




# Adoption of digital strategies across the human resource value chain



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**Orientation:** Digital technologies are transforming the way business functions operate, and this also applies to the human resource management (HRM) function.

**Research purpose:** The purpose of this study is to determine the extent to which South African organisations have adopted digital HRM strategies across the human resource (HR) value chain and the extent to which these digital strategies are perceived to contribute to the achievement of business objectives.

**Motivation for the study:** This study provides an indication of the trend of the adoption of digital HRM strategies and whether the digital strategies support business goals.

**Research approach/design and method:** A quantitative research design using a cross-sectional survey was used. Data were collected by means of a survey with a questionnaire from 312 HRM professionals and line managers in the automotive industry in the Eastern Cape Province of South Africa. Purposive and snowball sampling was used, and data were analysed using exploratory factor analysis (EFA), descriptive, paired-sample tests, Pearson correlations and regression analysis.

**Main findings:** The findings of this study indicate that Digital HRM Strategies have been moderately adopted across the HR value chain. The perceived contribution of these digital strategies towards attainment of business objectives was high.

**Practical/managerial implications:** Constraints such as lack of digital skills by HRM practitioners, which hinder the adoption of digital HRM strategies across the HR value chain, should be addressed.

**Contribution/value-add:** This research assists HRM practitioners and leaders in South Africa regarding which digital strategies to adopt to contribute to the achievement of organisational objectives.

**Keywords:** HRM digitalisation; digital HRM technologies; HR value chain; digital HRM strategies; organisational objectives/performance; South Africa.

## Introduction

Digitalisation, which is caused by continuous inventions and advances in digital technologies of the Fourth Industrial Revolution (4IR), has become a buzzword across many organisational operations, including human resource management (HRM) (World Economic Forum [WEF], 2016). Organisations exploit technologies of the 4IR by digitalising the production and distribution of commodities (WEF, 2016). Digitalisation has been accelerated by the outbreak of the COVID-19 pandemic and its related consequences such as lockdowns (Agrawal, Dutta, Kelly, & Millán, 2021).

Depending on the degree of embracement of technologies and preparedness for change, organisations have either adopted or are contemplating adopting digital strategies across the human resource (HR) value chain. The force behind the digitalisation of HRM is to improve and sustain efficiency and effectiveness in the delivery of a range of HRM services, which also directly or indirectly improves the employee experience and enables a quick response to the needs of the business (Deloitte, 2020; Jayabalan, Makhbul, Nair, Subramaniam, & Ramly, 2021; Thite, 2019).

As a result, some researchers and business leaders express confidence that HRM's strategic role as a business partner could be fulfilled (Jani, Muduli, & Kishore, 2021; Schiemann & Ulrich, 2017). Other researchers (Bondarouk & Brewster, 2016; Poisat & Mey, 2019) reveal more doubt about the impact of digital HRM strategies on service delivery, and this is mostly because of a lack of empirical research results. This lack of evidence could serve as a contributing factor to a reluctant

and haphazard approach to adopt digital HRM Strategies. In addition, the researchers are basing their arguments on past research that did not specifically probe the impact of HRM on organisational performance (Guest, 2011; Ulrich, 1997). Even in cases where empirical evidence depicts an association between HRM practices and organisational performance (Huselid, 1995), specific strategies and practices of the HRM function that have a significant impact were difficult to determine (Becker & Gerhart, 1996; Guest, 2011; Ulrich, 1997; Wright & Ulrich, 2017).

While this debate is ongoing, the adoption of digital strategies in HRM, as with any other business operation, is now inevitable whether in developed or undeveloped countries (Deloitte, 2016). Organisations lagging in the digitalisation race are vulnerable, as they may lose relevance (Deloitte, 2016; Jani et al., 2021). Although HRM digitalisation is being discussed at conferences in South Africa and leaders are acknowledging a need to digitalise the HRM function (CHRO South Africa, 2021), there is still a need to ascertain the extent to which organisations in South Africa have adopted digital HRM strategies across the HR value chain (SABPP, 2019). In addition, the business community needs to know the extent to which the digitalisation of HRM contributes to the attainment of business goals. Therefore, this study aims to empirically ascertain the extent to which South African organisations have adopted digital HRM strategies across the HR value chain and the extent to which this has contributed towards the achievement of organisational objectives.

## Objectives of the study

This study aims to determine the extent to which organisations in South Africa have adopted digital HRM strategies across the HR value chain and the extent to which these digital strategies are perceived to contribute to the achievement of organisational objectives.

Following this introduction, the study presents the literature review. This is followed by the research methods that were used to undertake the study. Thereafter, the results and their discussion are presented. The link between results and literature is discussed in the discussion section. Following this, practical implication of the results, limitations of the study and recommendations for future research are outlined. Finally, a conclusion drawn from the results is presented.

## Literature review

The literature review focuses on the adoption of digital HRM strategies and value that could be gained.

Digital HRM strategies are HRM practices or functions such as digital recruitment and selection that are executed using digital technologies (Barman & Das, 2018). A plethora of 4IR technologies can be adopted for the digitalisation of HRM and comprise social media, mobile applications, analytics and cloud computing (SMAC), for example, and other emerging technologies, such as artificial intelligence (AI),

blockchain, machine learning, Internet of Things (IoT), virtual reality, gamification and robotics (Bersin, 2017; Thite, 2019).

In South Africa, the following broad digital HRM strategies could be adopted across the HR value chain: digital workforce planning (including digital recruitment and selection); digital performance management; digital learning and development; digital reward and recognition; digital employee wellness management; digital employment relations management; and digital organisational development (SABPP, 2014). These seven identified digital HRM strategies are functional HR value chain elements extracted from the HR architecture depicted in the SABPP HR Management System Model (SABPP, 2014).

In addition, it should be noted that the seven HR value chain elements are supported by 30 HR professional practice standards (SABPP, 2014). Examples of the 30 HR professional practice standards include absenteeism management, collective bargaining, succession planning, recruitment and selection, career management and culture management (SABPP, 2014).

The goal of adopting an HRM strategy across the HR value chain is to assist in achieving business objectives, thus positioning HRM as a value-adding function rather than an expense to the organisation (Wright & Ulrich, 2017). Similarly, digital HRM strategies could, for example, enable effective and efficient collection, processing and utilisation of employee data, leading to the identification of potential talent that could contribute to business results (Amla & Malhotra, 2017).

Mjomba and Oyagi (2021) posit that digital HRM strategies contribute to achieving organisational goals by facilitating the collection and provision of talent information to assist HRM practitioners and managers in making informed decisions. The final results are financial results such as increases in sales, profits, market share and market value for the business (Armstrong & Taylor, 2020).

Thus, it is expected that digital HRM strategies that could be adopted across the HR value chain in South Africa could contribute to the achievement of business objectives through influencing HR outcomes such as motivation, satisfaction, engagement and commitment. This then influences business outcomes such as productivity, quality and customer satisfaction, and finally improved sales, profits, market share and market value. The following sections discuss digital HRM strategies that could be adopted to ascertain their potential contribution to the attainment of organisational goals.

## Digital workforce/human resource management planning

Digital applications in workforce planning can forecast and audit the talent pool within the organisation (Dulebohn & Johnson, 2013). Through workforce analytics, employee data sourced through video and exit interviews can be mined by AI's predictive models to inform intelligent decision-making

regarding talent (Jia, Guo, Li, Li, & Chen, 2018). Wiblen (2019) observed that digital workforce planning contributes to the consistent identification of talent eligible to be retained and for development across the organisation.

For example, algorithms could calculate the likelihood of some individual employees leaving the organisation at a future period. In this instance, if the individuals are valuable, the organisation could make proactive strategies to retain them before they leave (Wiblen, 2019). However, there are fears that vendors of technologies could evaluate and determine talent requirements, rather than the organisation's HRM practitioners themselves doing the task. In addition, Thite (2019) also doubted the authenticity and objectivity of the role of digital planning of the workforce, citing that there are instances where organisations have struggled to develop a unified and accessible talent database.

### Digital recruitment and selection

Digital recruitment and selection enable the online execution of tasks via social networking sites, career websites and job portals (Thite, 2019). It is argued that digital recruitment and selection directly influence organisational success. The digitalisation of screening, interviewing, shortlisting and providing feedback to applicants and interviewees reduces the time and costs spent on these tasks by HRM teams, creating time to execute more strategic value tasks (Burbach, 2019).

For example, candidates who match job profile and company culture could be sourced easily from diverse databases using AI which scours and screens resumes (Burbach, 2019). Social media can be used to network with potential talent and screen their profiles, while mobile applications could be used to deliver personalised recruitment and onboarding processes (Holm & Haar, 2019). This in turn improves employee engagement and communication within the organisation (Burbach, 2019). However, Holm and Haar (2019) argue that the adoption of digital technologies makes recruitment and selection complex and costly, as there is a need for recruitment officers and job applicants to have the necessary digital skills and digital applications to be able to use diverse digital channels of the digital recruitment and selection system.

### Digital employee performance management

In digital performance management, analytics and AI embedded in HRM performance systems mine employee performance data from diverse sources (Rondeau, 2019). Mobile and cloud-based solutions aid the provision and accessibility of real-time feedback about employee performance, thus reducing resources devoted to the practice as compared to paper-based performance management (Rondeau, 2019). Robotic Process Automation digitalises the performance management administration and generation of reports, resulting in the execution of such tasks quickly, with less bias and few errors (Shrivastava, Kataria, Chabani, Tongkachok, & Salameh, 2022).

Bissola and Imperatori (2019) observed positive correlation between digital performance management and organisational outcomes such as employee engagement and motivation. However, it could be challenging for HRM practitioners and HRM teams to equip themselves with skills in performance management governance and skills needed to evaluate employee performance using technologies. Rondeau (2019) also points out that digital performance management decreases face-to-face interaction between the employees and supervisors, as supervisors tend to rely more on digitalised performance data. In this way, digitalised employee performance feedback is unlikely to draw the attention and change the behaviour of employees as compared to feedback delivered through interpersonal interaction (Rondeau, 2019).

### Digital learning and development

Human resource management practitioners rank digital learning and development as a key priority (Deloitte, 2016, 2017), replacing the conventional classroom or face-to-face learning because of its collaborative and engaging ingredients (Chartered Institute of Personnel and Development [CIPD], 2017). The often-used technologies in digital learning and development comprise learning management systems; virtual classroom, webcasting, video and Zoom conferencing; and Microsoft Teams technology, which is embedded with AI and machine learning solutions to facilitate curation of content, effective and efficient administration and management of learning (Thite, 2019).

Predictive employee analytics could be applied to predict learning and skill gaps within the organisation (Thite, 2019). Mobile applications facilitate convenience delivery and accessibility of learning content. These technologies have the potential to deliver personalised learning across diverse talent groups and facilitate the measurement of the impact of learning and development interventions on organisational performance (Jayabalan et al., 2021; Wasserman & Fisher, 2020). However, Thite (2019) points out that digital learning and development offer fewer opportunities for learners to interact with other learners in discussions. In this regard, learners who rely primarily on instructors would struggle, as there are limited chances to ask for clarifications and feedback from the instructor.

### Digital reward and recognition management

The use of AI and machine learning technology, such as a neural network system, enhances the design and structuring of benefits and compensation programmes (Jia et al., 2018). This results in the verification of the accuracy of claim submissions digitalised, while chatbots could facilitate the handling of first-level rewards and benefit queries (Rondeau, 2019). Insights about employees' preferences for diverse salary and wage components could be generated using employee analytics, thus revealing the impact of organisational compensation and benefits components on employee attraction, motivation and retention (Jayabalan et al., 2021; Johnson, Stone, & Lukaszewski, 2020). The managerial self-service and employee self-service systems

are also used in the dissemination of compensation data and information to senior managers and general employees (Thite, 2019). The ability of the digital applications to integrate compensation and reward data with data from other HRM functions promotes the compilation of accurate and unbiased benefits and compensation structures (Rondeau, 2019). In addition, these technologies reduce the time needed to execute such functional tasks (Thite, 2019).

However, digital reward management systems are criticised for being rigid in that they allow final decisions that are the prerogative of the manager to be made by technology (Rondeau, 2019).

### Digital employee wellness management

Digital employee wellness management involves using AI and machine learning-powered wearables, digital health devices and mobile applications to collect, generate and monitor employee health and wellness data timeously (Brassey, Güntner, Isaak, & Silberzahn, 2021). This data is used by HRM practitioners to improve wellness and health and to create a sustainable behaviour change in employees (Brassey et al., 2021). In this regard, through employing analytics, insights about employee well-being are generated from the data, resulting in timely employee well-being intervention devised to deal with the affected employees. In addition, digital technologies enable well-being assistance programmes to reach many employees at once, benefiting organisations with few health consultants and thus saving time and resources (Diamandis & Kotler, 2015). Using AI-powered robots and chatbots, employees can receive mental health therapy anonymously at any time and at any place (Brassey et al., 2021). However, digital employee wellness management is criticised for aiding the unconsented collection and utilisation of employee information (Rose, Barton, Souza, & Platt, 2014). This could negatively affect employee job satisfaction and commitment and could see the organisation facing charges of infringing employees' security and privacy (Rose et al., 2014).

### Digital employment relations management

In digital employment relations management, the development and deployment of employee engagement surveys, sending of automatic reminders and collating data about employee engagement and job satisfaction levels can be digitalised through AI, analytics, robotics and machine learning technologies (Rondeau, 2019). Employee analytics draw insights on talent engagement levels and appropriate interventions developed (Rondeau, 2019). Digital employment relations management also includes management of trade union and workers' committee information, using digital technologies (Palm, Bergman, & Rosengren, 2020).

Mobile applications and social media facilitate the dissemination and sharing of information, such as employee relations policies (Shrivastava et al., 2022). Therefore, it is argued that digital employment relations management improves communication and cooperation in individual and collective labour relationships (Palm et al., 2020). However,

Burbach (2019) asserts that the use of technologies in the coordination of the employment relationship could make employees work 24/7 (Burbach, 2019), leading to overwork. This undermines employee morale, productivity and organisational climate. In addition, it diminishes physical interaction between employees and employers (Burbach, 2019). Physical interactions between employees and employers are perceived to sustain positive and productive relationships within the workplace, as they reduce employees' feeling of disenfranchisement (Burbach, 2019; Parry & Battista, 2019).

### Digital organisational development

Using technology, HRM practitioners, as cultural ambassadors, are encouraged to be leaders in embracing a technological culture within the organisations (Fisher & Bondarouk, 2020). When HRM practitioners collaborate with leaders across the business functions in this regard, an agile culture in which digitalisation can thrive is created. For example, Kahai (2020) argues that digitalisation makes team leaders and team members more open to each other and the community, which improves the organisation's brand. Digital leadership is characterised as adaptable and effective in virtual teams, and not averse to risk-taking (Contreras, Baykal, & Abid, 2020).

However, the demerits of using digital technologies in organisational development activities are that managers are required to acquire ethical, conflict and change skills in a digitalised workplace (Fisher & Bondarouk, 2020). This challenge includes the ability to choose suitable digital technologies favourable for smooth flow of information across the organisational stakeholders. In this regard, HRM practitioners are urged to communicate often and make follow-ups to their messages to reduce misunderstandings and information loss because of diverse digital communication platforms (Kahai, 2020).

The discussion in this section reveals that the adoption of digital HRM strategies across the HR value chain could contribute to the attainment of organisational objectives even though potential negative outcomes were also revealed. Therefore, this study seeks to empirically determine the extent to which organisations in South Africa had adopted digital HRM strategies across the HR value chain and the extent to which these digital strategies contribute to the achievement of organisational objectives.

## Research methodology

### Research approach

This study adopted the quantitative and cross-sectional methodological approach, using a questionnaire survey as the data collection instrument.

### Research participants and sampling

The target population for this study comprised HR directors, HR managers and HRM practitioners and line managers



who worked within small, medium and large companies in the automotive manufacturing industry in the municipalities of Nelson Mandela Bay and Buffalo City in Gqeberha and East London in the Eastern Cape Province of South Africa. A nonprobability sampling procedure, which comprised purposive and snowball sampling methods, was used in the study to select participants from the targeted organisations. A total of 425 online questionnaires were distributed, of which 328 were returned, 312 of which were usable, achieving a response rate of 73.41%. The demographic profile of the respondents is summarised in Table 1. This information was used to screen respondents to ensure that only data collected from targeted respondents were included for analysis.

### ***n* = 312: Research measuring instrument and administration procedure**

An online questionnaire was employed that consisted of 34 digital HRM strategies items. Some of the 34 digital HRM strategies items included in the online questionnaire are

**TABLE 1:** Demographic profile of respondents.

Profile	Category	Total respondents	Frequency	Per cent	Valid per cent
Industry	Automotive original equipment manufacturing	311	147	47.1	47.3
	Automotive component manufacturing	311	163	52.2	52.4
	Other	-	1	0.3	0.3
Position	HR director	312	28	90.0	90.0
	HR manager	-	123	39.4	39.4
	HR practitioner	-	48	15.4	15.4
	Manager	-	109	34.9	34.9
	Other	-	4	1.3	1.3
Department	Human resources	312	187	59.9	59.9
	Finance	-	17	5.4	5.4
	Marketing	-	27	8.7	8.7
	Production and operation	-	38	12.2	12.2
	Information technology	-	19	6.1	6.1
	Research & development	-	18	5.8	5.8
	Other	-	6	1.9	1.9
Geographical area	Nelson Mandela Bay	312	177	56.7	56.7
	Buffalo City	-	131	42	42
	Other	-	4	1.3	1.3
Length of service (years)	0–1	311	22	7.1	7.1
	1–5	-	112	35.9	36
	6–10	-	124	39.7	39.9
	11–15	-	45	14.4	14.5
	More than 15	-	8	2.6	2.6
Education	Grade 12	312	8	2.6	2.6
	Diploma	-	99	31.7	31.7
	Degree	-	162	51.9	51.9
	Master's	-	39	12.5	12.5
	Doctorate	-	2	0.6	0.6
	Other	-	2	0.6	0.6
Age group	19–30 years old	312	27	8.7	8.7
	31–40 years old	-	150	48.1	48.1
	41–50 years old	-	115	36.9	36.9
	51–60 years old	-	19	6.1	6.1
	Over 60 years old	-	1	0.3	0.3

HR, human resource.

digital recruitment, digital selection, digital management of the succession planning, digital employee performance management, digital absenteeism management, digital management of employee wellness, et cetera. There was no existing validated questionnaire to measure the phenomenon investigated in this study. As a result, the items included in the questionnaire were derived from the literature review. Thus, the 34 digital HRM strategies items were derived from the HR architecture's seven HR value chain elements depicted in the SABPP HR management system model, including the 30 HR professional practice standards created to support them (SABPP, 2014).

The items were measured on two separate five-point Likert rating scales, namely (1) the extent of use in HRM (USE) and (2) the extent of contribution towards the achievement of business objectives (CONTRIBUTION). The respondents were asked to rate the extent to which the 34 digital HRM strategies were being used in their organisation (USE) and the extent to which each has improved the HRM's contribution towards the achievement of business objectives (CONTRIBUTION). The five-point Likert rating scales ranged from not at all (1), small extent (2), moderate extent (3) great extent (4) and very great extent (5) for both USE and CONTRIBUTION.

The survey was administered using QuestionPro survey software with a link to the questionnaire. The survey link was sent to prospective respondents (HR directors, HR managers, HRM practitioners and line managers) via e-mail. The respondents could complete the online questionnaire by opening their e-mail and clicking on the survey link attached.

### **Statistical analysis**

Both descriptive and inferential statistics were applied, using Statistical Package for Social Sciences (SPSS) version 27, to analyse the collected empirical data. Exploratory factor analysis (EFA) was used to statistically determine the most appropriate structures and latent factors underlying the item variables. Kaiser–Meyer–Olkin (KMO) measure was used for checking sampling adequacy and Bartlett's test of sphericity (BTS) to check data suitability for EFA (Hair, Babin, Anderson, & Black, 2018). Thus, with KMO of 0.929 and 0.944 for both the USE and CONTRIBUTION scales respectively, and BTS of 0.000 for both the USE and CONTRIBUTION scales, was adequate, and data were considered suitable for factor analysis.

Principal Axis Factoring (PAF) was used for factor extraction (Williams, Brown, & Onsmann, 2012). After that, descriptive statistics such as the mean scores and standard deviations were used to describe extracted factors. Inferential statistics such as the paired sample *t*-tests, Pearson correlations and regression analysis were used to establish and explain the relationship between the variables and to provide inferences on the whole population from which the sample data was drawn (Bhattacharjee, 2012).

## Ethical considerations

All ethical protocols required for this study were observed. Participation in the study by the respondents was voluntary. Prospective respondents were informed of the purpose of the study in the covering e-mail letter prior to their consenting to participate. If the prospective respondents were not interested in completing the survey, they could just leave the survey by not clicking the 'START' button.

## Results

The pattern matrix and related factor loadings showed that four factors emerged for both USE and CONTRIBUTION scales. However, since the objective of having two scales was to compare the USE to CONTRIBUTION, the factor structure for USE was used for CONTRIBUTION. This was validated by performing Confirmatory Factor Analysis (CFA). In this regard, all the parameter estimates were statistically significant ( $p < 0.05$ ), and the fit indices indicated an adequate model fit (Hair et al., 2018).

After close examination of the items that loaded onto each factor, and the relationship that existed among them, the four factors for the USE structure were labelled as follows: Factor 1 (Digital Talent Practices), Factor 2 (Digital Organisational Design & Culture), Factor 3 (Digital Employment Relations Management) and Factor 4 (Digital Media). All the items were valid as they loaded onto each factor, revealing loadings higher than 0.3, with the highest loading being 1.02 and the lowest 0.374 (Hair et al., 2018). Cronbach's alpha coefficients for the USE factors ranged from 0.807 to 0.944, and for CONTRIBUTION ranged from 0.795 to 0.946, indicating high reliability of the questionnaire and the data collected.

### Factor 1: Digital talent

Digital Talent practices refer to the efficient and effective identification, acquisition, appraisal, development and retention of the right people (talent) in the organisation (Claus, 2019).

### Factor 2: Digital org (Design and Culture)

Digital Org (Design and Culture) is a practice related to the management of the organisational culture and design. As a

strategic partner with touchpoints at every level, HRM plays a paramount role throughout the organisation. In this regard, Digital Org (Design and Culture) contributes invaluable insights into the organisational design and culture processes.

### Factor 3: Digital employment relations management (ERM)

Digital ERM is a practice related to the management of the employment relationship within an organisation. Digital ERM refers to digital practices that enhance the relationship between employers and employees, and among employees, on an individual and collective basis.

### Factor 4: Digital media

Digital Media is a practice related to the use of digital media technologies in HRM. These are everyday technologies, applications and platforms that keep employees connected, and that are used for communicating, collaborating and transacting routine HR work in a digitalised workplace (Deloitte, 2017).

Table 2 summarises the descriptive statistics obtained for the factors. The mean value for Digital Media was 3.69 and Digital Talent was 3.52 for USE, which show that respondents had moderate to high perception on the adoption of these digital strategies within the organisations. Digital Org (Design & Culture) ( $M = 3.11$ ) and Digital ERM ( $M = 2.88$ ) show that respondents had moderate perception on the adoption. On the other hand, the mean value for Digital Media was 3.83 and Digital Talent was 3.71 for CONTRIBUTION, which show that respondents had high perception on the contribution of these digital strategies in

**TABLE 2:** Descriptive statistics for the factors.

Factor	n	USE		CONTRIBUTION	
		Mean	Standard deviation	Mean	Standard deviation
<b>Digital HRM strategy factors</b>					
Digital talent	312	3.52	0.74	3.71	0.79
Digital Org (design & culture)	312	3.11	0.84	3.29	0.89
Digital ERM	312	2.88	0.87	2.99	0.88
Digital media	312	3.69	0.88	3.84	0.84
Overall adoption of digital HRM strategies	312	3.30	0.71	3.45	0.72

HRM, human resource management.

**TABLE 3:** Paired sample *t*-tests and Cohen's *d* for the factors.

Use Pair	Paired differences				<i>t</i>	<i>df</i>	Sig. (2-tailed)	Cohen's <i>d</i>
	Mean	Standard deviation	95% CI of the difference					
			Lower	Upper				
<b>Pair 1</b> Digital Talent (USE) – (CONTRIBUTION)	-0.18479	0.37291	-0.22633	-0.14325	-8.753	311	0.000	-0.496 medium
<b>Pair 2</b> Digital Org (Design & Culture) (USE) – (CONTRIBUTION)	-0.18348	0.35479	-0.22301	-0.14396	-9.135	311	0.000	-0.517 medium
<b>Pair 3</b> Digital ERM (USE) – (CONTRIBUTION)	-0.10089	0.42419	-0.14814	-0.05363	-4.201	311	0.000	-0.238 small
<b>Pair 4</b> Digital Media (USE) – (CONTRIBUTION)	-0.14957	0.41398	-0.19569	-0.10346	-6.382	311	0.000	-0.361 small
<b>Pair 5</b> Adoption of digital strategies (USE) – (CONTRIBUTION)	-0.15468	0.30679	-0.18886	-0.12051	-8.906	311	0.000	-0.504 medium

achieving organisational objectives. Digital Org (Design & Culture) ( $M = 3.29$ ) and Digital ERM ( $M = 2.98$ ) show that respondents had moderate perception on the contribution of these digital strategies.

The paired sample statistics computed to determine whether the mean factor scores for CONTRIBUTION were higher than the factor scores for USE in each comparison show that the average mean score for Digital Media (contribution) ( $M = 3.84$ ,  $SD = 0.84$ ) compared to Digital Media (use) ( $M = 3.69$ ,  $SD = 0.88$ ) was the highest. Digital Talent (contribution) ( $M = 3.71$ ,  $SD = 0.79$ ) followed in comparison to Digital Talent (use) ( $M = 3.52$ ,  $SD = 0.74$ ) (see Table 2). Overall, the factor mean scores for CONTRIBUTION were higher than the factor means scores for USE in each comparison, including for pair 5, which compared overall Digital HRM Strategies (USE) and Digital HRM Strategies (CONTRIBUTION) (see Table 2).

The paired sample  $t$ -tests in Table 3 were performed to determine whether there were statistically significant differences between CONTRIBUTION and USE pairs. The results illustrate that Digital Org (Design & Culture) ( $t [311] = -9.135$ ,  $p < 0.001$ ) had the highest statistically significant difference between USE and CONTRIBUTION, followed by Digital Talent ( $t [311] = -8.753$ ,  $p < 0.001$ ) and Digital Media ( $t [311] = -6.382$ ,  $p < 0.001$ ). Digital ERM had the lowest statistically significant difference ( $t [311] = -4.201$ ,  $p < 0.001$ ). Overall, statistically significant differences were observed across all the pairs, including pair 5 – overall Digital HRM Strategies (USE) and Digital HRM Strategies (CONTRIBUTION) (see Table 3).

Moreover, Table 3 illustrates paired sample effect sizes computed using Cohen's  $d$ -test. This statistic was performed to determine the significant effect of the variances, using the sample standard deviation of the mean difference for USE and CONTRIBUTION paired factors. A medium significant effect was recorded for the Digital Org (Design & Culture) ( $d = -0.517$ ), followed by Digital Talent ( $d = -0.496$ ) and Digital Media ( $d = -0.361$ ) with close to medium significant effect. Digital ERM ( $d = -0.238$ ) registered a small effect size (see Table 3).

Table 4 outlines the Pearson's correlation statistics for the relationship between Digital HRM Strategies (USE) and (CONTRIBUTION) factors. The results reveal that Digital Org (Design & Culture) (0.917) had the most robust correlation between USE and CONTRIBUTION, followed by Digital Media (0.885), Digital Talent (0.884) and Digital ERM (0.884). All correlations were positive and strong. This suggests that the contribution of the digital HRM strategies towards the achievement of business objectives was increasing with every increase in use in HRM, with Digital Org (Design & Culture) likely to increase at a higher rate than the other digital strategies. In all instances, correlations were statistically significant at 1% level (0.01) (see Table 4).

**TABLE 4:** Correlation analysis: Adoption of Digital Human Resource Management Strategies (USE) factors and (CONTRIBUTION) factors.

Variable	Correlations								
	Digital Talent (USE)	Digital Org (Design & Culture) (USE)	Digital ERM (USE)	Digital Media (USE)	Digital Talent (CONTRIBUTION)	Digital Org (Design & Culture) (CONTRIBUTION)	Digital ERM (CONTRIBUTION)	Digital Media (CONTRIBUTION)	Overall Adoption of Digital HRM Strategies (CONTRIBUTION)
Digital Talent (USE)	1	0.714**	0.651**	0.552**	0.884**	0.700**	0.621**	0.517**	0.798**
Digital Org (Design & Culture) (USE)	-	1	0.822**	0.565**	0.621**	0.917**	0.741**	0.484**	0.819**
Digital ERM (USE)	-	-	1	0.507**	0.564**	0.774**	0.883**	0.407**	0.780**
Digital Media (USE)	-	-	-	1	0.487**	0.558**	0.457**	0.885**	0.703**
Digital Talent (CONTRIBUTION)	-	-	-	-	1	0.716**	0.650**	0.534**	0.798**
Digital Org (Design & Culture) (CONTRIBUTION)	-	-	-	-	-	1	0.819**	0.564**	-
Digital ERM (CONTRIBUTION)	-	-	-	-	-	-	1	0.464**	-
Digital Media (CONTRIBUTION)	-	-	-	-	-	-	-	1	-
Overall Adoption of Digital HRM Strategies (USE)	-	-	-	-	-	-	-	-	0.908**

HRM, human resource management.

\*\* , Correlation is significant at the 0.01 level (2tailed).

\* , Correlation is significant at the 0.05 level (2-tailed).

**TABLE 5a:** Regression analysis: Adoption of Digital Human Resource Management Strategies (USE) factors and Adoption of Digital Human Resource Management Strategies (CONTRIBUTION).

Model	R	R square	Adjusted R square	Standard error of the estimate	Durbin-Watson
<b>Model summary b</b>					
1	0.910a	0.829	0.826	0.30106	1.154

HRM, human resource management.

a. Predictors: (Constant), Digital Media (use), Digital ERM (use), Digital Talent (use), Digital Org (Design & Culture) (use).

b. Dependent Variable: Adoption of Digital HRM Strategies (CONTRIBUTION).

**TABLE 5b:** Regression analysis: Adoption of Digital Human Resource Management Strategies (USE) factors and Adoption of Digital Human Resource Management Strategies (CONTRIBUTION).

Model	Sum of squares	df	Mean square	F	Sig.
<b>ANOVA a</b>					
<b>1</b>					
Regression	134.582	4	33.646	371.212	0.000b
Residual	27.826	307	0.091	-	-
Total	162.408	311	-	-	-

HRM, human resource management.

a. Dependent Variable: Adoption of Digital HRM Strategies (CONTRIBUTION).

b. Predictors: (Constant), Digital Media (use), Digital ERM (use), Digital Talent (use), Digital Org (Design & Culture) (use).

**TABLE 5c:** Regression analysis: Adoption of Digital Human Resource Management Strategies (USE) factors and Adoption of Digital Human Resource Management Strategies (CONTRIBUTION).

Model	Unstandardised coefficients		Standardised coefficients	t	Sig.
	B	Standard Error	Beta		
<b>Coefficients a</b>					
<b>1</b>					
(Constant)	0.318	0.089	-	3.566	0.000
Digital Talent (USE)	0.315	0.034	0.323	9.153	0.000
Digital Org (Design and Culture) (USE)	0.213	0.04	0.248	5.347	0.000
Digital ERM (USE)	0.192	0.035	0.231	5.497	0.000
Digital Media (USE)	0.22	0.024	0.267	8.998	0.000

HRM, human resource management.

a. Dependent Variable: Adoption of Digital HRM Strategies (CONTRIBUTION).

Table 5 illustrates regression analysis results for the effect of the digital HRM strategies (USE) factors on overall digital HRM strategies (CONTRIBUTION) to further provide insight into the relationship and connectedness between USE and CONTRIBUTION.

As summarised in Table 5, digital HRM strategies (USE), consisting of four factors, as a predictor explains 82.9% of the variance in digital HRM strategies (CONTRIBUTION). Digital Talent ( $\beta = 9.153$ ) and Digital Media ( $\beta = 8.998$ ) were the highest predictors of the variance, followed by Digital ERM ( $\beta = 5.497$ ) and Digital Org (Design & Culture) ( $\beta = 5.347$ ). Overall, the high unstandardised coefficients and standardised coefficients of all the four factors, and the significant levels ( $p = 0.000$ ), as summarised in Table 5, indicate that the digital HRM strategies (USE) factors significantly predict the variance in digital HRM strategies (CONTRIBUTION).

## Discussion

### Outline of the results

This study aimed to determine the extent to which organisations in South Africa have adopted digital HRM strategies across the HR value chain and the extent to which these digital strategies are perceived to contribute to the achievement of organisational objectives. The findings of this study indicate

that digital HRM strategies ( $M = 3.30$ ) have been moderately adopted across the HR value chain (see Table 2). The perceived contribution of these digital strategies ( $M = 3.45$ ) towards the attainment of business objectives was high (see Table 2).

### Adoption of digital human resource management strategies

The findings of this study produced a four-factor model of digital HRM strategies that were moderately adopted across the HR value chain, consisting of (1) Digital Talent, (2) Digital Org (Design & Culture), (3) Digital ERM and (4) Digital Media. Comparatively, Digital Media ( $M = 3.69$ ) and Digital Talent ( $M = 3.52$ ) have been the most adopted strategies, whereas Digital Org (Design & Culture) ( $M = 3.11$ ) and Digital ERM ( $M = 2.88$ ) were the least adopted among the four digital HRM strategy factors (see Table 2). Table 2 also indicates overall digital HRM strategies (USE) ( $M = 3.30$ ) and overall digital HRM strategies (Contribution) ( $M = 3.45$ ). This confirms that digital HRM strategies contribute to organisational performance. These results are not surprising because it is reported that the aspects of the Digital Talent ( $M = 3.52$ ), such as digital recruitment and selection free HRM practitioners from executing mundane administrative duties manually to focus on strategic HRM activities (Sivathanu & Pillai, 2018). Digital learning and development practices could increase the motivation and satisfaction of learners,



and that training costs will be reduced, whilst training speed and flexibility will be enhanced (Johnson et al., 2020).

In addition, Digital Media ( $M = 3.69$ ) strategies emphasise the importance of using social media and mobile applications to transact HRM work by HRM practitioners and leaders. Human resource management practitioners use these technologies to keep employees and stakeholders connected in the pursuit of organisational goals. Ulrich (2019) asserts that HRM can add more value to the business by investing in digital strategies that help it access information, connect with stakeholders for better decision-making and to augment employees' social experience. Deloitte (2017) reports that a digital workplace should be accompanied by HR work transacted through social and media platforms.

Digital Org (Design & Culture) ( $M = 3.11$ ) and Digital ERM ( $M = 2.88$ ) strategies (see Table 2) were the least adopted among the four digital HRM strategy factors identified from the factor analysis. This means that positive outcomes derived from adopting these strategies towards attaining organisational goals were not exploited fully within the organisations. Yet, it is believed that digital HRM thrives where there is an innovative and an agile-minded workforce (digital workforce), a learning organisation (characterised by constant organisational mindset change) and a flexible culture to foster change (Deloitte, 2017). Accenture (2018) projects that jobs at risk of disappearing could be reduced if adoption of human-machine interaction skills by the South African workforce doubles. The lack of digital skills by HRM practitioners (Deloitte, 2017) could be one of the reasons that led to the lower adoption of these digital strategies. Another reason could be the fear by HRM practitioners and HRM teams and managers to lose face-to-face and human contact between employees and employers because of digitalisation (Burbach, 2019; Thite, 2019).

The nature of physical transactions would change because of digital activity, with some people preferring to engage with their HRM and line managers via digital platforms (Burbach, 2019; Parry & Battista, 2019). An unintended consequence is the perception that digital interactions could blur the boundaries between work life and personal life, resulting in stress for employees (Parry & Battista, 2019). There are also security concerns about the surveillance of the personal information of employees (Rose et al., 2014). Furthermore, factors such as competing organisational priorities, financial constraints, bureaucracy and hesitant by top management to buy-in could also have contributed to the low adoption of Digital Org (Design & Culture) ( $M = 3.11$ ) and Digital ERM ( $M = 2.88$ ) and to the overall moderate adoption rate of digital strategies in HRM ( $M = 3.30$ ) (Azhar, 2019; Burbach, 2019).

### Digital human resource management strategies contribution to business objectives

Even though the digital HRM strategies have been moderately adopted ( $M = 3.30$ ), as revealed in the descriptive results of

this study (Table 2), it should be commended that their contribution to the attainment of business objectives, as revealed from paired sample tests, Pearson's correlation and regression analysis results (Table 3, Table 4 and Table 5), have been perceived to be higher than the adoption rate. For example, the findings from regression analysis reveal that digital HRM strategies (USE), consisting of four factors, as a predictor explains 82.9% of the variance in digital HRM strategies (CONTRIBUTION) (see Table 5). This means that positive outcomes, such as efficiency and effectiveness in the execution of HRM operational tasks, strengthening and improvement of the relationship between the organisation's stakeholders (Jani et al., 2021), increased employee engagement, motivation and commitment, which aid the achievement of organisational goals (Thite, 2019), could be realised if HRM adopts the digital HRM strategies.

These findings are not new. Researchers (Bissola & Imperatori, 2013; Ma & Ye, 2015; Thite, 2019) believe that organisational culture and organisational design processes are HRM transformational activities, which strengthen the strategic role of the HRM towards achieving organisational goals. This refers to Digital Org (Design & Culture) strategies. Ulrich (2019) asserts that more value can be added to the business by investing in digital strategies that help HRM to access information and to connect with stakeholders. This refers to Digital Talent and Digital Media strategies. This fosters HRM to make better decisions and augment employees' social experience (Bersin, 2017; Deloitte, 2017; Ulrich, 2019).

### Practical implications

As a result of this study, it may be recommended that HRM practitioners and leaders within South African organisations may consider prioritising the adoption of Digital Talent, Digital Media, Digital ERM and Digital Org (Design & Culture) strategies across the HR value chain to enhance organisational performance through HRM digitalisation. Table 2 results show that respondents had moderate perception on the adoption of Digital Org (Design & Culture) ( $M = 3.11$ ) and Digital ERM ( $M = 2.88$ ). Azhar (2019) and Burbach (2019) suggest that obstacles such as fear and lack of digital skills by HRM practitioners, competing organisational priorities and financial constraints, among others, are the factors that influence the low adoption rate of digital strategies. Therefore, HRM practitioners may have to eliminate all obstacles that may hinder the adoption of digital strategies across the HR value chain.

Furthermore, this study reveals that HRM digitalisation correlates with the achievement of business objectives by 82.9% variance (Table 5) in South African organisations regardless of the moderate adoption rate. Therefore, the belief that HRM digitalisation has little or no impact on organisational performance could be dispelled. Thus, HRM practitioners, managers and leaders within organisations may be compelled to embrace digitalisation and start rolling out programmes to increase and aid the successful adoption of digital HRM

strategies. Existing literature revealed scant empirical research to ascertain the contribution of digital HRM strategies to organisational performance (Marler & Parry, 2016). However, positive results revealed in this study could accelerate and broaden the adoption rate of digital HRM strategies across the HR value chain within South African organisations.

Still, Ulrich (2019) cautioned that HRM should adopt digital HRM strategies that align with overall digital agenda of the business. This suggest that HRM practitioners should empower themselves with digital competencies like digital skills and data mining skills, and be endowed with credible activism, strategic and paradox management skills (Deloitte, 2021; Ulrich, Kryscynski, Ulrich, & Brockbank, 2017). These skills will enable HRM practitioners to navigate the 4IR technological complexities and adopt lucrative and viable digital strategies across the HR value chain (Bersin, 2017; Deloitte, 2021; Ulrich et al., 2017). Notably, Joseph, Thomas, and Abbott (2021) identified digital competencies that will enable entry-level HRM professionals contribute to strategic business partnering, namely technologising employee processes, processing data expertly and translating external trends. Similarly, Schultz (2021) identified roles of HRM practitioners in the 4IR, namely that they should be technology- and data-driven and embrace human-machine collaboration. In addition, it should also be noted that other generic competencies needed by HRM practitioners such as communication and problem-solving skills, analytical skills, creativity and team player skills are not excluded in this context (Garavan, Carbery, & Rock, 2012). Likewise, the need for HRM practitioners to be ethical, resilient, change- and business-driven were also identified in Schultz's (2021) study.

### Limitations of the research

This study involved organisations in the automotive manufacturing industry in the Nelson Mandela Bay and Buffalo City municipalities in Gqeberha and East London in the Eastern Cape Province of South Africa. If this study had been carried out beyond the automotive industry and the Eastern Cape province, more profound insights into the findings of this research could have been obtained.

### Recommendations for future research

It is recommended that future research on the same phenomenon could be extended beyond the current research's geographical area and organisational industry and beyond the borders of South Africa. This research of digital HRM strategies adoption across the HR value chain seems to be the first of its kind in South Africa; thus, more studies could strengthen the findings obtained in this study (SABPP, 2019).

The findings of this study revealed that Digital Org (Design & Culture) and Digital ERM strategies were challenging to adopt across the HR value chain, as compared to Digital Talent and Digital Media strategies. As these strategies, particularly Digital Org (Design &

Culture) strategies, contribute to the attainment of business objectives, it is recommended that the factors that may impede their smooth adoption such as fear and lack of digital skills by HRM practitioners, competing organisational priorities and financial constraints, among others, be studied in detail. This could see HRM practitioners become empowered with strategies to enhance the adoption rate.

The study implies that Digital Talent and Digital Media strategies were the easiest to adopt. Therefore, it is recommended that best practices relating to the adoption of these digital strategies be studied further to benefit from simple, ingenious and appealing ways of leveraging them to maximise value contribution towards organisational performance. In addition, possible barriers such as fear and lack of digital skills by HRM practitioners, competing organisational priorities and financial constraints should be studied to find ways to overcome them. The current study's findings as revealed by the descriptive statistics, generally, indicate that the adoption rate of digital HRM strategies was perceived to be moderate within the surveyed organisations. However, the contribution of digital HRM strategies to the attainment of business objectives was perceived to be higher than adoption rate as revealed from the paired sample tests, Pearson's correlation and regression analysis results.

### Conclusion

In the new world of work (the 4IR), organisations are forced to adopt digital strategies across various operational chains in an endeavour to achieve optimum efficiency in the execution of tasks. Human resources is not excluded from this context, hence the need to adopt digital strategies across the HR value chain for efficiency and to contribute to the attainment of organisational goals. Because of limited empirical research that ascertained the adoption of digital HRM strategies and their contribution to organisational performance, researchers and leaders within organisations were sceptical of the potential contribution of HRM digitalisation towards the attainment of organisational goals.

However, despite the limitations, the results of this study may contribute to ending this debate, perhaps compelling researchers and practitioners to accept that HRM digitalisation contributes to the attainment of organisational goals. In addition, it may arouse the curiosity of other researchers to conduct more research to confirm the results of this study and explore appealing ways of digitalising HRM. Further, the results of this study have contributed to the body of knowledge pertaining to the relationship between the digitalisation of HRM and organisational performance in the South African workplace.

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The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.

## Authors' contributions

M.C. was the main writer of the manuscript. M.R.M. and A.W. contributed to the writing of the manuscript.

## Ethical considerations

Ethical clearance to conduct this study was obtained from Nelson Mandela University Research Ethics Committee (ref. no. H20-BES-HRM-016).

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## Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

## Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

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