become a key concern for organisations before conducting digital transformation actions in many industries (Le, 2023).

Digital transformation in HRM will not be successful without a suitable strategy. Businesses should know how to divide and identify priority work groups before taking action. The task of the leaders is to communicate the vision and strategy developed for the organisation and provide the necessary support to execute the transformation roadmap (Bumann & Peter, 2019).

### *2.7. Digital leadership in HRM*

During the digital transformation process, a new concept has emerged "digital leadership". Digital leadership combines leadership and digital skills to make the most of digital technology and improve business performance (Amelda et al., 2021). Previously, leadership training programs mainly focused on leadership and communication skills. In the digital transformation era, these leaders also need technological visions and adaptability. Characteristics of digital leadership include innovative vision, digital intelligence, openness, ethics and employee orientation, adaptability, learning from mistakes, and creativity (Amelda et al., 2021). The need to successfully manage digital transformation shows the importance of digital leadership (Büyükbeşe et al., 2022). Lack

of digital leadership is the number one issue hindering businesses' digital performance (Amelda et al., 2021).

In HR activities, the method proposed by business leaders directly impacts the process of implementing corporate governance. Therefore, to be ready for digital transformation in HRM, a digital leadership style can be considered a guideline for implementing all plans.

The barrier for many businesses to be ready for digital transformation comes from the management board's unwillingness to change because they doubt whether there will be any risks if the business chooses to change or whether their interests will be affected if they choose to change (Hang, 2022). Besides, during the change process, employees often feel uncomfortable, even resistant, so the role of leadership is even more important.

### *2.8. Digital capabilities of the HR department*

In addition to the resource factors mentioned above, many researchers emphasise the importance of employees' digital capabilities in the digital transformation process (Proksch et al., 2021). Andersson et al. (2018) argue that besides the technological resources needed for successful digital transformation, it also requires new human skills and experience with different digital technologies. Cascio & Montealegre (2016) assert a growing skills gap between the current workforce and the skills needed to compete in a VUCA world (volatility, uncertainty, complexity and vague). In HRM, the human resources department plays a very important role, so their digital competency requirements must also be evaluated. Digital capacity is an important premise for digital transformation (Slavković et al., 2023).

The digital competency of the human resources department reflects their ability to use digital technology in solving tasks. Digital capabilities of the human resources department may include the ability to use computers to calculate salaries, store employee records on software, use tools such as Facebook and Zalo for recruitment purposes, and the ability to analysis and data modeling skills. In addition, digital competency requires using information and communication technology creatively and safely. Therefore, the requirement for digital capacity of the human resources department is very necessary for the digital transformation in HRM.

### *2.9. Digital culture in HRM*

Digital transformation is a challenge driven by technology and requires profound cultural changes within businesses. Many researchers have also pointed out the importance of corporate culture in encouraging change (Lokuge et al., 2019). According to a survey by (Capgemini, 2017) with over 340 businesses in 8 countries, up to 62% of respondents identified culture as the number one barrier in digital transformation.

Digital culture is a concept formed during the digital transformation process. Martínez-Caro et al. (2020) define digital culture as a set of shared assumptions and understandings about organisational operations in a digital context. This culture may include an agile and flexible working style; digital-first mindset; adapt and allow for failure when establishing digital capabilities; and data-centric (Proksch et al., 2021). Kane et al. (2016) revealed that the organisational culture of digitally mature companies has characteristics similar to smaller companies, such as adapting quickly, taking risks, and investing in talent.

Digital transformation in HRM takes time, as it requires both behavioural and cultural transformation (Vardarlier & Ozsahin, 2021). For SMEs, digital culture in HRM influences the working style and attitude of staff, which determines the readiness for innovation in HRM. People are the centre of innovation in HRM, so to be successful, businesses must build a digital culture in HRM (Mitrofanova & Konovalova, 2019).

### *2.10. Favorable conditions for digital transformation in HRM*

The aspect of favorable conditions in this study can refer to issues related to organisational structure, employee awareness of digital transformation, knowledge sharing as well as the ability to apply technology in HRM.

During the transformation process, businesses can apply lean organisational structures to help improve the ability to respond faster and more flexibly to changes in technology or business environment (Bumann & Peter, 2019). In HRM, businesses should establish an advanced human resources management apparatus to suit Industry 4.0. According to Weiner (2009), two aspects reflect an organisation's readiness for change: commitment to change and employees' awareness of the effectiveness of change. At the same time, digital transformation creates rapid changes, such as applying artificial intelligence and modern software technology. In fact, there are currently many software and technical tools that can apply digital transformation in HRM. Therefore, investing in knowledge and building solid intellectual capital is the key to helping digitally transformed businesses succeed. Besides, there are many technology products in human resource management. However, not all products are suitable for all businesses. It also depends on the compatibility and features suitable for the specific characteristics of each business. In other words, to be ready for innovation in HRM, we need to consider to what extent level the enterprise can apply the technology.

### *2.11. Methodology*

Building a theoretical framework and research process: The research team collects and evaluates major domestic and foreign scientific works related to the topic, thereby building a theoretical framework and research process appropriate to the research objective.

Building a scale: Based on theoretical models and in-depth interviews with experts, the research team built up a scale suitable for the characteristics of SMEs.

Scale development: Qualitative research is conducted as a basis for building models and supplementing explanations for the results from quantitative data. The study applies the reliability assessment method through Cronbach's Alpha coefficient to eliminate inappropriate variables.

Finally, the study conducted an exploratory and confirmatory factor analysis to build and test the scale using survey data from SMEs in Thua Thien Hue province. We selected Thua Thien Hue as a case for this scale development because of the following reasons. Thua Thien Hue is a pioneer city in digital transformation in Vietnam and the provincial leaders determined that digital transformation is no longer an option but is mandatory for departments, branches, units and businesses (Hau, 2022). However, with a rate of over 98%, SMEs in the province are facing certain difficulties in being ready for digital transformation, especially in the human resource management sector.

To achieve the research objectives, the study was conducted through the following procedure:

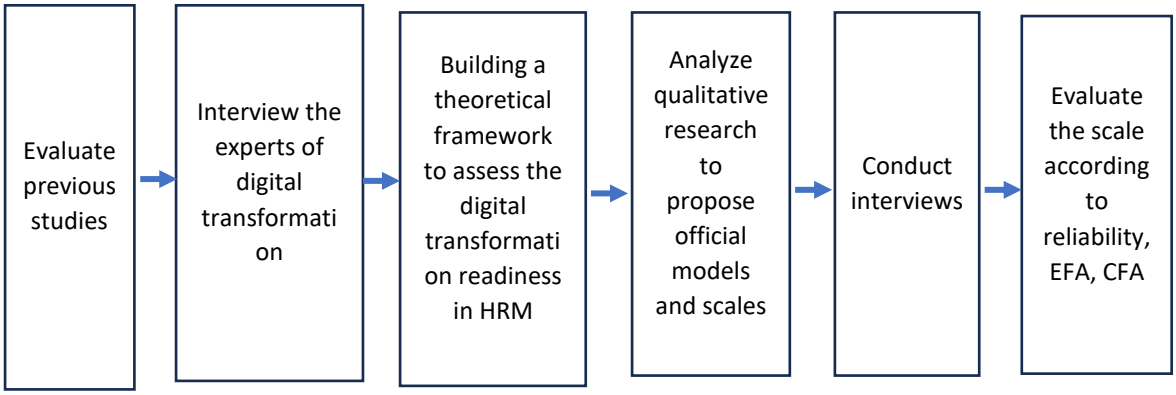


***Figure 1: Research procedure***

*(Sources: Authors' suggestion)*

**3. Qualitative research reults**

The in-depth interview method was used with the cooperation of 8 experts knowledgeable about digital transformation in HRM (including two lecturers and six business managers). The average time for each interview is 50 minutes.

In this study, the authors consulted on the reasonableness of the aspects and corresponding criteria. The authors also conducted discussions to reach consensus on terms used, added and removed measurement variables. The results are shown in Table 2 as follows:

***Table 2: Results of adjusting the digital transformation readiness scale in HRM based on qualitative research***

| Original dimension | Adjustments | Expert No. |
|---|---|---|
| **Digital technology platform in HRM (7 criteria)** | - Edit the words used<br>- Criteria 1 and 2 overlap and need to be changed<br>- Do not use the phrase "automation" because the target audience here is SMEs<br>- Legal risk criteria overlap with digital leadership aspects and need to be changed | [2]<br>[8]<br>[1], [7]<br>[3], [4] |
| **Digital transformation strategy in HRM (6 criteria)** | - Edit the words used<br>- Rearrange the criteria in a more logical order<br>- Should clearly state the time in the criterion "The enterprise has built a digital transformation strategy in HRM", for example 5 years or 10 years? | [2], [5]<br>[8]<br>[4] |
| **Digital leadership in HRM (6 criteria)** | Rearrange the criteria in a more logical order | [6], [8] |
| **Digital capabilities of the HRM department (5 criteria)** | - Edit the words used<br>- Should separate "knowledge, skills and experience" into different criteria<br>- The criterion "Enterprises have human resources staff with IT expertise" should be eliminated because with SMEs, it is very difficult to reach. | [5]<br>[3]<br>[1], [3], [7] |
| **Digital culture in HRM (6 criteria)** | - The criterion "Enterprises have policies to support innovative ideas" is duplicated in the digital transformation strategy aspect of HRM, it can be altered with another criterion to avoid duplication.<br>- Replace the phrase "people" with "employees" because we are focusing on HRM | [3], [4], [6]<br>[6] |
| **Favorable conditions for digital transformation in HRM (7 criteria)** | - Edit the words used<br>- Rearrange the criteria in order from inside to outside<br>- The criterion "Enterprises have programs to attract and recruit talents in the IT field" should be changed because of the small size and low financial capacity of SMEs.<br>- The criterion "Enterprises have mechanisms to share knowledge and experience quickly" overlaps with the criterion for sharing knowledge in the aspect of digital culture | [2]<br>[2], [5]<br>[1]<br>[1] |

*Note: [number]: No. of experts in the interviewing list*

*(Source: Authors' summarisation)*

Based on proposed adjustments and discussions with experts, the official questionnaire was conducted. A 5-point Likert scale from 1 (Strongly disagree) to 5 (Strongly agree) is used.

***Table 3: Proposed scale***

| Code | Item | Sources |
|---|---|---|
| | **Digital technology platform in HRM** | |
| **CN1** | Enterprises have applied technology to key operational processes in HR management such as recruitment, salary payment, timekeeping, training,... | (Hoa & Tuyen, 2021; Ministry of Planning and Investment, 2023; Pirola et al., 2020; Schumacher et al., 2016; Stoianova et al., 2020) |
| **CN2** | Enterprises ensure legal issues when using technology in human resource management | |
| **CN3** | Enterprises update technology solutions for HR management from suppliers in the market | |
| **CN4** | Technology in HR Management is easily integrated with the enterprise's IT system | |
| **CN5** | Enterprises periodically check and review vulnerabilities in the IT system in HR management | |
| **CN6** | Enterprises have processes to handle IT incidents and violations in HR management | |
| | **Digital transformation strategy in HRM** | |
| **CL1** | The business has built a strategy for digital transformation in HRM in the next 5 years | (Ministry of Planning and Investment, 2023; Pirola et al., 2020; Silva et al., 2022; Stoianova et al., 2020) |
| **CL2** | The digital transformation strategy in HRM is clearly communicated and easy to understand | |
| **CL3** | Enterprises integrate digital transformation into their overall strategy | |
| **CL4** | Businesses are interested in and invest in technology initiatives in HRM | |
| **CL5** | Enterprises apply IT systems and data analysis to support HRM strategies | |
| **CL6** | Enterprises have plans and resources to upgrade and innovate IT systems for HRM | |
| | **Digital leadership in HRM** | |
| **LD1** | Leaders are interested in digital transformation activities in HRM | (Ministry of Planning and Investment, 2023; Pirola et al., 2020; Silva et al., 2022; Stoianova et al., 2020) |
| **LD2** | Leaders understand current digital transformation trends in HRM | |
| **LD3** | Leaders have a positive attitude towards digital transformation in HRM | |

| | | |
|---|---|---|
| **LD4** | Leaders are willing to invest in digital transformation in HRM | |
| **LD5** | Leaders clearly understand the risks when implementing digital transformation in HRM | |
| **LD6** | Leadership is ready to address resistance to digital transformation in HRM | Authors' suggestions |
| | **Digital capabilities of the HRM department** | |
| **NV1** | The HR department has knowledge about digital transformation in HRM | (Ministry of Planning and Investment, 2023; Pirola et al., 2020; Schumacher et al., 2016) |
| **NV2** | The HR department has skills in digital transformation in HRM | |
| **NV3** | The HR department has experience in digital transformation in HRM | |
| **NV4** | The HR department has IT capabilities such as data analysis, online recruitment, etc. | |
| **NV5** | The HR department is open to digital transformation in HRM | |
| **NV6** | The HR department has the ability to accept changes quickly and positively | Authors' suggestions |
| | **Digital culture in HRM** | |
| **VH1** | Businesses encourage employees to innovate and be creative | (Hoa & Tuyen, 2021; Schumacher et al., 2016; Stoianova et al., 2020) |
| **VH2** | Businesses encourage knowledge sharing among workers | |
| **VH3** | Businesses appreciate employees' digital initiatives | |
| **VH4** | Businesses are willing to accept risks when applying changes in HRM | |
| **VH5** | Enterprises prioritize using technology to solve human resource problems | |
| **VH6** | HR decisions are primarily based on data | |
| | **Favorable conditions for digital transformation in HRM** | |
| **DK1** | The enterprise's organizational structure is flexible for digital transformation in HRM | (Ministry of Planning and Investment, 2023; Pirola et al., 2020; Stoianova et al., 2020) |
| **DK2** | Businesses clearly understand the values brought by digital transformation in HRM | |
| **DK3** | Enterprises have policies and procedures related to collecting and storing personnel data | |
| **DK4** | Enterprises spend budget to invest in digital transformation in HRM | |
| **DK5** | Enterprises have policies that favor employees with IT capabilities | |
| **DK6** | Enterprises have relationships with IT service providers for HRM | |

*(Source: Authors' summarisation)*

## 4. Evaluate and test the HRM digital tranformation readiness measurement scale

### *4.1. Descriptive statistics*

After conducting the survey, the researchers collected 206 valid questionnaires belonging to the board of directors, head or deputy head of human resources department or employees with experience in HRM. Regarding business type, the majority are non-state enterprises, accounting for 87%. The foreign-invested enterprises are lower, accounting for 9.3%, and the state-owned enterprises are the lowest. This is also consistent with the population of our study. Regarding the business sector, Enterprises in the trade and service sector participating in the survey had the largest number, accounting for more than 65%. Regarding the number of years in operation, 48% of businesses have less than five years, accounting for the largest proportion, and only 3.7% of businesses have time of operation for over 15 years.

### *4.2. Scale reliability*

Cronbach's Alpha test results (Table 4) show all coefficients greater than 0.7, and the Cronbach's Alpha coefficient if the variable is type is still lower than the general Cronbach's Alpha. All variables have a total variable correlation coefficient greater than 0.3. Thus, all 36 observed variables from 6 scales are kept for further analysis.

***Table 4: Cronbach's Alpha test results***

| **The scale** | **Number of observed variables** | | **Cronbach's Alpha** |
|---|---|---|---|
| | Before | After | |
| Digital technology platform in HRM | 6 | 6 | 0.914 |
| Community strategy in HRM | 6 | 6 | 0.777 |
| Digital leadership in HRM | 6 | 6 | 0.884 |
| Digital capabilities of the HRM department | 6 | 6 | 0.894 |
| Digital culture in HRM | 6 | 6 | 0.874 |
| Favorable conditions for digital transformation in HRM | 6 | 6 | 0.896 |

*(Source: Survey data, 2023)S*

### *4.3. Exploratory factor analysis (EFA)*

Exploratory factor analysis was performed with the Varimax rotation method to determine the factors for further analysis. The hypothesis set out in this analysis is that there is no correlation between the 36 observed variables in the population. The KMO and Barlett tests in exploratory factor analysis show that this hypothesis is rejected (Sig =

0.000), and the KMO coefficient is 0.846 (>0.5). This means the observed variables in the population are correlated with each other, and exploratory factor analysis is appropriate.

The results of EFA exploratory factor analysis extracted six factors from 36 observed variables, with the lowest eigen value of these six factors being 1.834 > 1. The cumulative extracted variance of these six factors is 64.159% > 50% meets the requirements.

Table 5 indicates the rotated factor matrix, proving all observed variables have factor loadings greater than 0.5. Thus, the results ensure discrimination between factors. According to the EFA results, the scale of digital transformation readiness in HRM has six factors and 36 observed variables.

***Table 5: Results of the exploratory factor analysis***

| **Observed variables** | Component | | | | | | **Factor name** |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | |
| CN5 | 0.815 | | | | | | **Digital technology platform in HRM (CNS)** |
| CN3 | 0.811 | | | | | | |
| CN2 | 0.810 | | | | | | |
| CN4 | 0.796 | | | | | | |
| CN6 | 0.790 | | | | | | |
| CN1 | 0.662 | | | | | | |
| DK3 | | 0.787 | | | | | **Favorable conditions for digital transformation in HRM (DKS)** |
| DK4 | | 0.782 | | | | | |
| DK2 | | 0.781 | | | | | |
| DK6 | | 0.781 | | | | | |
| DK1 | | 0.777 | | | | | |
| DK5 | | 0.739 | | | | | |
| NV6 | | | 0.834 | | | | **Digital capabilities of HRM department (NLS)** |
| NV5 | | | 0.816 | | | | |
| NV2 | | | 0.803 | | | | |
| NV4 | | | 0.796 | | | | |
| NV1 | | | 0.794 | | | | |
| NV3 | | | 0.768 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LD4 | | | | 0.808 | | | **Digital leadership in HRM (LDS)** |
| LD3 | | | | 0.792 | | | |
| LD1 | | | | 0.781 | | | |
| LD5 | | | | 0.780 | | | |
| LD2 | | | | 0.770 | | | |
| LD6 | | | | 0.758 | | | |
| VH5 | | | | | 0.836 | | **Digital culture in HRM (VHS)** |
| VH3 | | | | | 0.804 | | |
| VH4 | | | | | 0.804 | | |
| VH6 | | | | | 0.800 | | |
| VH2 | | | | | 0.734 | | |
| VH1 | | | | | 0.540 | | |
| CL3 | | | | | | 0.753 | **Digital strategy in HRM (CLS)** |
| CL4 | | | | | | 0.746 | |
| CL2 | | | | | | 0.720 | |
| CL6 | | | | | | 0.661 | |
| CL1 | | | | | | 0.655 | |
| CL5 | | | | | | 0.558 | |
| Eigenvalue | 7.876 | 4.453 | 3.231 | 2.901 | 2.801 | **1.834** | |
| Extracted variance (%) | 11.510 | 22.995 | 34.277 | 45.534 | 55.976 | **64.159** | |

*(Source: Survey data, 2023)*

### *4.4. Confirmatory factor analysis (CFA)*

*First: Measure the model fit with market information*

The results show that the index CMIN/df = 1.521 is less than 2; TLI = 0.917, CFI = 0.924 are both greater than 0.9; RMSEA = 0.050 is less than 0.08; PCLOSE = 0.455 is greater than 0.05. Thus, the scale is consistent with market data (Hair et al., 2010).

*Second: Assess the reliability of the scale*

Scale reliability is assessed through 3 indices: Composite reliability (CR), average variance extracted (AVE) and Cronbach's Alpha coefficient (CA). Table 6 shows that the CR values are all greater than 0.7; AVE are all greater than 0.5. Combined with the

Cronbach's Alpha coefficient (CA) greater than 0.6 presented above, it can be confirmed that the scales meet the requirements (Hair, 2019).

*Third: Test the convergent validity*

All observed variables are weighted with a value greater than 0.5, and the P value in the estimation tables is denoted by ***, meaning it is statistically significant. In addition, based on the data in Table 6, we see that the AVE extracted variance of all scales ranges from 0.512 to 0.632, all greater than 0.5. It can be concluded that the scale achieved convergent validity (Hair, 2019).

***Table 6: Results of estimating the composite reliability coefficient and average extracted variance***

| | **CR** | **AVE** | **DKS** | **NLS** | **VHS** | **LDS** | **CNS** | **CLS** |
|---|---|---|---|---|---|---|---|---|
| **DKS** | 0.893 | 0.581 | **0.762** | | | | | |
| **NLS** | 0.881 | 0.554 | 0.226 | **0.744** | | | | |
| **VHS** | 0.876 | 0.542 | 0.248 | 0.174 | **0.736** | | | |
| **LDS** | 0.884 | 0.560 | 0.176 | -0.155 | 0.206 | **0.748** | | |
| **CNS** | 0.911 | 0.632 | 0.581 | 0.116 | 0.380 | 0.286 | **0.795** | |
| **CLS** | 0.777 | 0.512 | -0.023 | 0.025 | 0.063 | 0.018 | -0.032 | **0.715** |

*(Source: 2023 survey data)*

*Fourth: Evaluate the unidimensionality*

According to Steenkamp & Van Trijp (1991), if the model meets the condition of being suitable for market data, the unidimensionality of the observed variables will be achieved. In addition, because there is no correlation between the errors, it can be concluded that the model used in this study is unidimensional.

*Fifth: Evaluate the discriminant validity*

The correlation coefficients between pairs of concepts are all smaller than 1 and statistically significant ($p<0.05$), so the correlation coefficients are all different from 1. In addition, the square root value of AVE (value diagonal and bold lines in Table 6) is all larger than the correlation coefficients between concepts (values in the same row and column). Thus, it can be concluded that the concepts or scales achieve discriminant validity (Hair, 2019).

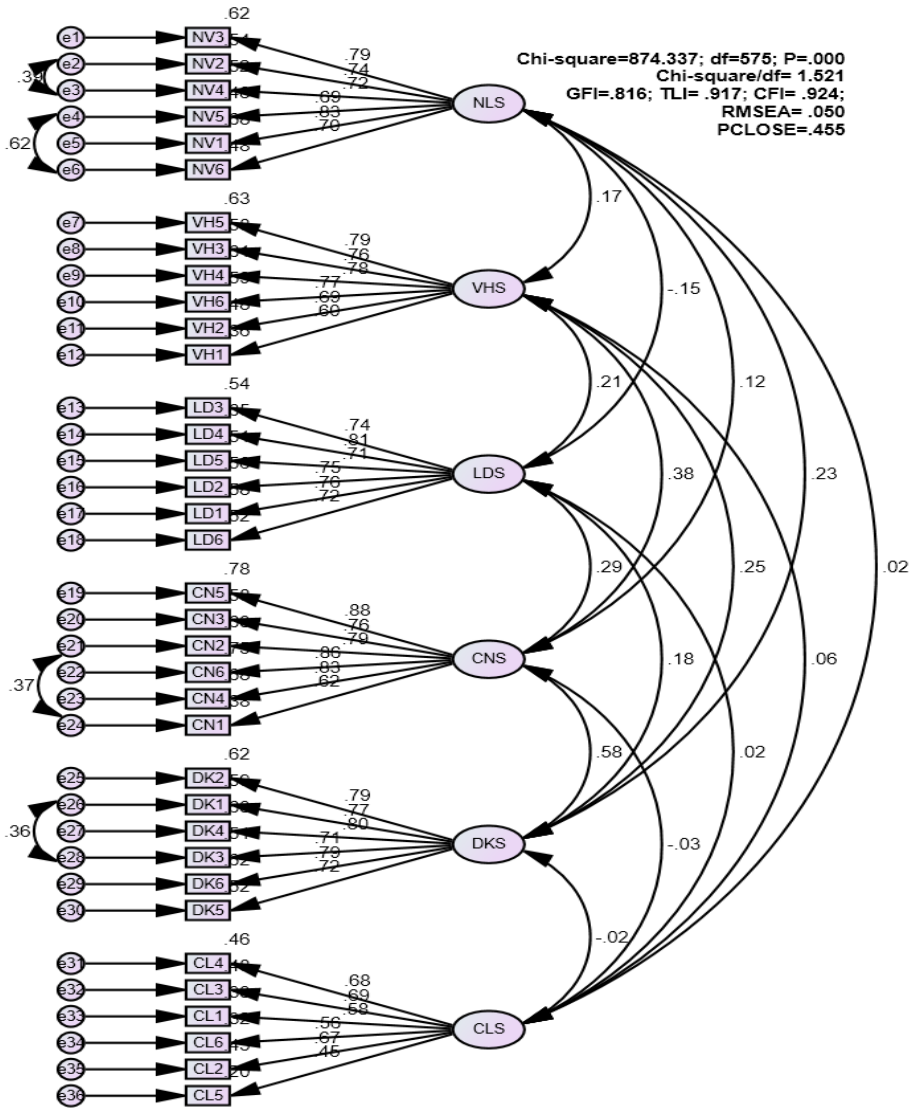


***Figure 2: Confirmatory factor analysis results of the digital transformation readiness scale in HRM***

*(Source: Survey data, 2023)*

## 5. Conclusion

The article has presented the process of developing a scale of digital readiness in HRM of SMEs in Vietnam. From Cronbach's alpha coefficient, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) prove that the scales are reliable and that the observed variables in each scale have convergent and discriminant validity. The official scale to evaluate digital innovation readiness in HRM includes 36 observed variables grouped into six dimensions as follows: Digital technology platform in HRM (6 observed variables), Digital transformation strategy in HRM (6 observed variables),

Digital leadership in HRM (6 observed variables), digital capacities of the HRM department (6 observed variables), Digital culture in HRM (6 observed variables) and favourable conditions for digital transformation in HRM (6 observed variables).

Theoretically, the research has confirmed the important role of internal resources according to resource-based theory in the development process of enterprises. In addition, in practical terms, through this study, the author hopes that SMEs in Vietnam will have more tools to better understand the readiness level for innovation in their HRM. Thereby, they will have more appropriate policies to ensure a high level of readiness, creating a proactive position to adapt to the current digital transformation process.

The author hopes that the measurement scale to evaluate the digital transformation readiness in HRM will be the basis for conducting further research in more depth and on a broader scale (such as analysing the impact of readiness for radical change in people management on business efficiency; research context in more localities or countries,...).

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