Examining the impact of digital transformation on HRM practices in Morocco's IT sector

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ABSTRACT

The main goal of this study is to explore the dynamic relationship between digital transformation and Human Resource Management (HRM) practices in Morocco's growing information technology (IT) sector. This study scrutinizes the impact of digital transformation on key HRM dimensions including recruitment, learning, development and performance appraisal. Employing robust quantitative methods, particularly correlation analysis, this study aims to unravel the intricate connections between various facets of digital transformation and HRM practices. Structured surveys are the vehicles selected for data collection and dissemination among HR professionals and IT employees to provide valuable insights into the strength, direction and statistical significance of the relationships between digital transformation and HRM practices in the unique context of the Moroccan IT landscape. This research enriches academic discourse on the influence of digital transformation on HRM practices. It offers a comprehensive understanding of how digital advancements HR functions in Morocco's IT sector. Beyond academia, this research provides useful guidance to HR professionals allowing them to improve their plans and optimize digital transformation activities within their organizations.

Contribution/Originality: This study focuses specifically on the Moroccan IT industry, a topic that hasn't been thoroughly examined about the effects of digital transformation on HRM practices. This study employs a novel approach by integrating rigorous quantitative techniques with a focused survey methodology to reveal subtle patterns within this expanding sector.

1. INTRODUCTION

The business landscape is undergoing a digital transformation shifting from traditional approaches to dematerialized structures and reliance on IT solutions (Bradshaw, Atkinson, & Doody, 2017). Many companies across sectors are swiftly adopting efficient technologies while some IT solution firms lag in their digital journey (Matt, Hess, & Benlian, 2015). Resistance and distrust hinder this change causing managers and teams to grapple with the challenge (Lemoine & Rudik, 2017). Morocco's Information and Communications Technology (ICT) industry faces challenges like broadband penetration and a digital talent shortage (World Economic Forum). Digital skills are now crucial for national development but many countries neglect skills in technology infrastructure programs (Cukier, Wendy, & Grant, 2017).

Digitization poses challenges for HR practices emphasizing the need to reshape workplaces for customization, stimulus and resourcefulness (Lemoine & Rudik, 2017). The rise of Millennials immersed in digital technologies drives the need for HR digitalization focusing on autonomy and work-life balance (Mitrofanova & Konovalova, 2019). The rapid revolution in digital transformation requires a shift in HR management models emphasizing flexibility and acknowledgment of employees' needs.

Moreover, the human element is undeniably pivotal for achieving success in digital transformation (Herzog & Bender, 2017). In a similar context, a McKinsey study revealed that about 45% of routine company tasks can be automated, releasing staff time after mundane activities and permitting them to concentrate more on engaging and creative jobs. The mere functionality of digitalized processes does not ensure the success of the transition based on a technical perspective. It necessitates adaptation from employees, managers and executives to navigate the challenges posed by these transformative changes. Furthermore, given the digital transformation's impact on companies' processes and aptitude to embrace more flexible working engagements and diverse working settings such as a decrease in face-to-face interaction, the introduction of remote working has significantly altered how we work and certain employees might perhaps call for further training to achieve an equal level of efficiency (Barišić, Barišić, & Miloloža, 2021). Thus, numerous transformation processes have failed because participants are unwilling to cooperate, are afraid to employ a different system, lack the necessary skills to integrate or simply lack the guidance of their hierarchies. The human factor remains the weakest tie within the digitization process. In the wake of digital transformation's effects on organizational processes and the potential for companies to adopt flexible work arrangements, fostering a more adaptable organization has emerged as a critical focus for HRM practices (Demartini et al., 2018; Gong & Ribiere, 2021). The results of digital transformation usher in a unique challenge for modern HRM practices—cultural transformation (Branca et al., 2020; Marler & Parry, 2016). Learning and development play integral roles in HRM practices and are crucial for fulfilling its strategic objectives. Employees are compelled to engage in continuous learning to maintain comparable levels of efficiency with the advent of remote or hybrid work. This entails enhancing the knowledge and skills of staff with transferrable and specialized abilities providing a competitive edge and enhancing adaptability to change (Ancarani & Di Mauro, 2023; Kurek, 2021). Workforce analysis poses both a crucial component and a challenge for organizational HR strategy. HRM gains the capability to assess employee experience, engagement and satisfaction through the integration of digital technologies (Fenech, Baguant, & Ivanov, 2019; Selmer & Chiu, 2004). However, remote work introduces complexities in conducting performance management reviews, necessitating additional efforts to motivate employees. Good performance management principles remain applicable while the shift to remote work presents unique factors and challenges that require consideration (Adare, 2021). The HR technology sector witnesses' substantial investments in startups, cloud HR services and software reflecting the rapid growth of digital HR. Organizations are adapting HR management systems with digital training programs and mobile applications responding to the demand for user-friendly back-office software. IT solution companies are undergoing digital transformation to enhance efficiency and meet market demands. However, barriers to digital transformation persist including internal communication issues, financial constraints and unclear strategies. In a nutshell, digital transformation has profoundly altered HRM processes making them more efficient and technology-driven. Embracing digital HR is imperative for maintaining competitiveness in the rapidly evolving business landscape.

1.1. Problem Statement

The business landscape is undergoing significant transformations in the digital era. There's a noticeable shift from traditional working methods to IT solutions and digital tools leading to a dematerialization of businesses. Many IT solutions companies lag in their digital transformation journey despite various companies across sectors striving to implement efficient technologies (Bradshaw et al., 2017). According to Matt et al. (2015) the expectation would be that enterprises in the IT solutions industry would be heavily digitalized. However, this is often not the

case. Some businesses exhibit resistance and skepticism towards such changes. When confronted with this challenge, managers may feel overwhelmed by the magnitude of the task and work teams may hesitate to abandon old practices or fear change (Lemoine & Rudik, 2017). Although Morocco's impressive development in the MENA (Middle East and North Africa) region's telecom and ICT sector, issues like the penetration of broadband infrastructure remain. The World Economic Forum highlights a severe shortage of digital talent as the current pool of skilled individuals is increasingly in demand leaving a significant gap between existing skills and emerging ones such as analytics and creative thinking. Any national digital plan aiming for social and economic development must now prioritize digital skills as a key component. However, many countries focus on supporting technological infrastructure growth without addressing the skills needed for its implementation, maintenance and management. Morocco shares this approach having heavily invested in physical infrastructure over the past two decades (Cukier et al., 2017).

The disruptions caused by digitization pose numerous challenges for human resources practices which are often difficult to address due to the rapid pace of change and shifting strategies and goals. Digital transformation emphasizes how crucial it is to redesign workplaces to emphasize individuality, creativity, ingenuity, and importantly all merit and reward.

The significant increase in the number of Millennials who are deeply engaged with digital technologies from a young age underscores the necessity for HR practices to embrace digitalization. This generation values autonomy, seeking a balance between work and personal life which often requires HR management models that support remote work, flexible hours and freelance options (Mitrofanova & Konovalova, 2019). Moreover, the human factor is crucial for the success of digital transformation (Herzog & Bender, 2017). Approximately 45% of everyday company tasks can be automated, freeing employees to focus on more stimulating and creative tasks. However, a successful transition cannot solely rely on digitized processes working effectively, employees, managers and executives must adapt to these changes. Workplaces have undergone a major shift since teleworking became popular. Employees now work online less frequently and require additional training to reach the same levels of productivity (Barišić et al., 2021). Many transformation processes fail due to resistance, fear of change, lack of skills or inadequate guidance from hierarchies. HRM practices must prioritize the development of more adaptable organizations given the impact of digital transformation on organizational processes (Demartini et al., 2018; Gong & Ribiere, 2021). Cultural transformation presents a unique challenge for contemporary HRM practice (Branca et al., 2020; Marler & Parry, 2016). Learning and development are crucial components of HRM practice particularly with the introduction of remote and hybrid work. Enhancing employees' knowledge and expertise through transferrable and specialized skills gives them a competitive advantage and enhances their adaptability to change (Ancarani & Di Mauro, 2023; Kurek, 2021). Workforce analysis is another crucial component that allows HR to measure employee experience, engagement and satisfaction using integrated digital technologies (Fenech et al., 2019; Selmer & Chiu, 2004). However, incorporating and conducting performance management reviews including supporting employee development and motivation can be challenging with remote work. The basic principles for effective performance management are still applicable but there are new considerations and difficulties (Adare, 2021).

2. LITERATURE REVIEW

2.1. Introduction

The definitions of "digital transformation" vary based on different viewpoints and perceptions (Zaoui & Souissi, 2020). It is regarded as a social phenomenon and an upgrade of business models by corporations (Barland, 2013; Medina & Prario, 2013; Øiestad & Bugge, 2014; Rothmann & Koch, 2014). This shift is driven by "digital" generations like Generation Y and Generation Z for whom digital technologies are integral to their lives. Companies must adapt and revise their business strategies to align with this digital era. Digital transformation can impact various aspects of a company including culture, organizational structure, workplaces and ethics making it

challenging to view it solely as a business model. Nonetheless, according to Emily, Mondher and Imed's study "Digital Transformation Challenges", the characterization of digital transformation as either a "disruptive or incremental change process" is proposed. Initially, it involves adopting and using digital technologies progressing towards a deliberate endeavor to generate value or realize a comprehensive transformation within a company (Henriette, Feki, & Boughzala, 2015).

There is increasing research attention on various aspects of digital transformation. Scholars note a lack of understanding of Digital Transformation (DT) as a phenomenon. This includes incomplete tools to assist managers in DT journeys, insufficient business cases for justifying the need to embark on DT (Westerman, Calméjane, Bonnet, Ferraris, & McAfee, 2011) and limited theoretical discussions of its theories. Some articles, like the one by Hess and Salmela (2022) have developed DT frameworks incorporating technology, value creation changes, structural aspects and financial considerations forming the four components for driving DT strategy design.

2.2. Digital Transformation and Recruitment

The recruitment process has undergone significant improvements due to the integration of digital tools, resulting in enhanced efficiency, more accurate candidate assessments, increased candidate diversity and the development of broader and more diverse talent pipelines (Braga Tadeu, de Castro Moura Duarte, Taurion, & Jamil, 2019). The swift evolution of technology has resulted in shifting company requirements, rendering recruitment a challenging endeavor. The adoption of digital transformation in recruitment as highlighted by Holm (2012) has primarily impacted the sequence of tasks. For example, e-recruitment systems have replaced traditional processes, eliminating the need for time-consuming tasks such as receiving, sorting and registering incoming applications. According to Mohammed (2019) companies have shifted away from traditional recruitment methods as attracting, sorting and connecting with applicants have become fully automated. This rapid development of e-recruitment (Boşcai, 2015; Dhamija, 2012) has revolutionized the recruitment industry, offering efficiency benefits to both organizations and candidates (Slavić, Bjekić, & Berber, 2017). Initially, technological platforms in recruitment consisted of job sites that allowed recruiters to advertise job openings to a wider audience (Nikolaou, 2021). Nevertheless, the utilization of social networking websites as recruitment tools has spurred ongoing advancements in digital tools enhancing the quality of the hiring process (Dragusha, Josimovski, & Dragusha, 2019). Today, various recruitment methods including social media websites, simplify different characteristics of the recruitment process such as attracting candidates and conducting background checks (Nikolaou, 2021). Furthermore, social networking platforms facilitate easy sharing of job ads and enable targeting specific niches with platforms like LinkedIn offering features that make it more accessible to reach professional profiles.

Hypothesis 1 (H1): Performance management has a significant impact on digitalization in the IT industry.

2.3. Digital Transformation and Learning & Development

The primary role of Learning & Development (L&D) departments is to support their organization's strategic objectives particularly within the framework of digital transformation and the need to enhance corporate education and innovation (Seufert & Meier, 2016). L&D units aim to become strategic partners playing a central role in guiding the workforce efficiently through digital change. To achieve this, they must identify and cultivate the competencies required to navigate the digital economy, expand their scope to include formal and informal learning across the organization and embrace digital transformation themselves to effectively support the entire company's digital journey. An essential aspect of this challenge is how organizations can adapt to continuous disruptions and changes driven by digitization without resisting transformation. Several studies have proposed that learning and development (L&D) experts should take responsibility for fulfilling their roles as advisors or change agents in their organizations and implement structural changes that will help employees deal with distractions and promote innovation (Kotter, 2012; Kotter & Wasserman, 2016; Robertson, 2007). The influence of technologies and

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automation as well as the decision-making process necessitates the need for higher skills and competent workforce development required for future employment. This has consequently increased the role of learning and development. This transformation imposed greater requirements for critical skills and flexibility among employees to solve complex business turbulence which also indicates the crucial need for L&D to enhance skills and competencies (Gregory, 2020). The nature of learning in an organization is moving from reactive to strategic enabler (Tobias, 2005). Consequently, L&D in contemporary organizations emphasizes facilitative learning which operates as a strategic partner instead of solely addressing skill and performance issues (Amer, 2020).

Hypothesis 2 (H₂): Learning and development have a significant impact on digitalization in the IT industry.

2.4. Digital Transformation and Performance Management

Globalization prompted several organizations to adopt the principles of "digital-based work management" to enhance employee performance. In their study, Riyadi and Huseini (2019) highlighted the role of digital performance management especially in the IT sector. Digital tools assist IT managers in making informed decisions and support their employees as they provide real-time data and analytics. In addition, performance management, which is driven by digital transformation urged a profound change in performance management by shifting their focus to outcomes-based and individual performance instead of using the time-based assessment.

According to Demartini et al. (2018) and Horváth and Szabó (2019) digital transformation enhances employee analysis and reporting capabilities which enable performance measurement and forecasting of formerly challenging to record expertise. In addition, it also improves communication with HR specialists and organizational management (Demartini et al., 2018; Marler & Parry, 2016). Performance appraisals are now conducted virtually through an organization's internet interface enabling electronic submission of performance data by both managers and subordinates. Digitalization enhances operational efficiency in performance management delivering data more quickly and meaningfully (Kishori & Divyabharath, 2017). Performance appraisal software is increasingly prevalent, offering organizations tools like workforce performance management and talent management software for systematic tracking of employee performance and achievements. Digitalization and technology have improved performance management and appraisal. There are still challenges that organizations need to address. The need for systems that standardize data, performance and processes ensuring real-time data accessibility at all levels remains a key priority for further improvement.

Hypothesis 3 (H₃): Performance management *has a significant impact on digitalization in the IT industry.*

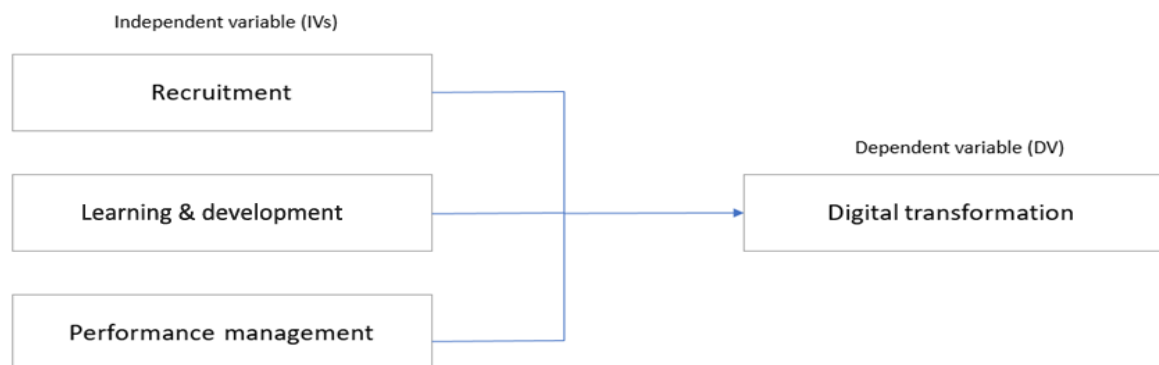Figure 1 illustrates the conceptual framework adopted in this study.

Figure 1. Conceptual framework.

3. METHODS

3.1. Participants and Procedure

This study focuses on analyzing the perspectives of individuals in the IT sector in Morocco regarding digital transformation and its relationship with HRM practices. The statistical unit of analysis is individual respondents,

and questionnaires will be used for data collection. This research has a cross-sectional time horizon and data will be collected simultaneously from individuals across different departments and backgrounds recognizing the potential variability in responses. The sample design encompasses essential information related to the sampling process, including details about the population, sampling stages, selection probabilities, sampling units and sample sizes. Sampling is described as the method used to select a subset from a large population to assess or predict information or outcomes about the larger group (Kumar, 2018). In this study, the population of interest consists of individuals employed in the IT sector in Morocco. This study will primarily utilize the non-probability and convenience sampling method due to its practicality and ease of data collection within a short timeframe.

According to Osuala (2001) sampling involves selecting a portion of a population to represent the entire population. The following five crucial study design parameters influence the determination of sample size: minimum expected difference (effect size), estimated measurement variability, desired statistical power, significance criteria and the decision between one- or two-tailed statistical analysis (Smith, 2013). Cohen (2007) emphasizes the importance of selecting a sample size that provides sufficient statistical power. Hence, the test's power emerges as a crucial factor in the process of determining the sample size for a study. The power of a statistical test is the likelihood of rejecting a null hypothesis or identifying a particular effect size within a specified sample size at a given alpha level (Cohen, 2007). Meyer (1979) and Fox, Hunn and Mathers (2009) suggested using a population range and its corresponding sample size as follows to determine the appropriate sample size for a population:

For a population range from infinity to 500,000, an approximate sample size of 384 is recommended.

For a population range from 500,000 to 100,000, a sample size of 383 is suggested.

For a population range from 100,000 to 50,000, a sample size of 381 is advised.

For a population range from 50,000 to 10,000, a sample size of 370 is recommended.

For a population range from 10,000 to 5,000, a sample size of 357 is suggested.

For a population range from 5,000 to 3,000, a sample size of 341 is advised.

For a population range from 3,000 to 2,000, a sample size of 318 is recommended.

For a population of 2,000, the appropriate sample size would also be 318.

Nevertheless, when dealing with a population of 2000, the size of the sample would be 318.

Table 1. Questionnaire design.

Sections	Variables	Items	Sources	Adoption or adaption
A	Demographic profile	3	According to Saunders, Lewis, and Thornhill (2009) the aim of including the demographic profile as part of the questionnaire is to identify the participants' different characteristics and examine respondents to show if they are representative of the population we are studying. For this study, there is a focus on 3 main elements" gender, age and work experience for demographic profile data collection.	Adaption
B (Dependent variable)	Digital transformation	5	Barišić et al. (2021) and Mergel, Edelmann, and Haug (2019). Towards a theory of digital transformation.	Adaption
C (Independent variable)	Recruitment	4	Gilch and Sieweke (2021) Recruiting digital talent: The strategic role of recruitment in an organization's digital transformation. German Journal of Human Resource Management, 35(1), 53-82. https://doi.org/10.1177/2397002220952734.	Adaption
	Learning & development	4	Camarda (2016): The digital transformation of learning. 10.13140/RG.2.1.3323.3689.	Adaption
	Performance management	4	Nasiri (2021): Performance management in digital transformation: A sustainability performance approach.	Adaption

3.2. Questionnaire Design

Table 1 presents an overview of the variables, items and sources used in the questionnaire for this study. The questionnaire is divided into three main sections: demographic profile, dependent and independent variables. Section A focuses on the demographic profile which includes three items: gender, age and work experience. According to Saunders et al. (2009) the aim of including the demographic profile is to identify the participants' characteristics and ensure the respondents represent the population being studied. This demographic information provides a foundational understanding of the sample. Section B addresses the dependent variable, digital transformation, comprising five items adapted from Barišić et al. (2021) and Mergel et al. (2019). These items explore the challenges and theoretical underpinnings of digital transformation within the context of Human Resource Management (HRM). Section C examines three independent variables: recruitment, learning and development and performance management. The recruitment variable includes four items sourced from Gilch and Sieweke (2021) which discuss the strategic role of recruitment in organizations' digital transformation. Learning and development also comprising four items are adapted from Camarda (2016) and focus on the digital transformation of learning processes. Performance management with four items from Nasiri (2021) investigates sustainable performance approaches in the digital era.

Designing a questionnaire is a crucial phase in any research endeavor involving a series of inquiries intended for respondents with precise instructions on the sequencing and content of questions. Questionnaires are widely used across diverse research domains including survey research and experimental design (Sreejesh, Mohapatra, & Anusree, 2014).

This study employs a self-administered questionnaire in Google format given the time constraints. The survey is distributed through email and social media to all respondents, leveraging the practical advantages of softcopy distribution for efficient data collection from participants in various locations within a short timeframe. The questionnaire is meticulously structured into different sections, namely A: Demographic profile, B: Dependent variable and C: Independent variable. Sections B and C consist of structured questions incorporating both open-ended and closed-ended questions sequentially.

These sections use a five-point Likert scale for evaluation ranging from strongly disagree (1) to strongly agree (5). Section B includes five questions related to the dependent variable, digital transformation while section C explores the relationship between the three independent variables and digital transformation with four questions for each independent variable. This structured approach ensures comprehensive data collection and facilitates robust analysis of the intricate relationships between digital transformation and HRM practices in Morocco's IT sector.

3.3. Measurement

In this study, various measurement instruments were employed to conduct tests with the Statistical Package for the Social Sciences (SPSS) used to analyze the relationships between variables and interpret the results from the collected data. Post-data collection, the software conducts several pivotal analyses, including descriptive analysis, tests for reliability and validity, factor analysis, Analysis of Variance (ANOVA), multiple regression and computation of beta coefficients.

The primary aim of this research is to investigate the influence of digital transformation on HRM practices in the IT sector in Morocco. In this context, measurements refer to tools or methodologies for analyzing data obtained from respondents (Sickles & Zelenyuk, 2019). The main purpose of this study is to develop a correlation between independent variables such as recruitment, learning and development   and performance management and the dependent variable which is related to human resource management practices. SPSS 22.0 was used to measure the collected raw data. Descriptive analysis was implemented using SPSS software while factor analysis and reliability testing were used to analyze raw data to summarize the data (Arslan, Agatz, & Klapp, 2021).

4. DATA ANALYSIS

The summary of distribution and response statistics for a questionnaire has been provided in Table 2. 319 questionnaires have been delivered to employees through Google Forms. All the questionnaires were considered usable with a total of 80% response rate.

Table 2. Summary of questionnaire distribution.

Total questionnaires	Total responses received	Total response rate %	Unusable responses	Usable response
400	319	80%	0	319

Table 3. Demographic profile of respondents.

Demographic	Categories	Frequency n=359	Percentage (%)
Gender	Male	186	58%
	Female	132	42%
Age	18-25	30	9%
	26-35	222	70%
	36-45	42	13%
	46 and above	24	8%
Working experience	<2 years	24	8%
	11 years and above	84	26%
	3-5 years	90	28%
	6-10 years	120	38%
Job designation	First line management	96	30%
	Middle management	114	36%
	Operation level employees	60	19%
	Top management	48	15%

4.1. Descriptive Statistics

Table 3 presents demographic data for survey respondents. It includes information on gender, age, working experience and job designation. Of the 319 respondents, 58% were male and 42% were female. Regarding age, the majority fell into the 26-35 age groups (70%) while smaller proportions were in the 18-25 (9%), 36-45 (13%) and 46 and above (8%) categories. Regarding working experience, the largest group had 6-10 years of experience (38%) followed by 3-5 years (28%), 11 years and above (26%) and <2 years (8%). In terms of job designation, the highest representation was in middle management (36%) followed by first line management (30%), operation level employees (19%) and top management (15%).

4.2. Reliability and Validity Test

Reliability tests are used to assess internal consistency with the stability of measurement of the questionnaire as well as to identify potential sources of error. A prevalent approach for assessing the reliability of a questionnaire is through Cronbach's alpha which gauges the internal consistency of the questionnaire. This metric can be computed using statistical software like SPSS. According to Bougie and Sekaran (2019) a Cronbach alpha value between 0.6 and 0.7 indicates that the questionnaire is reliable. However, Hair, Black, Babin, and Anderson (2019) suggest that a more suitable range for Cronbach alpha is between 0.7 and 0.9 with higher values indicating more reliable results.

However, Hair et al. (2019) suggest that a more suitable range for Cronbach alpha is between 0.7 and 0.9 with higher values indicating more reliable results. If the Cronbach alpha value is less than 0.7, the questionnaire may not be reliable and should be excluded from further analysis.

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Table 4. Reliability analysis results.

Constructs	Cronbach's alpha	Number of items
Digital transformation	0.775	5
Recruitment	0.790	4
Learning and development	0.722	4
Performance management	0.789	4

Based on Table 4, Cronbach's alpha values for all variables with items retained from the factor analysis exceed the threshold of 0.6. The Cronbach's alpha value for digital transformation was 0.775 indicating relatively good internal consistency and demonstrating that the five items in the construct are moderately reliable in measuring the concept of digital transformation. For recruitment, Cronbach's alpha was 0.722 suggesting moderate consistency and reasonable reliability in measuring the four recruitment items. Similarly, Cronbach's alpha value for learning and development was 0.722 indicating a moderate level of internal consistency across the four items and reliability in measuring the concept. Additionally, Cronbach's alpha for performance management is 0.789 indicating a good level of consistency with its four items being reasonably reliable in measuring the concept.

4.3. Factor Analysis

Factor analysis is a statistical technique used to detect core relationships among a set of variables (Hair et al., 2019). It identifies common factors or underlying constructs associated with a group of variables and determines the degree to which each variable is related to these common factors (Hair et al., 2019). Factor analysis is often employed to identify the primary dimensions or factors associated with constructs like intelligence, personality and attitudes. Researchers can better understand the complex relationships among variables and gain insights into the structure of the construct by uncovering these underlying factors.

The KMO test measures the degree of sampling adequacy while Bartlett's test assesses the significance of the correlations between the variables in the dataset. These tests help determine whether a dataset is suitable for factor analysis and identify any potential problems or limitations with the data (Zulkepli, Sipan, & Jibril, 2017). The KMO (Kaiser-Meyer-Olkin) value evaluates dataset efficiency for factor analysis by measuring the degree of sampling adequacy which indicates how well the variables in the dataset are correlated. A KMO value of 0 indicates no correlation between variables while a KMO value of 1 indicates perfect correlation. Generally, a KMO value of 0.6 or higher is considered adequate for factor analysis while a value below 0.6 may suggest that the dataset is unsuitable for this technique (Tabachnick, Fidell, & Ullman, 2013). The Bartlett test of sphericity produces a p-value indicating the likelihood that correlations between variables are due to chance. A p-value of less than 0.05 is typically considered statistically significant suggesting that the correlations are not due to chance and that factor analysis is appropriate. Conversely, a p-value greater than 0.05 indicates that correlations are likely due to chance, making factor analysis inappropriate for the dataset (Tabachnick et al., 2013). Table 5 shows that a KMO score of 0.744 indicates that the data are moderately suitable for factor analysis. Table 6 shows a KMO score of 0.825 indicating that the data are well-suited for factor analysis. Significant p-values (p < 0.05) further suggest that the variables are correlated. Bartlett's test of sphericity tests the null hypothesis that the intercorrelations among variables are equal to zero meaning that the variables are uncorrelated.

A significant p-value (below 0.05) in Bartlett's test suggests that the null hypothesis can be rejected indicating that the variables are indeed correlated.

Table 5. KMO and Bartlett's test (Dependent variables).

KMO and Bartlett's test		
Kaiser-Meyer-Olkin measure of sampling adequacy		0.744
Bartlett's test of sphericity	Approx. chi-square	503.265
	Df	10
	Sig.	0.000

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KMO and Bartlett's test		
Kaiser-Meyer-Olkin measure of sampling adequacy		0.825
Bartlett's test of sphericity	Approx. chi-square	2097.865
	Df	66
	Sig.	0.000

4.4. Factor Loading

Factor loading values are a statistic used in factor analysis to indicate the relationship between a particular variable and one of the underlying factors that explain the relationships between the variables in a dataset. According to some researchers, a factor loading value of 0.5 or higher is adequate for factor analysis while a factor loading value below 0.5 may indicate that the variable is not strongly related to the underlying factor and should be eliminated from the analysis (Bougie & Sekaran, 2019).

However, it is important to note that the appropriate threshold for factor loading values can vary depending on the specific goals and objectives of the study as well as the sample size and other factors. For example, some researchers have suggested that it is acceptable to have factor loading values between 0.5 and 0.6 for small-scale pilot tests with a small sample size. Ultimately, the decision about whether to eliminate a variable with a low factor loading value should be based on a careful analysis of the specific goals and objectives of the study as well as the results of the factor analysis (Cooper & Schindler, 2018).

Tables 7 and 8 present the results of factor loading obtained through Principal Component Analysis (PCA). Factor loadings indicate the magnitude and direction of the association between each variable and the underlying factors extracted from the dataset. The values range from -1 to 1 where higher absolute values indicate a stronger association with the factor. The initial loading column shows the factor loadings before extraction, and in this case, all variables have an initial loading of 1.000. This is expected in PCA where each variable is initially assumed to load perfectly onto a single factor. After the extraction process, the factor loadings are recalculated. The values in this column signify the strength and direction of the relationship between each variable and the underlying factor extracted. For instance, "Digital Transformation 2" exhibits a high loading of .742 indicating a robust association with the underlying factor. Conversely, "Digital Transformation 1" demonstrates a lower loading of .401 suggesting a relatively weaker association.

Communalities serve as measures of the proportion of variance in a set of variables that is collectively shared by all variables. The "Initial Communality" column indicates the total variance in each variable that is explained by all the variables in the set while the "Extraction" column represents the portion of the variance in each variable that is explained by the extracted factor(s). According to Table 7, the communalities suggest a high degree of shared variance among the variables as the initial communality values are all close to 1.0. This suggests a strong interrelationship among the variables indicating that they measure similar concepts. Furthermore, the extraction column indicates that a substantial portion of the variance in each variable is explained by the extracted factor(s). The extraction communalities range from .529 to .742 signifying some shared variance among the variables. Higher extraction communalities imply a more robust representation of the underlying construct.

Table 7. Factor loading result (Dependent variable).

Communalities		
Items	Initial	Extraction
Digital transformation 1	1.000	0.401
Digital transformation 2	1.000	0.742
Digital transformation 3	1.000	0.594
Digital transformation 4	1.000	0.635
Digital transformation 5	1.000	0.529

Communalities are measures of the amount of variance in a set of variables that is shared by all variables. The "Initial Communality" column represents the total variance in every variable that is accounted for by all the variables in the set while the extraction column represents the volume of variance in each variable that is accounted for by the factor (or factors) that have been extracted.

In Table 7, the communalities suggest that there is a high degree of shared variance among the variables as the initial communalities are all close to 1.0. This indicates that the variables are highly related to one another and measure similar concepts. The extraction column also suggests that a significant portion of the variance in each variable is accounted for by the extracted factor(s). The extraction communalities range from .5.29 to .742 indicating that the variables share some common variance. The higher the extraction communalities, the stronger the representation of the underlying constructs.

According to Table 8, the initial communalities for each variable are 1.000 indicating that each variable represents a unique construct and is not related to any other variable in the set.

The extraction communalities range from 0.655 to 0.846 indicating that the variables share similar variance. This also shows that the representation of the underlying construct becomes stronger with higher communality extraction. The range of extraction communalities from 0.655 to 0.846 is considered good. In factor analysis, extraction communalities of 0.5 or higher are deemed acceptable meaning that the variables account for at least 50% of the variance of the underlying construct they represent.

Table 8. Factor loading result (Independent variable).

Items	Initial	Extraction
Recruitment1	1.000	0.798
Recruitment 2	1.000	0.743
Recruitment 3	1.000	0.830
Recruitment 4	1.000	0.846
Learning and development1	1.000	0.834
Learning and development2	1.000	0.835
Learning and development 3	1.000	0.655
Learning and development 1	1.000	0.719
Performance management1	1.000	0.655
Performance management2	1.000	0.695
Performance management3	1.000	0.791
Performance management4	1.000	0.715

4.5. Multiple Regression

Multiple linear regression analyzes the relationship between a dependent variable and one or more independent variables. The objective is to determine whether a significant relationship exists between the dependent variable and independent variables and to identify the strength and direction of this relationship (Sekaran & Bougie, 2016). In this study, the dependent variable is digital transformation and the independent variables are recruitment, learning and development and performance management.

Table 9. Model summary (Multiple regression).

Model summary				
Model	R	R²	Adjusted R²	Std. error of the estimate
1	0.660[a]	0.436	0.430	0.7104

Note: a. independent variables: Recruitment, learning& development, performance management.

In Table 9 of the multiple regression analysis, the model exhibits an R-value of .660 indicating a strong positive relationship between the independent variables (recruitment, learning and development and performance management) and the dependent variable (digital transformation). The 436 R-squared values signify that 43.6% of

the variance in digital transformation is explained by these independent variables. The adjusted R-squared value of .430 adjusts for the number of independent variables and penalizes the model for potential overfitting providing a more accurate measure of performance. The standard error of the estimate is 0.7103 representing the average difference between the actual and predicted values of the dependent variable. A lower standard error indicates a better fit of the model to the data. Here, the standard error of 0.7103 suggests that on average, the model's predictions deviate by approximately 0.71 units from the observed values of the dependent variable which is less than 1.

4.6. ANOVA Regression

Analysis of Variance (ANOVA) is indeed a powerful statistical method used to compare means across different groups and it seems like an appropriate choice for study. Comparing the means of the dependent variable, "Digital Transformation "across various levels of the independent variables (recruitment, learning and development, and performance management) can provide valuable insights into potential significant differences. ANOVA is particularly useful when dealing with multiple groups allowing researchers to assess whether variations in the independent variables lead to statistically significant differences in the means of the dependent variable.

Moreover, multiple linear regression indicates a comprehensive approach to understanding the relationships between variables. ANOVA assesses group differences and multiple linear regression explores the relationships and predictive capabilities between variables. This dual approach can offer a more nuanced understanding of how recruitment, learning and development and performance management impact digital transformation.

Table 10 presents the results of a multiple regression analysis with "digital transformation   " as the dependent variable and "recruitment ", "L&D", and "performance management " as the predictors.

The "Sum of Squares" column displays the total variation in the dependent variable (280.755) how much of this variation can be explained by the predictor variables (122.313) and how much remains unexplained by the residuals (158.442). The "df" column demonstrates the points of freedom for every source of variation. In the case of this study, regression has 3 degrees of freedom because it includes 3 predictor variables. The residuals have 314 degrees of freedom because the sample size is 317 and 3 degrees of freedom have been used to estimate the regression coefficients.

"The "Mean Square" column is the sum of squares divided by the degrees of freedom. Here, the mean square for the regression (40.771) is much larger than the mean square for the residuals (0.505) which indicates that the regression model provides a good fit to the data.

The "F" column reports the F-ratio which is the ratio of the mean square of the regression to the mean square of the residuals. The F-ratio is 80.800 which is large and significant ($p < .05$). This suggests that the predictor variables collectively explain a significant portion of the variation in the dependent variable.

The "Sig." column reports the significance of the F-ratio which indicates whether the predictor variables are together substantial in clearing up the variation in the dependent variable. The p-value is .000 which is less than .05 so the predictor variables are collectively significant in explaining the variation in the dependent variable.

Applying ANOVA and multiple linear regression allows for a comprehensive exploration of the factors influencing digital transformation facilitating informed decision-making based on the study's findings.

Table 10. ANOVA.

Model	Sum of squares	df	Mean square	F	Sig.
Regression (a)	122.313	3	40.771	80.800	0.000[b]
Residual	158.442	314	0.505		
Total	280.755	317			

Note: a. Predictor (constant), recruitment, L&D, performance management.
       b. Dependent variable: Digital transformation.

Table 11. Multiple regression coefficients.

Models		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	Beta		
1	(Constant)	1.354	0.247		5.471	<0.000
	Recruitment	0.264	0.064	0.238	4.100	<0.000
	Learning and development	0.423	0.073	0.420	5.817	0.000
	Performance management	-0.22	0.058	0.018	-0.385	0.700

Note: Dependent variable: Digital transformation.

4.7. Beta Coefficient

Table 11 summarizes coefficients for a regression analysis with "Digital Transformation" as the dependent variable. The coefficients indicate the relationship between the independent variables (recruitment, learning and development and performance management) and the dependent variable.

The unstandardized coefficients (B) are the alteration in the dependent variable per item change within the independent variable. The standardized coefficients (beta) represent the strength and direction of the relationship between the dependent variables while controlling for other independent variables.

The t-value and Sig. column designate a t-test to determine whether the coefficient is statistically significant. A t-value of 5.471 for the constant (intercept) is significant (Sig. = .000) meaning that there is a significant relationship between the independent variables and the dependent variables. A t-value of 4.100 for recruitment (Sig. = .000) and 5.817 for learning and development (Sig. = .000) is also significant indicating that these two independent variables have a significant relationship with the dependent variable. On the other hand, a t-value of -.385 for performance management (Sig. = .700) is not significant meaning that the relationship between performance management and the dependent variable is not statistically significant.

Table 12. Summary of hypothesis analysis.

Hypothesis	Accepted or rejected
H$_1$: In the Morrocco IT services industry, the relationship between digital transformation and recruitment is significant.	Accepted (p=<0.00, <0.05)
H$_2$: In the Morrocco IT services industry, the relationship between digital transformation and learning and development is significant.	Accepted (p=00, <0.05)
H$_3$: In the Morrocco IT services industry, the relationship between digital transformation and performance management is significant.	Rejected (0.700, <0.05)

4.8. Summary of the Hypotheses

4.8.1. Hypothesis Testing

Hypotheses testing for the study are summarized in Table 12.

H$_1$: In the Morrocco IT services industry, the relationship between digital transformation and recruitment is significant.

Based on the research findings, the constant has a coefficient (B) of 1.354, a t-value of 5.471 and significance (Sig.) of .000. This means that the constant is statistically significant implying that the regression line is not horizontal line but has a slope. The predictor variable "recruitment "with a coefficient (B) of .264 a standardized coefficient (Beta) of .283, a t-value of 4.100, and a significance (Sig.) of .000. This means that the predictor variable "recruitment" is also statistically significant and has a positive relationship with the response variable. This explains that a successful digital transformation implies a success of the recruitment processes as well. In other words, there is a significant impact of the digital transformation on recruitment in the IT industry in Morocco.

H$_2$: In the Malaysian IT services industry, the relationship between career development and talent retention is significant.

H$_2$: In the Morrocco IT services industry, the relationship between digital transformation and learning and development is significant.

According to the regression analysis, there is a significant relationship between digital transformation and learning and development. The dependent variable is being predicted based on the independent variable "learning and development ". The unstandardized coefficient for "learning and development " is .423 and its standardized coefficient is .420. The t-value for this variable is 5.817 and the significance level (Sig.) is .000 indicating that this predictor is statistically significant in predicting the dependent variable. The constant value in the model is 1.354. Hence, these results suggest that there is a statistically significant positive about the impact of digital transformation on L&D.

H₃: In the Morrocco IT services industry, the relationship between digital transformation and performance management is significant.

The results of the regression analysis show that the dependent variable is "digital transformation" and the independent variable is "performance management ". The unstandardized coefficients (B) and standardized coefficients (Beta) represent the size and direction of the relationship between the independent and dependent variables. The t-value is the ratio of the estimated coefficient to its standard error, and the significance (Sig.) level is used to conclude if the coefficient is considerably different from zero. The coefficient for performance management is -.022 which means that as performance management decreases, the digital transformation score is expected to decrease as well but the relationship is not significant as shown by the t-value of -.385 and a p-value of .700 which is greater than .05. This means that the evidence against the null hypothesis is not strong enough to reject it and we cannot conclude that there is a significant relationship between performance management and digital transformation in this context of the IT industry in Morocco.

5. DISCUSSION AND IMPLICATIONS

In this digital evolution with Industry 4.0 adoption, it is of utmost importance for corporations to succeed, maintain and gain the upper hand over their competitors by retaining and recruiting talent (Bakar & Omilion-Hodges, 2018). Baharin et al. (2019) stated that organizations must adapt and gradually modify their HR policies and practices to encourage employees to remain which may attract prospective talent to join an organization. A high turnover rate can have many negative consequences for a business. To replace departing employees, companies must first allocate extra money for recruiting, selecting and training recruits (Hee & Ann, 2019). The study identified the following three independent variables: reward programs, recruitment, learning and development and performance management. A multiple regression model and SPSS software were used to analyze the relationship between the dependent and independent variables and the following hypotheses were supported:

The test results support hypothesis 1 which confirms a significant relationship between digital transformation and recruitment. The beta coefficient is 1.354 with a p-value less than 0.001%. This explicitly shows that recruitment implies a positive influence on the IT sector aligning with Gilch and Sieweke (2021) who emphasize the crucial role of digital platforms such as dynamic recruitment web, global social media as well as specialized talent search platforms. Having those platforms enable organizations to control integrated data analytics, enabling companies to gain deeper understandings of labor market trends and design more appropriate recruitment strategies.

Based on the findings, hypothesis 2 is accepted due to the significant relationship between digital transformation and learning and development. The beta coefficient is .423 with a p-value less than 0.001%. This explicitly shows that recruitment implies a positive influence on digital transformation. Previous studies have highlighted a significant shift in the landscape of corporate learning particularly in the realm of learning management systems (LMS) (Cohn & Papadimitriou, 2020). Traditional LMSs are now being complemented and replaced by a diverse array of new learning tools. These tools such as Pathgather, Degreed, SAP Jam, Oracle's Video Learning, Skillsoft's new learning platform and Workday Learning offer a plethora of features including curated content, video and mobile learning solutions, micro-learning and integration with external Massive Open

Online Courses (MOOCs) and video learning resources available on the Internet. As a result, the adoption of these new employee learning systems has emerged as the fastest-growing segment in HR technology spending (Harris & Spencer, 2016).

Moreover, vendors like NovoEd, EdX, Intrepid, Everwise and others have stepped in to provide modern cloud-based platforms with a wide range of features catering to diverse learning needs. These platforms offer pathways, chapters, social collaboration features, assessment tools, scoring mechanisms and instructor interaction capabilities. Such platforms are proving effective in various learning contexts, including sales training, executive development, and onboarding (Konovalova, 2017). Additionally, content companies such as SkillSoft, PluralSight, Lynda.com, and CrossKnowledge have integrated delivery systems with their content offerings (Zhang & Chen, 2023). These systems not only deliver content but also incorporate learning experiences and micro-learning platforms within their solutions. Another noteworthy vendor, Axonify specializes in safety training and compliance training, offering LMS-like functionality with a modern approach (Larkin, 2017). This evolution in corporate learning reflects a strategic shift with a focus on innovation and leadership development providing world-class training experiences, long-term career development and fostering teamwork and integration among multifunctional teams. Corporate training departments are transitioning from mere providers and organizers of training to content curators and facilitators of learning experiences. This shift emphasizes self-regulated learning activities and promotes a culture of continuous learning where employees are encouraged to develop their skills independently (Pillala, 2021). Furthermore, there is a growing recognition of employees as internal clients with a vested interest in quality independent learning to support their career advancement. The availability of mobile devices has made training accessible to everyone at any time prompting companies to create their own training platforms or leverage existing solutions to seamlessly integrate internal and external content. Overall, the focus is shifting towards platforms that empower individuals to take charge of their own development reflecting a broader cultural shift towards continuous learning and skill enhancement in the workplace (Haihua, Qin, & Du Mei, 2023).

On the third factor of digital transformation, hypothesis 3 is not accepted indicating that there is no substantial association between performance management and digital transformation in IT services. The performance management beta coefficient result is -.022 with a p-value of 0.022 which is not significant at the 0.05 level. The study found that recruitment and learning and development have a significant relationship with digital transformation in the IT sector industry in Morocco while performance management does not have a significant relationship. In their study, Guo and Xu (2021) stated that operating performance is more affected by digital transformation than financial performance. Implementing digital transformation to operate performance requires more promising conditions such as policy and innovation environment.

The statistical software SPSS was used for data analysis and hypothesis testing. The results indicate that H1 and H2 are accepted and H3 is not accepted. These findings suggest that for the IT sector in Morocco, successful digital transformation is linked to effective recruitment practices and investment in learning and development initiatives. However, digital transformation does not seem to play a significant role in driving performance management in this industry.

6. CONCLUSION AND RECOMMENDATION

The findings of the study demonstrated that recruitment and learning and development have positive impacts on digital transformation. Meanwhile, the relationship between performance management and digital transformation in the study was not significant.

As depicted in the study, recruitment has a profound impact on digital transformation in the IT industry in Morocco. Further study could be explored to understand specific factors that improve the relationship between these variables. Researchers probably could explore aspects such as the effectiveness of different digital recruitment methods, employer branding in recruitment and the impact of emerging technologies on recruitment. Comparative

studies across various industries or regions could provide insights into the generalizability of findings and identify best practice for digital recruitment. For example, the importance of generating a large pool of candidates in an organization created attention to conduct more studies on the impacts of recruitment in digital transformation. Researchers particularly examined factors that influence the outcome variables during the process of generating a pool of candidates, maintaining applicant status and influencing a candidate's job choice decision (Barber, 1998; Dineen & Soltis, 2011). Digital transformation has a significant impact on learning and development. Research on creative approaches to learning and skill development in the digital age needs to be developed. Studies could discover more about the effectiveness of various digital learning platforms and their role in fostering adaptability and innovation towards continuous learning. Performance management and digital transformation show no significance in the study. In this case, the organization needs to identify and evaluate its current performance management relating to digital transformation. Innovative strategies in performance management could be explored in which digital technologies could be integrated into performance management instead of relying on traditional performance practices. Although the study did not find a significant relationship between digital transformation and performance management in the IT sector in Morocco, it is essential for companies to reevaluate their performance management practices in the context of digital transformation. Traditional performance management approaches may not align well with the rapidly evolving digital landscape while companies can explore innovative approaches to performance management that leverage digital technologies and emphasize continuous feedback, goal setting and skill development. Companies can better support employee growth and contribute to overall organizational success by adopting more agile and data-driven performance management practices. Studies indeed revealed that digital transformation is characterized by a shift towards big data, artificial intelligence, analytics cloud, mobile and social media platforms (Nwankpa & Roumani, 2016). This has resulted in proposals and strategies that will coexist with traditional performance management which then led towards introducing a significant shift in the distribution networks, source of innovation, business application, stakeholder relations and subsequently in the creation of value (Soto-Acosta, 2020). On the other hand, Kindermann et al. (2021) stated in their empirical study the positive relationship between digital transformation and a company's performance. However, he argues that organizations may have to bear the cost of expanding their business model based on digital orientation which may eventually not compensate for benefits. However, studies still exist to prove that digital orientation leads to innovation satisfaction, return and overall performance (Khin & Ho, 2019) which is recommended to be explored for this study. In addition to that additional data such as insights into technology adoption, organizational culture and leadership style is also collected as it will lead to a better understanding of the factors that contribute to digital transformation. Expansion of the study to other variables might as well influence the relationship between the independent variables and independent variables for the study which could provide a comprehensive understanding of the impact of digital transformation on those variables. The study's overall findings highlight the important impact of digital transformation on performance management, learning and development, and recruitment. However, the relationship between performance management and digital transformation in this study was not significant.

6.1. Contribution of Academia

From an academic perspective, the study could add research evidence that will be beneficial to fill a knowledge gap on how digital transformation could be integrated into HRM practices. Based on previous studies, digitalization has been explored from the perspective of customer preferences, buying behaviors, marketing and business. However, there are very few studies done on how digitalization affects internal processes and behavior in terms of HRM practices (Branca et al., 2020; Burchardt & Maisch, 2019). Comprehensive statistical analysis could be conducted to study the relationship between digital transformation and various HRM functions as mentioned in the study.

6.2. Contribution to Industry

The study offers practical implications for organizations particularly those operating in the IT industry in Morocco. It highlights the importance of aligning HR strategies with digital transformation goals and provides guidance on how organizations can leverage digital technologies to enhance recruitment, learning and development, and performance management practices. In addition, the insights provided by the study could lead to HR practitioners tailoring their strategies accordingly.

6.3. Limitation

The study found certain limitations. The first limitation is the time constraint to conduct the study in the process of collecting and analyzing large amounts of data and the need to engage with multiple stakeholders. This is followed by the resistance to change by some of the organizations which impacts the adoption and implementation of digital technologies. This resistance in addition limits the availability of the data due to the lack of participants and resistance to shared information from stakeholders and employees. Similarly, the results of research on digital transformation may not be descriptive of all-inclusive population and may not be generalizable to other regions. Furthermore, the fast pace of the high-tech revolution could make it demanding to keep up with the latest developments and the results of research may become outdated quickly. Furthermore, the aforementioned can make it challenging to preserve definitions and measures updated and the results of research may become outdated quickly. Finally, the study may overlook other variables that are relevant to digitalization and HRM practices. Addressing these limitations could enhance the robustness and validity of findings providing a more comprehensive understanding of the dynamic relationship between HRM practices and digital transformation.

REFERENCES

Adare, B. (2021). Farmers perception towards the extent of land degradation in the case of Essera Woreda, Dawuro Zone Southwest Ethiopia.

Amer, M. E. M. (2020). The impact of distance education on learning outcome in computer skills course in prince Sattam bin Abdulaziz university: An experimental study. *Journal of Curriculum and Teaching*, *9*(4), 1-9. https://doi.org/10.5430/jct.v9n4p1

Ancarani, A., & Di Mauro, C. (2023). Successful digital transformations–identifying the role of leadership in digitalization in procurement. In (pp. 13-26). Wiesbaden: Springer Fachmedien Wiesbade.

Arslan, A. M., Agatz, N., & Klapp, M. A. (2021). Operational strategies for on-demand personal shopper services. *Transportation Research Part C: Emerging Technologies*, *130*, 103320. https://doi.org/10.1016/j.trc.2021.103320

Baharin, N. L., Hanafi, W. N. W., Rahman Zahari, A., Fadzline Muhammad Tamyez, P., Azlinna Azizan, N., & Esa, E. (2019). *Work readiness skills and career self-efficacy: A case of Malaysian private university*. Paper presented at the European Proceedings of Social and Behavioural Sciences, 100.

Bakar, H. A., & Omilion-Hodges, L. M. (2018). Relative leader-member relationships within group context: Linking group cooperation to perceived group performance. *Corporate Communications: An International Journal*, *23*(4), 582-598. https://doi.org/10.1108/ccij-01-2018-0001

Barber, A. E. (1998). *Recruiting employees: Individual and organizational perspectives*. Thousand Oaks, Calif: Sage Publications.

Barišić, A. F., Barišić, J. R., & Miloloža, I. (2021). Digital transformation: Challenges for human resources management. *ENTRENOVA-ENTerprise REsearch InNOVAtion*, *7*(1), 357-366. https://doi.org/10.54820/gtfn9743

Barland, J. (2013). Innovation of new revenue streams in digital media: Journalism as customer relationship. *Nordicom Review*, *34*(s1), 99-111. https://doi.org/10.2478/nor-2013-0107

Boşcai, B. G. (2015). Niche Websites and online tools used in recruitment. *SEA–Practical Application of Science*, *3*(7), 113-120.

Bougie, R., & Sekaran, U. (2019). *Research methods for business: A skill building approach*. West Sussex: John Wiley & Sons.

Bradshaw, C., Atkinson, S., & Doody, O. (2017). Employing a qualitative description approach in health care research. *Global Qualitative Nursing Research*, *4*, 1-8. https://doi.org/10.1177/2333393617742282

Braga Tadeu, H. F., de Castro Moura Duarte, A. L., Taurion, C., & Jamil, G. L. (2019). Digital transformation: Digital maturity applied to study Brazilian perspective for industry 4.0. *Best Practices in Manufacturing Processes: Experiences from Latin America*, 3-27. https://doi.org/10.1007/978-3-319-99190-0_1

Branca, T. A., Fornai, B., Colla, V., Murri, M. M., Streppa, E., & Schröder, A. J. (2020). The challenge of digitalization in the steel sector. *Metals*, *10*(2), 288. https://doi.org/10.3390/met10020288

Burchardt, C., & Maisch, B. (2019). Digitalization needs a cultural change–examples of applying agility and open innovation to drive the digital transformation. *Procedia Cirp*, *84*, 112-117. https://doi.org/10.1016/j.procir.2019.05.009

Camarda, C. (2016). The digital transformation of learning. https://doi.org/10.13140/RG.2.1.3323.3689

Cohen, A. (2007). Commitment before and after: An evaluation and reconceptualization of organizational commitment. *Human Resource Management Review*, *17*(3), 336-354. https://doi.org/10.1016/j.hrmr.2007.05.001

Cohn, C., & Papadimitriou, D. (2020). Lms practices to support workplace e-learning.

Cooper, D. R., & Schindler, P. S. (2018). *Business research methods* (13th ed.). New York: McGraw-Hill/ Irwin.

Cukier, Wendy, & Grant, K. (2017). *Digital skills and business school curriculum*. Retrieved from https://conference.pixel-online.net

Demartini, M., Pinna, C., Tonelli, F., Terzi, S., Sansone, C., & Testa, C. (2018). Food industry digitalization: From challenges and trends to opportunities and solutions. *IFAC-PapersOnLine*, *51*(11), 1371-1378. https://doi.org/10.1016/j.ifacol.2018.08.337

Dhamija, P. (2012). E-recruitment: A roadmap towards e-human resource management. *Researchers World*, *3*(3), 33. https://doi.org/10.1177/239700221202600303

Dineen, B. R., & Soltis, S. M. (2011). Recruitment: A review of research and emerging directions. *American Psychological Association*, *2*, 43-66. https://doi.org/10.1037/12170-002

Dragusha, B., Josimovski, S., & Dragusha, N. (2019). Social network impact on strategic human resource management and traditional recruitment process: Case study Republic of Kosova. *ILIRIA International Review*, *9*(1), 179-189.

Fenech, R., Baguant, P., & Ivanov, D. (2019). The changing role of human resource management in an era of digital transformation. *International Journal of Entrepreneurship*, *22*(2), 166-175.

Fox, N., Hunn, A., & Mathers, N. (2009). Sampling and sample size calculation. *East Midlands/Yorkshire: The National Institutes for Health Research. Research Design Service for the East Midlands/Yorkshire & the Humber*.

Gilch, P. M., & Sieweke, J. (2021). Recruiting digital talent: The strategic role of recruitment in organisations' digital transformation. *German Journal of Human Resource Management*, *35*(1), 53-82. https://doi.org/10.1177/2397002220952734

Gong, C., & Ribiere, V. (2021). Developing a unified definition of digital transformation. *Technovation*, *102*, 102217. https://doi.org/10.1016/j.technovation.2020.102217

Gregory, V. (2020). *Firms as learning environments: Implications for earnings dynamics and job search (August, 2020)*. FRB St. Louis Working Paper No. 2020-036.

Guo, L., & Xu, L. (2021). The effects of digital transformation on firm performance: Evidence from China's manufacturing sector. *Sustainability*, *13*(22), 12844. https://doi.org/10.3390/su132212844

Haihua, W., Qin, S., & Du Mei, Z. J. (2023). Research on the influence of collaborative innovation network on collaborative innovation performance in the Yangtze River Delta urban agglomeration. *Science Research Management*, *44*(3), 19.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). North Way: Cengage: Learning EMEA.

Harris, S., & Spencer, E. (2016). 2017 HR systems survey: 19th annual edition. *Sierra-Cedar*.

Hee, O. C., & Ann, Y. S. (2019). Factors influencing employee turnover in the food manufacturing industry in Malaysia. *International Journal of Academic Research in Business and Social Sciences, 9*(1), 482-491. https://doi.org/10.6007/ijarbss/v9-i1/5423

Henriette, E., Feki, M., & Boughzala, I. (2015). *The shape of digital transformation: A systematic literature review.* Paper presented at the MCIS 2015 Proceedings. 10.https://aisel.aisnet.org/mcis2015/10.

Herzog, M., & Bender, B. (2017). *Competences for the development of smart products.* Paper presented at the In DS 87-9 Proceedings of the 21st International Conference on Engineering Design (ICED 17) Vol 9: Design Education, Vancouver, Canada, 21-25.08. 2017 (pp. 285-294).

Hess, J., & Salmela, H. (2022). Leveraging dynamic managerial capabilities to capitalize on digi-tal transformation.

Holm, A. B. (2012). E-recruitment: Towards an ubiquitous recruitment process and candidate relationship management. *German Journal of Human Resource Management, 26*(3), 241-259. https://doi.org/10.1177/239700221202600303

Horváth, D., & Szabó, R. Z. (2019). Driving forces and barriers of industry 4.0: Do multinational and small and medium-sized companies have equal opportunities? *Technological Forecasting and Social Change, 146,* 119-132. https://doi.org/10.1016/j.techfore.2019.05.021

Khin, S., & Ho, T. C. (2019). Digital technology, digital capability and organizational performance: A mediating role of digital innovation. *International Journal of Innovation Science, 11*(2), 177-195. https://doi.org/10.1108/ijis-08-2018-0083

Kindermann, B., Beutel, S., de Lomana, G. G., Strese, S., Bendig, D., & Brettel, M. (2021). Digital orientation: Conceptualization and operationalization of a new strategic orientation. *European Management Journal, 39*(5), 645-657. https://doi.org/10.1016/j.emj.2020.10.009

Kishori, B., & Divyabharath, B. (2017). A study on digitalization in performance management. *International Journal of Advance Research and Innovative Ideas, 3*(6), 1311-1313.

Konovalova, V. (2017). Digital transformation of corporate learning: New technologies rules and culture. *State University of Management,* 1-4.

Kotter, J. (2012). How the most innovative companies capitalize on today's rapid-fire strategic challenges-and still make their numbers. *Harvard Business Review, 90*(11), 43-58.

Kotter, J. P., & Wasserman, J. (2016). Viele organisationen stehen sich selbst im weg: Interview von cliff lehnen.

Kumar, R. (2018). Research methodology: A step-by-step guide for beginners. *Research Methodology,* 1-528.

Kurek, D. (2021). Use of modern IT solutions in the HRM activities: Process automation and digital employer branding.

Larkin, J. (2017). HR digital disruption: The biggest wave of transformation in decades. *Strategic HR Review, 16*(2), 55-59. https://doi.org/10.1108/shr-01-2017-0006

Lemoine, D., & Rudik, I. (2017). Managing climate change under uncertainty: Recursive integrated assessment at an inflection point. *Annual Review of Resource Economics, 9*(1), 117-142. https://doi.org/10.1146/annurev-resource-100516-053516

Marler, J. H., & Parry, E. (2016). Human resource management, strategic involvement and e-HRM technology. *The International Journal of Human Resource Management, 27*(19), 2233-2253. https://doi.org/10.1080/09585192.2015.1091980

Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering, 57,* 339-343. https://doi.org/10.1007/s12599-015-0401-5

Medina, M., & Prario, B. (2013). The transformation of audiovisual media companies: The cases of Mediaset (Italy) and Antena 3 (Spain). *Studies in Communication Sciences, 13*(2), 166-173. https://doi.org/10.1016/j.scoms.2013.10.001

Mergel, I., Edelmann, N., & Haug, N. (2019). Defining digital transformation: Results from expert interviews. *Government Information Quarterly, 36*(4), 101385.

Meyer, J. T. (1979). *Fundamental research statistics for the behavioural sciences.* New York: Holt, Rinehart and Winston.

Mitrofanova, A., & Konovalova, V. (2019). Opportunities, problems and limitations of digital transformation of HR management. *European Proceedings of Social and Behavioural Sciences.* https://doi.org/10.15405/epsbs.2019.03.174

Mohammed, S. (2019). The introduction and use of electronic recruitment (ERecruitment) on the recruitment process in organizations: Benefits of this technology for recruiting organizations. *Global Journal of Human Resource Management, 7*(5), 45-59.

Nasiri, M. (2021). Performance management in digital transformation: A sustainability performance approach.

Nikolaou, I. (2021). What is the role of technology in recruitment and selection? *The Spanish Journal of Psychology, 24*, e2. https://doi.org/10.1017/sjp.2021.6

Nwankpa, J. K., & Roumani, Y. (2016). IT capability and digital transformation: A firm performance perspective.

Øiestad, S., & Bugge, M. M. (2014). Digitisation of publishing: Exploration based on existing business models. *Technological Forecasting and Social Change, 83*, 54-65. https://doi.org/10.1016/j.techfore.2013.01.010

Osuala, E. C. (2001). *Introduction to research methods.* Onitsha: Africana-FEP Publishers Ltd.

Pillala, M. A. G. (2021). Role of artificial intelligence in human resources. *Nveo-Natural Volatiles & Essential Oils Journal| NVEO, 8*(4), 297-307.

Riyadi, M. K., & Huseini, M. (2019). Integrated HR performance management system innovation with big data in BPJS health. *Jurnal Wira Ekonomi Mikroskil, 9*(1), 41-54.

Robertson, B. J. (2007). Organization at the leading edge: Introducing Holacracy™. *Integral Leadership Review, 7*(3), 1-13.

Rothmann, W., & Koch, J. (2014). Creativity in strategic lock-ins: The newspaper industry and the digital revolution. *Technological Forecasting and Social Change, 83*, 66-83. https://doi.org/10.1016/j.techfore.2013.03.005

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students.* London: Pearson Education.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach.* West Sussex: John Wiley & Sons.

Selmer, J., & Chiu, R. (2004). Required human resources competencies in the future: A framework for developing HR executives in Hong Kong. *Journal of World Business, 39*(4), 324-336. https://doi.org/10.1016/j.jwb.2004.08.001

Seufert, S., & Meier, C. (2016). From elearning to digital transformation: A framework and implications for L&D. *International Journal of Advanced Corporate Learning, 9*(2), 27–33. https://doi.org/10.3991/ijac.v9i2.6003

Sickles, R. C., & Zelenyuk, V. (2019). *Measurement of productivity and efficiency.* Cambridge: Cambridge University Press. https://doi.org/10.1017/9781139565981.

Slavić, A., Bjekić, R., & Berber, N. (2017). The role of the internet and social networks in recruitment and selection process. *Strategic Management-International Journal of Strategic Management and Decision Support Systems in Strategic Management, 23*(3), 36-43. https://doi.org/10.46541/978-86-7233-397-8_124

Smith, S. (2013). Determining sample size: How to ensure you get the correct sample size. E-Book (c) Qualtrics Online Sample.

Soto-Acosta, P. (2020). COVID-19 pandemic: Shifting digital transformation to a high-speed gear. *Information Systems Management, 37*(4), 260-266. https://doi.org/10.1080/10580530.2020.1814461

Sreejesh, S., Mohapatra, S., & Anusree, M. R. (2014). *Business research methods: An applied orientation.* Cham: Springer.

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2013). Using multivariate statistics. In (Vol. 6, pp. 497-516). Boston, MA: Pearson.

Tobias, S. (2005). Foucault on freedom and capabilities. *Theory, Culture & Society, 22*(4), 65-85. https://doi.org/10.1177/0263276405053721

Westerman, G., Calméjane, C., Bonnet, D., Ferraris, P., & McAfee, A. (2011). Digital transformation: A roadmap for billion-dollar organizations. *MIT Center for Digital Business and Capgemini Consulting, 1*, 1-68.

Zaoui, F., & Souissi, N. (2020). Roadmap for digital transformation: A literature review. *Procedia Computer Science, 175*, 621-628. https://doi.org/10.1016/j.procs.2020.07.090

Zhang, J., & Chen, Z. (2023). Exploring human resource management digital transformation in the digital age. *Journal of the Knowledge Economy*, 1-17. https://doi.org/10.1007/s13132-023-01214-y

Zulkepli, M., Sipan, I., & Jibril, J. D. (2017). An exploratory factor analysis and reliability analysis for green affordable housing criteria instrument. *International Journal of Real Estate Studies, 11*(4), 9-21.