Tomas Bata University in Zlín
Faculty of Management and Economics

Doctoral Thesis Summary

Measuring the acceptance and impact of digitalization of performance management systems: Evidence from an emerging economy in Africa

Měření přijetí a dopadu digitalizace systémů řízení výkonnosti: Důkazy z rozvíjející se ekonomiky v Africe

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ABSTRACT

Several concerns about performance management systems (PMS) in organizations have been raised, ranging from their paper-based form and bureaucracy to their failure to produce desired outcomes. Digitalization has been proposed to mitigate these PMS challenges. However, scant knowledge exists in the literature about the processes involved in PMS digitalization and the factors that motivate its acceptance and impact on employee performance. To minimize this knowledge gap in the literature, this study extends the innovation diffusion theory (IDT) and proposes a research model (TOP model). The model integrates technological (T) factors (relative advantage, complexity) from the IDT with organizational (O) factors (firm digital capabilities, management support) and personal (P) factors (job satisfaction, personal innovativeness, and attitude) to predict the acceptance of PMS digitalization and its impact on employee performance. The study uses a mixed-method approach, drawing 11 interview responses and 492 survey samples from Ghana's banks, healthcare, and professional accounting firms. The data were analyzed using thematic content analysis and partial least square structural equation modeling (PLS-SEM) and further reinforced with advanced analytical techniques such as quadratic relationship assessment, importance-performance matrix analysis, and the fuzzy set qualitative comparative analysis (fsQCA). Findings indicate that a firm seeking to digitalize its PMS should identify and digitize its work processes, establish a digital data generation system and database for big data, and use an artificial intelligence program. The study also found a PMS digitalization acceptance matrix (PDAM) for managing system and behavioral issues associated with PMS digitalization acceptance. The findings also demonstrate the role of TOP factors in predicting PMS digitalization acceptance. Finally, the results show that TOP factors interact in varied combinatorial ways to explain the variation in acceptance of PMS and employee performance. These findings, which have important theoretical and managerial implications, have been fascinatingly discussed in chapter five of the study.

ABSTRAKT

Systémy řízení výkonnosti (PMS) v organizacích, se staly předmětem časté kritiky, která se týkala problémů spojených s jejich papírovou formou, byrokratickými mechanismy až po skutečnost, že často nepřinášejí očekávané výsledky. Ke zmírnění těchto problémů, spojených s PMS byla doporučena digitalizace. V literatuře však existuje jen málo poznatků o procesech spojených s digitalizací PMS a o faktorech, které vedou k jejímu přijetí a ovlivňují výkonnost zaměstnanců. Tato studie rozšiřuje teorii šíření inovací (IDT) a představuje výzkumný model (TOP model), čímž se snaží tuto mezeru ve zdrojích literatury minimalizovat. Model integruje technologické (T) faktory (relativní výhoda, komplexnost) z IDT s organizačními (O) faktory (digitální schopnosti firmy, podpora managementu) a osobními (P) faktory (spokojenost s prací, osobní inovativnost a postoj) s cílem predikovat schopnost přijetí digitalizace PMS organizací a její dopad na výkonnost zaměstnanců. Studie využívá metodu kombinovaného výzkumu a zahrnuje 11 rozhovorů a 492 dotazníkových šetření z ghanských bank, zdravotnických zařízení a profesionálních účetních firem. Data byla analyzována pomocí tematické obsahové analýzy a modelování strukturálních rovnic metodou parciálních nejmenších čtverců (PLS-SEM) a následně pomocí pokročilých analytických technik, jako je hodnocení kvadratických vztahů, analýza matice významnosti a výkonnosti a kvalitativní komparativní analýza fuzzy množin (fsQCA). Zjištění ukazují, že firma, která se snaží digitalizovat svůj PMS, by měla identifikovat a digitalizovat své pracovní procesy, vytvořit systém pro generování digitálních dat a databázi velkých dat a používat program umělé inteligence. Dále studie nalezla matici přijetí digitalizace PMS (PDAM) pro řízení systémových i behaviorálních problémů spojených s přijetím digitalizace PMS. Výsledky také ukazují, jakou roli hrají TOP faktory při předpovídání přijetí digitalizace PMS. Výsledky rovněž ukázaly, že TOP faktory se vzájemně kombinují a přispívají tak k objasnění rozdílů v přijímání PMS a výkonnosti zaměstnanců. Tato zjištění, která mají důležité teoretické a manažerské důsledky, byla podrobně rozebrána v páté kapitole této práce.

TABLE OF CONTENT

LIST OF ABBREVIATIONS USED

ACP	Acceptance of digitalization of performance management system
ATT	Attitude
CMX	Complexity
EPF	Employee performance
FDC	Firm digital capabilities
fsQCA	Fuzzy set qualitative comparative analysis
IDT	Innovation diffusion theory
IPMA	Importance performance matrix analysis
JSF	Job satisfaction
MTS	Management support
PDAM	PMS digitalization acceptance matrix
PIN	Personal innovativeness
PLS-SEM	Partial least square structural equation modelling
PM	Performance management
PMP	Performance management practices
PMS	Performance management system
RAD	Relative advantage
SEM	Structural equation modelling
TOP	Technological, organizational, and personal

1. INTRODUCTION

1.1 Background of the study

Performance management (PM) is a common activity in all organizations due to its importance in developing human resources (Brown et al., 2019). In other words, every organization is concerned about PM because its goal can only be achieved through effective PM. To this end, organizations find strategies to manage their performance for sustained growth. Thus, PM has become one of the key and frequently-eyed variables in organizational studies, both from practitioners (Cappelli & Tavis, 2016) and academic perspectives (Tseng & Levy, 2019). According to Armstrong (2000), PM is a strategic process that enhances performance and improves employees' capabilities to sustainably achieve the organization's goals. Effective PM is a source of competitive advantage (de Leeuw & van den Berg, 2011). Other extant studies have confirmed the same relationship. For instance, a recent study by Tseng and Levy (2019) indicates that PM helps develop organizations and results in high performance. Accordingly, organizations engage in different practices to achieve these positive organizational outcomes.

1.2 Research problem

Past studies indicate that most PMS still need to achieve their objectives (e.g., Blackman et al., 2017), such as improving employee behaviour and performance, enhancing employee capabilities, rewarding high-performers, and motivating underperformers (Cappelli & Tavis, 2016). Blackman et al. (2017) note that PMS is perceived as an extra burden. Further, there is a negative attitude toward adopting PMS to which Blackman et al. (2017) explain that usually, there is a strong emphasis on achieving a set performance target at once. Moreover, other studies have found that employees perceive PMS as a waste of time (Blackman et al., 2017). Still, others see PMS as bureaucratic and complex (Blackman et al., 2017). PMS is also seen as accountability-focused rather than developmental-focused (Cappelli & Tavis, 2016).

Accordingly, several solutions have been proposed to resolve these challenges of PMS and key among these solutions is digitalization. In an organizational context, Sahlin and Angelis (2019) define digitalization as changing business models, processes, and internal and external interactions into a form where information is easily retrievable. It can also be defined as integrating information technology (IT) systems and other media infrastructure in planning, monitoring, evaluating, and rewarding performance. In support of this call for the PMS digitalization, prior research indicates that some firms have discarded their annual performance review, which is a key process of PMS (Ewenstein et al.,

2016) and has adopted a PMS that use more technology. For instance, Atlassian, an Australian software company, has automated its PMS (Ewenstein et al., 2016), while General Electric (GE) has replaced its PMS with a performance management App, which gives frequent feedback (Cappelli & Tavis, 2016). Extant studies have reported that these firms which have adopted PMS digitalization can offer immediate, real-time, and frequent feedback to their employees (Chillakuri, 2018), and accurate performance results (Brosig et al., 2019).

Despite the numerous visible benefits that PMS digitalization could offer organizations, surprisingly, the academic literature on the digitalization of PMS remains very scant (Sahlin & Angelis, 2019). Second, the few existing studies (Brosig et al., 2019) still need to articulate the processes involved in digitalizing PMS. Third, these studies, to the best of the knowledge of the author, have yet to measure the factors which drive employees' acceptance of PMS digitalization. Further, only a few studies have measured the impact of PMS digitization on performance (e.g., Lechermeier et al., 2020). To this end, Lechermeier et al. (2020) contend that although Deloitte, a world-renowned consultancy firm, has implemented a real-time performance feedback system, the impact of this feedback is unknown. Finally, past research on PM and especially the digitalization of PM had a significantly low representation of advanced analytical approaches, raising questions about the validity of their findings.

To address these shortcomings in the literature and offer clarity and guidelines for academics and practitioners, this study extends the innovation diffusion theory (IDT) and proposes a research model that integrates technological, organizational, and personal factors to explore the critical processes in digitalizing PMS, factors influencing its acceptance and the impact on employee performance.

The stuy has several contributions. First, the study explores PMS digitalization acceptance which many scholars are yet to explore, especially from a developing country perspective. Second, this study examines the use of IDT in the context of PMS digitalization. Most previous studies applying the IDT mainly focus on technology or digitalization adoption. Third, this study also examines the interplay of organizational factors [firm's digital capabilities(FDC) and management support(MTS)] and personal factors such as attitude(ATT), job satisfaction(JSF), and personal innovativeness(PIN) providing new perspectives on predictors of PMS digitalization acceptance(ACP) and its net effect on employee performance (EPF). Fourth, apart from using mixed methods, this study blends the analytical power of partial least square structural equation modeling (PLS-SEM) and fuzzy set qualitative comparative analysis (fsQCA) methods in

examing PMS digitalization. Finally, by employing advanced analytical approaches such as the quadratic assessment method in PLS-SEM, the study has responded to the call by extant literature to researchers to adopt advanced analytical techniques on their dataset to avoid reporting misleading findings (Becker et al., 2013).

1.3 Research questions

The main research question of this study is "**What are the key factors driving the acceptance of digitalization of PMS**? This question has been further divided into sub-questions, which have been stated below:

RQ1: What are the processes involved in the digitalization of PMS?

RO2: In what ways do technological factors affect ACP?

RQ3: In what ways do organizational factors affect ACP?

RQ4: In what ways do personal factors affect ACP?

RQ5: Is there a mediation effect of personal factor (i.e.,ATT) on the relationship between technological factors and ACP?

RQ6: Is there a mediation effect of personal factor (i.e., ATT) on the relationship between organisational factors and the ACP?

RQ7: Does ATT mediate the relationship between personal factors (i.e JSF & PIN) and ACP?

RQ8: How does the ACP affect EPF?

RQ9: How do varied combinations of technological, organisational, and personal factors influence ACP and EPF?

1.4 Research objectives

The main objective of the current study is **to provide an understanding of how organizations can digitalize their performance management systems.** This overarching objective has been divided into specific objectives as follows:

RO1: To identify the key processes involved in digitalization of PMS.

RO2: To examine the role of technological factors ACP.

RO3: To examine the role of organizational factors in ACP.

RO4: To examine the role of personal factors in ACP.

RO5: To assess the mediation effect of personal factor (i.e.,ATT) on the relationship between technological factors and ACP.

RO6: To assess the mediation effect of personal factor (i.e., ATT) on the relationship between organisational factors and ACP.

RO7: To assess how ATT mediates the relationship between personal factors (i.e., JSF & PIN) and ACP.

RO8: To evaluate the effect of ACP on EPF.

RO9: To evaluate how varied combinations of technological, organisational and personal factors influence ACP and EPF.

RO10: To develop a comprehensive performance management model, which organizations can adopt as a guide when pursuing digitalization of performance management systems.

2. LITERATURE REVIEW

2.1 Digitalization of performance management system

Digital technologies continue to be applied in different functional business areas, including human resource management (HRM). As a key activity in HRM, PMS is confronted with many challenges and digitalization has been proposed to offer some solutions. Digitalization of PMS is defined in this study as the use of digital data, software, and digital technologies such as Artificial Intelligence(AI), Big Data(BD), Machine Learning (ML), and Internet of Things (IoT) to offer frequent and real-team feedback to employees with the overarching objective of developing them rather than holding them accountable for their performance shortfalls (Cappelli & Tavis, 2016).

Taking inspiration from Meijerink et al. (2021) work on digital HRM, this study explains the processes of PMS digitalization as follows: First, all employee performance data and HR-related information that borders on the performance needed to be digitized. This step is necessary because AI algorithms and related application software cannot read analog data. Second, digital data collection tool devices must be available to collect thousands of performance data. Digital data can be collected through a bundle of sensors and connected or smart devices (IoT), including wearable devices (smartphones, smartwatches, smart badges, and GPS tracking devices)(Meijerink et al. (2021). As organisations produce data daily, sources such as emails, social media messages (messages work from team WhatsApp page), text messages, photos, videos, phone calls, and internet searches can be ideal for performance data. According to the literature (Garcia-Arroyo & Osca, 2021), IoT tools can capture employees' locations, moods, performance, actions, and behaviour. When these datasets meet the 5Vs criteria (volume-quantity, variety-types, velocity-speed, veracity-accuracy, and value-importance),

it is referred to as big data (Anuradha, 2015). The big data collected cannot be stored on the standard computer disk but on big data storage and management databases such as Microsoft HD Insight and Cassandra (Anuradha, 2015). As raw as in these databases, big data are subject to data cleaning using software such as Microsoft Excel or Open refine (Miller & Vielfaure, 2022). The data needs to be mined to make insights from the big data. Popular data mining tools include Rapid Miner and Teradata (Saouabi & Abdellah, 2019). Using tools such as Tableau, Plotly, and IBM Watson analytics, the data that has been mined are presented professionally with aesthetic visualization and can be reported meaningfully using Power BI. AI is then applied to the data, a process where AI learns and gleans varied insights, patterns, and trends from the data. Consequently, the AI is then able to make decisions and predictions. In PMS digitalization, AI informs managers about the employee's performance, recommends decisions, and predicts the employee's future performance based on big performance data. According to previous works (Meijerink et al., 2021), Upwork, a digital work platform, practices digital HRM. Indeed, Upwork digital HRM includes digital PMS wherein their system applies both workers' behavioural data and customer evaluation to determine their overall performance with human managers (Kinder et al., 2019).

2.2 An extended Innovation diffusion theory

Forwarded by Rogers (1962), the innovation diffusion theory (IDT) explains why, how, and the speed at which an innovation spreads across a population. Based on the nature and characteristics of innovation users, IDT can be divided into four aspects: innovation, communication systems, time, and social systems (Sahin, 2006). Innovation refers to any idea or new technology introduced into a society or a group of people (Rogers, 2003). In the context of this study, innovation is PMS digitalization. The communication systems are channels through which innovation gets to the social system, which is the network of people with a common purpose (Rogers, 2003; Wani & Ali, 2015). The life of innovation is tied to acceptance by the social system and therefore dies off if rejected (Wani & Ali, 2015). Given PMS digitalization as a new way of managing employees' performance, it will only survive in organizations if employees accept it. Further, when innovation becomes known to the social system, people voluntarily decide on its acceptance; thus, the time aspect of IDT measures the period at which people decide to try the innovation. While some individuals may try it as soon as the innovation is available, others consider it late.

The IDT further suggests that the spread of innovation is a function of its characteristics. Thus, Rogers identified five key characteristics of innovation: relative advantage, compatibility, observability, complexity, and trialability. According to Rogers (2003), how people perceive these five characteristics determine the rate at which the innovation is adopted or accepted. The following sub-sections discuss only relative advantage and complexity in line with the study's objectives. It is folowed by discussion of organisational and personal factors that also affect PMS digitalization acceptance.

2.2.1 Relative advantage

Consistent with prior studies (e.g., Moore & Benbasat, 1991), the relative advantage (RAD) is defined as the degree to which users evaluate innovations as superior to their predecessors. In this study, the digitalization of PMS should offer improved or more benefits than the traditional PMS to be accepted. The argument is that employees will find PMS digitalization to offer improved benefits, such as its focus on employee development rather than accountability and an opportunity to have regular and informal check-in, which is expected to influence their attitude and acceptance of the PMS digitalization. Several studies have found that RAD positively affects attitudes (Lim et al., 2022) and acceptance of innovation (Safari et al., 2015). Similarly, this study predicts that RAD will positively influence employee attitudes and acceptance of PMS digitalization.

2.2.2 Complexity

In line with extant studies (Al-Rahmi et al., 2019; Rogers, 2003), complexity (CMX) denotes the degree to which users perceive innovation as challenging or difficult to use. According to Al-Jabri and Sohail (2012), innovation complexity is assessed in terms of mental effort and time spent in using the innovation. Therefore, where individuals perceive it as frustrating to use the innovation, they will have a negative attitude toward it (Lim et al., 2022) and, consequently, will be less likely to adopt it. Along this line, the current study expects complexity to influence employee attitude and acceptance of PMS digitalization negatively.

2.3.1 Firm digital capabilities

Firm digital capabilities (FDC) are defined as a firm's ability to use its technical resources (Afuah, 2002). Zhou and Wu (2010) state that these capabilities are developed through an organization's experience. Indeed, a firm with digital capabilities will have its employees passionate about technology, and it is easy for them to accept new technologies. Digital capabilities have an impact

on attitude and acceptance of innovation (Zhou & Wu, 2010). It has been noted that when employees believe that their firms have dynamic digital capabilities, they will have a positive evaluation of the feasibility of introducing new digital technologies (attitude) and are more likely to accept the innovation (von Arnim & Mrozewski, 2020). Following these findings, the current study expects FDC to influence employee attitude and subsequently acceptance of PMS digitalization.

2.3.2 Management support

Consistent with prior studies (Handayani et al., 2017), management support (MTS) is the extent to which senior or top management team supports the implementation of innovation and their attitude toward the user acceptance or rejection of the innovation. In PMS digitalization, management is expected to provide support through training, motivating, directing, and providing necessary IT infrastructures. Previous studies (Hsu et al., 2019) argue that when MTS is high, it results in high technology adoption. Along the findings of several previous studies (Chen & Hsiao, 2012; Handayani et al., 2017; Hsu et al., 2019), this study also predicts that MTS will positively influence employee attitude and their acceptance of PMS digitalization.

2.3.3 Personal innovativeness

Personal innovativeness (PIN) measures people's willingness to experiment with an innovation despite any potential risk to their situation (Agarwal & Prasad, 1998). Innovative people will be more interested in trying a new technology even though it might conflict with their condition. Past studies show that PIN positively influences attitude and acceptance of innovation (Cheng & Huang, 2013). Thus, this study anticipates that PIN positively affects attitude and acceptance of PMS digitalization.

2.3.4 Job satisfaction

Job satisfaction (JSF) measures the pleasant emotional state of individuals, which represents their critical feedback from evaluating a job they hold (Locke, 1976). Individual perception of their jobs affects their attitude and behaviour. For instance, past studies (Schouteten & Vleuten, 2013) have noted that JSF influences employees' attitudes toward organizational change. Based on these findings, the current study predicts that JSF will positively influence employee attitude and acceptance of PMS digitalization.

2.3.5 Attitude

Following extant studies (Ajzen, 1991; Albarracin & Shavitt, 2018), attitude (ATT) can be defined as the opinion a person holds about an object as either positive or negative, having evaluated the object. Several factors affect a person attitude. In this study, ATT toward the digitalization of PMS is expected to be influenced by RAD, CMX, FDC, MTS, PIN, and JSF. In turn, ATT will influence the acceptance of PMS digitalization. Several studies have found that ATT predicts the acceptance of new technology (Salloum et al., 2019). Therefore, this study expects that when employees have a favorable ATT toward the PMS digitalization, they will be more likely to accept it.

2.4 The mediating role of attitude

Mediation models also offer a means for a better understanding of processes and the occurrence of phenomena, and as such, it has become a prevalent statistical approach (Lachowicz et al., 2018). Mediation analysis involves an evaluation of alternative means by which a causal effect of a variable on another could be explained through a third variable (Lachowicz et al., 2018). The third variable, also called the mediator, could either complement the main predictor to cause an effect or fully explain the causal effect without the influence of the main predictor. To this end, the current study presumes that attitude can mediate the relationship between the TOP factors and acceptance of PMS digitalization. Indeed, attitude has been found to be a good mediator in many technology adoption studies (Khurana et al., 2020).

2.5 PMS digitalization and employee performance

Agarwal et al. (2018), in human capital trend report published by Deloitte, indicate that about 76% of the companies surveyed had reorganized their PMS. Acceptance of new technology is usually influenced by several technological, organizational, and personal factors (e.g., Handayani et al., 2018). Moreover, adoption of new technology has also influenced performance in past research (Al-Hawary & AlDafiri, 2017). Accordingly, this study expects that acceptance of PMS digitalization (ACP) will positively influence employee performance (EPF).

2.6 Equifinality of PMS digitalization acceptance and peformance

Theories such as theory of planned behaviour (TPB) and IDT offer relatively narrow and linearly assumed causality of events. Past behavioural studies have indicated that individuals' attitudes and behaviour are complex and sometimes may be explained by combined interactions of heterogeneous variables

(Olya & Al-ansi, 2018). Against this background, this study moves further by leveraging the strength of complexity theory which assumes that an occurrence phenomenon is explained by heterogeneous, dynamic, and combined interaction predictors (Hoffmann & Riley, 2002). Several authors have confirmed the explanatory power of complexity theories in numerous studies (Olya & Mehran, 2017). Along this line of thought, the current study applies complexity theory propositions to examine how varied combinations of technological, organizational, and personal factors interact to explain ACP and EPF.

2.7 Conceptual framework and hypotheses

Given the research objectives and literature reviewed, the study proposes a conceptual model (see figure 1) below:

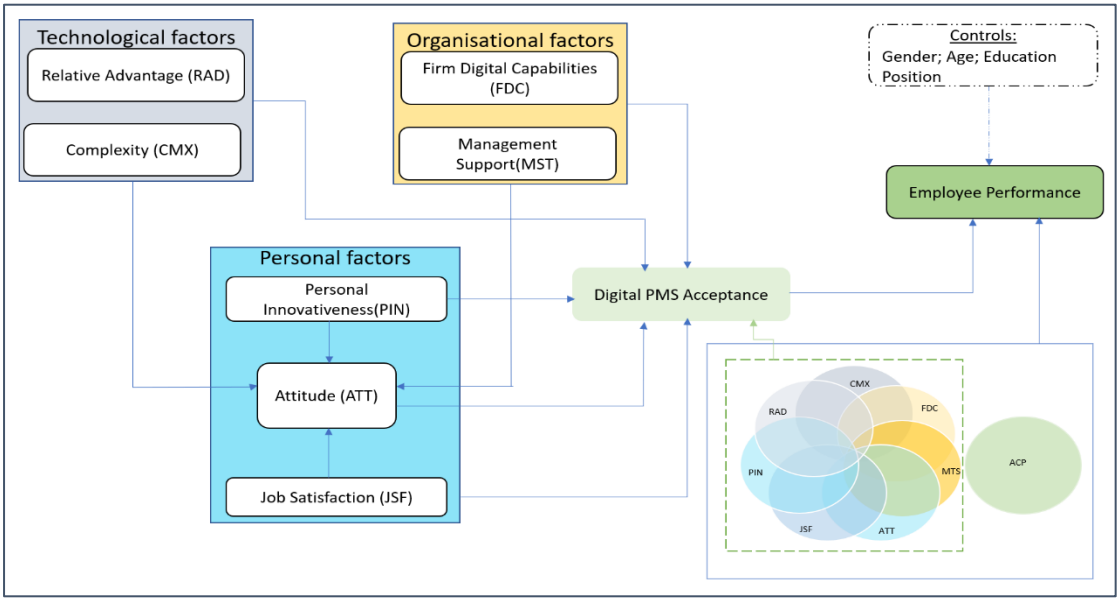

Figure 1: Path and configurational research model (Source: Author's Own, 2023)

Based on the above literature review and conceptual model, the following hypotheses are proposed:

H1 (a-b): RAD positively affects ATT and ACP.

H2 (a-b): CMX negatively affects ATT and ACP.

H3 (a-b): FDC positively affect ATT and ACP.

H4 (a-b): MTS positively affects ATT and ACP.

H5 (a-b): PIN positively affects ATT and ACP.

H6 (a-b): JSF positively affects ATT and ACP.

H7 (a-b): ATT mediates the relationship between technological factors (RAD & CMX) and ACP.

H8 (a-b): ATT mediates the relationship between organisational factors (FDC & MTS) and ACP.

H9 (a-b): ATT mediates the relationship between personal factors (PIN & JSF) and ACP.

H10: ATT positively affects ACP.

H11: ACP positively affects EPF.

H12: Varied combinations of TOP factors (RAD, CMX, FDC, MTS, PIN, JSF, and ATT) are associated with high level of ACP.

H13: Varied combinations of TOP factors (RAD, CMX, FDC, MTS, PIN, JSF, ATT) and ACP are associated with high level of EPF.

3. METHODOLOGY

3.1 Research design

This study is exploratory and explanatory because aside from exploring the scarcely known processes involved in PMS digitalization, it also seeks to explain the factors and their relationships in PMS digitalization (ACP). Additionally, it also measures the impact of ACP on employee performance. Mixed methods (qualitative and quantitative methods) were used for data collection and analysis.

3.2 Study setting

The sample for the study was drawn from four commercial banks, two healthcare service organizations, and one international professional accounting firm operating in Ghana. The study is not specifically about Ghana because the participating firms include both local-based firms and international firms with their headquarters or origin outside Ghana. Indeed, interest in adopting digitalization in many spheres of Ghana economy has surged as international firms increasingly transfer their digital infrastructure into Ghana (Agyapong, 2021), thereby providing another setting for PMS digitalization research.

3.3 Sample and sampling techniques

Cross-sectional data were collected the participating firms. The selection criterion for participating firms is that the firms must be known as a firm implementing PMS digitalization (Chillakuri, 2018) and operating in emerging economies in Africa. The researcher identified some of the firms through the literature review, while the rest were identified through the snowball sampling technique. After identifying the participating firms, a stratified random sampling

technique was employed to gather data for the quantitative study. Approval for access to firms was sought from the HR Manager/Director prior to data collection. Where approval was granted, the reseracher was introduced to the employees through an email. The researcher followed up with employees through emails with the survey instrument and assured the respondents that participation was voluntary. Responses to the survey were to be sent through the researcher's email or in sealed envelopes for the reseracher to collect them at the firm's reception days after. In instances where the firm's IT policy does not allow external hyperlinks (e.g., as experienced in some of the banks), the researcher visited the branches and administer the survey with the help of the branch managers. In all, the study's respondents include middle level managers, supervisors, and low-level staff. Due to the global COVID-19 pandemic and the respondents' busy schedules, zoom/WhatsApp channels were used for the interview. Each interview lasted approximately 30 minutes. In all, 492 questionnaires were used for the study, having cleaned 506 survey responses received. The data cleaning was done through the case-wise deletion method. Further, 11 interview responses were obtained from the study and are deemed adequate for qualitative analysis.

3.4 Sample-size adequacy determination

The present study relied on G-power software for its power analysis. The software is able to estimate sample size accurately while avoiding any disturbances of statistical significance (Faul et al., 2009). To use the G*power for sample size determination, the user needs to specify the following parameters: the effect size(f^2), alpha(α), power ($1-\beta$), and the number of predictors. Consequently, in this study, the power analysis indicates 55 responses as the minimum sample size required to bring an effect size of 0.15 and 0.8 statistical power at a 0.05 significance level. However, along the lines of Ringle et al. (2015) recommendation, the study targeted four or five times the required minimum sample size to increase its model's reliability. Thus, the 492-sample obtained is adequate to realize sufficient statistical power.

3.5 Measures and pre-administering validation

Based on the literature review, this study adapted existing validated measures to measure its main constructs, namely relative advantage (RAD), complexity (CMX), management support(MST), firm digital capabilities(FDC), job satisfaction(JSF), personal innovativeness(PIN), attitude(ATT), PMS digitalization acceptance (ACP), and employee performance (EPF). The description and sources from which these measures were adapted have been provided in Table 1. All the measures (RAD, CMX, FDC, MTS, PIN, ATT, ACP,

EPF, expcept JSF) were measured on a five-point Likert-like scale anchored on the extreme by 1 = “strongly disagree” and 5= “strongly agree.”. However, JSF was also measured by using a seven-point Likert-like scale anchored on the extreme by 1= “extremely dissatisfied” and 7=, “extremely satisfied.” The questionnaire was subjected to face and content validity checks before its administration.

3.6 Common method bias minimization strategies

Statistically, the study employed Harman’s one-factor test to check for common method bias (CMB). Harman’s one-factor test assesses the extent to which a single factor accounts for more than 50% of the total variance that all the variables should share. The results showed that the most dominant variable explains only 22% of the variance in the dataset, thereby confirming that CMB was not an issue in this study. Further, a multicollinearity assessment using variance inflation factors (VIF) also confirmed that collinearity was not an issue in the study as all the VIFs values, which range from 1.285 to 3.208, were below the recommended threshold of 3.3 (Kock, 2015).

3.7 Analytical methods

As a mixed-method study, data gathered was analysed separately and based on research questions and or hypotheses using appropriate analytical methods for each (Creswell & Clark, 2018). The qualitative data was analysed using thematic content analysis (TCA) where in six steps were followed including familiarizing oneself with the data, creating preliminary codes, looking for themes, defining and labeling themes, refining the themes, validity and reliability checks, and production of a report. The TCA helped provide answer to research question one. The quantative data was analysed using several techniques such as PLS-SEM and fsQCA.These analytical methods were also suplemented with IPMA and quadratic assesment test. The PLS-SEM was used to examine the first 8 hypotheses to provide answers to the research questions 2 to 8. Given the nature of organisational complexity, the study also adopted fsQCA to examine the range of different combinations of variables and how they affect ACP and EPF. By so doing, answers were provided to research question 9. Since there were over 10 variables in the study and managers may not have the resources to attend to all these at once, it was necessary to identify the factors that managers need to attend to as priorities, and this was achieved through the use of IPMA technique. To check for the robostness of the research model which depicts the 9 hypotheses tested, quadratic asssement test was employed to ascertain whether the linear relationship established were indeed linear.

Table 1: Construct/variable definitions & items sources (Abridged)

Construct	Definition	Items	Source
Relative Advantage	Relative advantage refers to the extent to which an innovation is perceived as better than its predecessor (Moore & Benbasat, 1991).	**RAD1:** The digitalization of our PMS enhances effectiveness in my job. **RAD2:** I find the digitalization of our PMS useful in my job. **RAD3:** The digitalization of our PMS improves my job performance	Handayani et al., 2017
Complexity (CMX)	Complexity refers to the extent to which innovation is perceived by an individual as difficult to use (Al-Rahmi et al., 2019).	**CMX1:** The digitalization of our PMS requires technical skills to use. **CMX2:** The digitalization of our PMS requires a lot of mental effort to use. **CMX3:** The digitalization of our PMS is very frustrating.	Min et al., 2019
Management Support (MTS)	Management support measures senior management attitude and the support they provide for the implementation of new technology (Chen & Hsiao, 2012; Handayani et al., 2017)	**MTS1**: Senior management provides support for PMS digitalization. **MTS2**: Senior management has active participation in the PMS digitalization decision-making process. **MTS3**: Senior management has provided sufficient resources for PMS digitalization implementation.	Chen & Hsiao, 2012; Handayani et al., 2017
Firm Digital Capabilities (FDC)	Firm digital capabilities denote a firm's ability to utilize its technical resources (Afuah, 2002).	**FDC1:** My organization usually acquires important digital technologies. **FDC2:** My organization usually identifies new digital opportunities.	Zhou & Wu, 2010
Job satisfaction (JSF)	Job satisfaction measures the pleasant emotional state of individuals which represents their judgmental feedback from the evaluation of a job they hold (Locke, 1976).	**How satisfied are you with the following aspect of your job?** **JSF1: P**hysical working conditions. **JSF2:** Freedom to choose your method of working. **JSF3:** Your colleagues and fellow workers.	Jadoo, 2020
Personal Innovativeness (PIN)	Personal Innovativeness is the degree to which a person is willing to try out innovation (Agarwal & Prasad, 1998).	**PIN1:** Usually, I like to experiment with new idea or system **PIN2:** If I heard about a new idea or system, I would look for ways to experiment with it.	Thatcher et al., 2003
Attitude (ATT)	Attitude is defined as the opinion a person holds about an object as either positive or negative, having evaluated the object (Ajzen, 1991; Albarracin & Shavitt, 2018).	**ATT1**: Introducing PMS digitalization in my company was a good idea **ATT2**: The PMS digitalization makes my work more interesting **ATT4:** I like working with the PMS digitalization **ATT5:** Using PMS digitalization is beneficial.	Ajzen, 1991
PMS digitalization Acceptance (ACP)	PMS digitalization acceptance refers to employees' willingness to use digital technologies in their PMS.	**ACP1:** I am very satisfied with the PMS digitalization in our firm. **ACP2:** The PMS digitalization (features) performs as expected. **ACP3:** I am enthusiastic about using PMS digitalization.	Chen & Hsiao, 2012
Employee Performance (EPF)	Employee performance- refers to the work output expected of a worker, which is assessed on defined standards.	**EPF1:** I almost always perform better than an acceptable level **EPF2:** I often perform better than can be expected from me **EPF3:** I often put extra effort into my work	Kuvaas, 2006)

Source: Author's Own, 2023

4. DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Thematic analysis of interview

By following the thematic content analysis procedure stated in section 3.7, five main themes were generated including the nature of PMS digitalizatio, implementation processes, challenges, and remediation, critical success factors and sustainability measures (CSFS), the impact of PMS digitalization on employee performance, and the general observations and conclusions. The discussion of the themes is sumarised in Table 2.

4.2 Analysis of quantitative data

4.2.1 Measurement model assessment

The objective of the measurement model assessment is to explain the reliability and validity of items that measure latent variables in the model of the study. Specifically, Henseler (2021) indicates that convergent, construct, and discriminant validity are key metrics considered in the measurement model assessment.

Convergent validity (CV_1) assesses the extent to which a measure is highly correlated with alternative measures evaluating the same construct (Hair et al., 2014) and CV_1 is evaluated using factor loadings (FL) and average variance extracted(AVE). The results indicated both FL and AVE values are within their respective acceptable thresholds as shown in Table 3. Construct validity(CV_2), which examines the extent to which the measurements are consistent and assessed via Cronbach's alpha (α) and composite reliability (ρc), was also checked. The values for CV_2 metrics depicted in Table 3 compared with conservative threshold suggest that CV_2 requirement is met. Discriminant validity (DV) reflects the degree to which a construct in measurement model is distinct and does not seem to measure a phenomenon that is captured by other constructs (Rönkkö & Cho, 2022). The current study assessed DV using the heterotraitmonotrait (HTMT) criterion and all the values of HTMT displayed in Table 4 are less than 0.85 threshold implying that DV requirement has been achieved (Henseler, 2021).

Table 2: Summary of the results of Qualitative data analysis via Thematic Content Analysis

#	Theme	Description of theme	Sample Illustration from Respondents
1	**Nature of PMS Digitalization**	• The findings show that PMS digitalization has been introduced for about 3.5 years. • The new PMS involves setting goals and identification of Key Performance Indicators (KPIs) etc. • All the firms have a final year review where actual performance for the year is compared with the overall goals set	*"The PMS process starts like this: We have financial goals or KPIs which are basic, only that it keeps increasing every year" Apart from these goals we have different goals like digital targets, people management (e.g., training), and process management goals depending on strategic direction of the bank. The process management has to do with how well you go with compliance, auditing, and operation standards" (CBK01).*
2	**PMS Digitalization Implementation processes**	It was found that before the implementation of PMS digitalization, the firms engaged in the following processes: • Several meetings with internal stakeholders of the organization. • Numerous communications from leadership to the staff at different levels and training of employees at different levels • Change "champions" and manual on the new PMS. • Trial period for staff to adjust to the new system.	*"By organizing in-house training at the branch level and also HR put together a document, highlighting the various steps required under each process (goal setting, mid-year review, and end of year review." (CBK02).*
3	**PMS Digitalization Implementation Challenges and Remediation**	Implementation challenges found with PMS digitalization are: • Some staff had difficulties understanding the new PMS during the trial period. • Some of the technologies introduced were not working at the implementation time, causing lag . Some remedial actions include re-training staff and using alternative technologies during a glitch. They also commissioned change champions to assist	"*As with any new system, there were initial hiccups with staff profile setup and navigation. For instance, we were all required to sign in at a particular time, but some could not do it but emails to IT team, they were sorted. Again, personally, although I took part in the training when I have left alone, I could do it and had to consult."* (CBK04). *"There was a workaround for staff to use specially designed Google sheet templates, and once the challenge was resolved, the information in the templates was uploaded into the system. (PSF05)*
4	**Critical success factors & impact of PMS Digitalization**	Critical success factors were transparency, effective communication, re-training, and good change management practices. The respondents indicated that PMS digitalization has a positive influence on Performance.	"*Good change management practices and stakeholder buy-in. Communications from leadership and pre-launch activities were also key in driving new behaviors needed for a successful implementation" (PSF06).* *"Yes, I will say it has influenced performance in a positive way. This new system seems to be stringent because, in previous years, the human face was employed every now and then….. (CBK05).*
5	**General Observations**	The researcher noted the following: the firms differ significantly on the level of digitalization. They have yet to digitalize all the processes in their PMS fully, and most of the firms do not have real-time performance feedback.	

(Source: Author's own, 2023)

Table 3: Factor loadings, construct reliability, and validity

Construct	Item code	Factor loadings **[>0.6]**	Outer VIF **[<3.3]**	CA **[>0.7]**	CR **[>0.7]**	AVE **[>0.5]**
Acceptance	ACP1	0.886	2.863	0.891	0.893	0.755
	ACP2	0.858	2.593			
	ACP3	0.908	3.156			
	ACP5	0.822	2.135			
Attitude	ATT1	0.763	2.144	0.880	0.883	0.677
	ATT2	0.811	2.431			
	ATT3	0.799	2.612			
	ATT4	0.865	2.734			
	ATT5	0.869	3.190			
Complexity	CMX1	0.818	1.507	0.779	0.787	0.694
	CMX2	0.885	2.051			
	CMX3	0.793	1.663			
Employee Performance	EPF1	0.784	1.778	0.898	0.899	0.712
	EPF3	0.874	2.834			
	EPF4	0.864	2.854			
	EPF5	0.861	2.886			
	EPF6	0.832	2.162			
Firm Digital Capabilities	FDC1	0.879	3.067	0.919	0.920	0.754
	FDC2	0.867	3.030			
	FDC3	0.876	2.842			
	FDC4	0.855	3.019			
	FDC5	0.866	3.208			
Job Satisfaction	JSF1	0.800	2.490	0.909	0.914	0.611
	JSF10	0.772	2.256			
	JSF2	0.749	1.958			
	JSF3	0.855	3.117			
	JSF4	0.730	1.907			
	JSF5	0.767	2.166			
	JSF7	0.827	2.543			
	JSF9	0.748	2.128			
Management Trust	MTS1	0.799	2.161	0.842	0.844	0.614
	MTS2	0.817	2.329			
	MTS3	0.833	2.008			
	MTS4	0.743	1.530			
	MTS5	0.719	1.465			
Personal Innovativeness	PIN1	0.906	2.697	0.792	0.817	0.712
	PIN2	0.902	2.727			
	PIN4	0.709	1.285			
Relative Advantage	RAD1	0.849	2.056	0.879	0.883	0.732
	RAD2	0.850	2.116			
	RAD3	0.862	2.957			
	RAD4	0.861	2.949			

Note: CA-Crombach Alpha, CR-Composite Reliability, AVE-Average Variance Extracted. The values in bold show the threshold for each metric.
(Source: Author's own, 2023)

Table 4: Discriminant validity results- Heterotrait-monotrait ratio (HTMT)criterion

	ACP	ATT	CMX	EPF	FDC	JSF	MTS	PIN	RAD
ACP									
ATT	0.811								
CMX	0.282	0.306							
EPF	0.686	0.657	0.239						
FDC	0.635	0.534	0.311	0.579					
JSF	0.565	0.605	0.256	0.505	0.522				
MTS	0.702	0.635	0.348	0.611	0.738	0.595			
PIN	0.635	0.684	0.307	0.580	0.496	0.502	0.533		
RAD	0.675	0.751	0.431	0.520	0.554	0.411	0.669	0.443	

Note: ACP-Acceptance, CMX-Complexity, EPF-Employee performance, FDC-Firm digital capabilities, MTS-Management support, PIN-Personal innovativeness, RAD-Relative advantage. ATT-Attitude. (Source: Author's Own, 2023).

4.2.2 Structural model assessment

Hypothesis testing of direct relationships: Consistent with extant research guidelines (Hair et al., 2019) the study tested 14 hypotheses of direct relationship. Using the core metrics such as path coefficient (β), standard error (SE), standard deviation (SD), significance of estimates(t-statistic), p-values, and confident interval, 9 out of these 14 hypotheses were accepted. The results are displayed in Table 5. As seen in Table 5, the results suggest that RAD positively affects both ATT and ACP thereby confirming H1a (β=0.495, p<0.001) and H1b (β=0.126, p<0.05). However, the H2a and H2b did not received support as their respective metric (β=-0.043, p>0.05) and (β=-0.033, p>0.05) did not meet the thresholds, implying that CMX does not have any effect on both ATT and ACP. H3a (β=-0.016, p>0.05) was rejected meaning that FDC do not have influence on ATT. On the contrary, FDC positively affects ACP leading to the author accepting H3b (β=0.159, p<0.01). Further MTS does not affect ATT (H4a (β=0.057, p>0.05)), although it affects ACP (H4b (β=0.148, p<0.01)). This means H4a is rejected while H4b is accepted. On the personal factors (PIN, JSF and ATT), the results demonstrate that PIN does not only affect ATT but also affects ACP. This leads to the acceptance of both H5a (β=0.293, p<0.001) and H5b (β=0.113, p<0.01). Similarly, H6a (β=0.236, p<0.001) was accepted, implying that JSF affects ATT. On the contrary, the effect of JSF is not strong enough to influence ACP leading to the rejection of H6b (β=0.064, p>0.067). In addition, ATT also has an effect on ACP, that is, H10 (β=0.387, p<0.001) giving support to H10. Finally, H11 (β=0.615, p<0.001) is accepted suggesting that ACP has a positive effect on EPF.

Table 5: Structural model assessment (with bootstrap sample size =5000)

		Model 1 (main)									Model2 (Control)		
Hypothesis	Path	β	SE	SD	t-value	P-values	95%BCCI.	Decision	VIF	Effect Size(f^2)	β	P -values	Decision
H1a	RAD -> ATT	0.459	0.457	0.040	11.365	0.000***	[0.396, 0.529]	Accept	1.674	0.324	0.458	0.000***	Accept
H1b	RAD -> ACP	0.126	0.124	0.054	2.308	0.011*	[0.039, 0.219]	Accept	2.217	0.019	0.128	0.009*	Accept
H2a	CMX -> ATT	-0.043	-0.041	0.030	1.426	0.077	[0.094, 0.004]	Reject	1.176	0.004	-0.045	0.068ns	Reject
H2b	CMX -> ACP	-0.033	-0.033	0.032	1.029	0.152	[0.086, 0.020]	Reject	1.181	0.002	-0.032	0.152ns	Reject
H3a	FDC -> ATT	-0.016	-0.015	0.047	0.338	0.368	[0.094, 0.062]	Reject	1.948	0.000	-0.013	0.389ns	Reject
H3b	FDC -> ACP	0.159	0.158	0.049	3.204	0.001**	[0.080, 0.243]	Accept	1.948	0.034	0.157	0.001**	Accept
H4a	MTS -> ATT	0.057	0.059	0.060	0.959	0.169	[0.041, 0.155]	Reject	2.235	0.004	0.058	0.166ns	Reject
H4b	MTS -> ACP	0.148	0.147	0.054	2.760	0.003**	[0.059, 0.234]	Accept	2.244	0.026	0.148	0.003**	Accept
H5a	PIN -> ATT	0.293	0.292	0.046	6.401	0.000***	[0.217, 0.368]	Accept	1.394	0.159	0.292	0.000***	Accept
H5b	PIN -> ACP	0.113	0.113	0.038	3.014	0.001**	[0.053, 0.177]	Accept	1.615	0.021	0.114	0.001**	Accept
H6a	JSF -> ATT	0.236	0.236	0.042	5.634	0.000***	[0.166, 0.306]	Accept	1.516	0.096	0.236	0.000***	Accept
H6b	JSF -> ACP	0.064	0.067	0.043	1.502	0.067	[0.007, 0.135]	Reject	1.661	0.007	0.066	0.064ns	Reject
H10	ATT -> ACP	0.387	0.388	0.066	5.879	0.000***	[0.280, 0.494]	Accept	2.592	0.150	0.384	0.000***	Accept
H11	ACP -> EPF	0.615	0.617	0.036	17.315	0.000***	[0.552, 0.670]	Accept	1.000	0.609	0.606	0.000**	Accept
CV1	AGE -> EPF										-0.053	0.074	ns
CV2	EDU -> EPF										0.096	0.002	sig.
CV3	GEN -> EPF										0.056	0.219	ns
CV4	JPS -> EPF										0.016	0.322	ns

Endogenous Latent variable	R^2	Predictive Relevance, Q^2 (= 1-SSE/SSO)	
ATT	0.614	ATT	0.597
ACP	0.621	ACP	0.547
EPF	0.379	EPF	0.381

*Note: ACP-Acceptance of PMS digitalization, ATT-Attitude, CMX-Complexity, EPF-Employee performance, FDC-Firm digital capabilities, MTS-Management support, PIN-Personal innovativeness, RAD-Relative advantage, n.s., non-significant, sig., significance, SE-Standard error (sample mean), VIF-Variance inflation factor, *p < 0.05; *p < 0.01,***p < 0.001 (one-tail)., BCCI,-Bias corrected confident interval, CV-Control Variable. (Source: Author's own, 2023).*

The study examined the quality of the structural model results using some core metrics such as the inner variance inflation factors (VIF), coefficient of determination (R^2), and effect size (f^2) as a guide. There were no collinearity issues, as all the VIF values were less than 3. The study obtained moderate R^2 values, 61.4% for ATT, 62.1% for ACP, and 37.9% for EPF. Accordingly, the R^2 values can be described as moderate. In this study, the f^2 values obtained for the 9 accepted paths range from 0.02 to 0.61, suggesting moderate to large effect sizes.

*Mediation analysis***:** The study assessed the potential intervening role attitude may play in six core causal pathways in the model. In Table 6, the results of the mediation analysis are presented. The results indicate that the direct effect (β=0.126, P<0.05) and indirect effect (β=0.178, P<0.001) of RAD on ACP are significant. As such, hypothesis (H7a) is accepted, suggesting that ATT mediates the relationship between RAD and ACP. However, the H7b is rejected because both the direct effect (β = -0.033, P>0.05) and indirect effect (β=0.016, P>0.05) of CMX on ACP are not significant. This implies that ATT does not mediate the relationship between CMX and ACP. Similarly, against expectation, the results show that ATT does not mediate the relationship between FDC and ACP as predicted. Statistically, although the direct effect (β=0.159, P<0.01) of FDC on ACP is significant, the corresponding indirect effect (β=-0.006, P>0.05) is insignificant, leading to the rejection of H8a. Further, the mediation effect of attitude on MTS and ACP relationship, as predicted, has not been confirmed. The result depicts that whereas the direct effect (β=0.148, P<0.01) of MTS on ACP is significant, the associated indirect effect (β=0.022, P>0.05) is not significant. This leads to the rejection of H8b. As expected, H9a is accepted because both the direct effect (β=0.113, P<0.001) and indirect effect (β=0.113, P<0.001) of PIN on ACP are significant. This implies that ATT mediates the relationship between PIN and ACP. Finally, H9b is also accepted, given that the direct effect (β=0.064, P>0.05) of JSF on ACP is not significant, yet the corresponding indirect effect (β=0.091, P<0.001) is significant. This means attitude mediates between JSF and ACP.

Table 6 Results of mediation assessment (with bootstrap sample size =5000)

Hypo.	Path (Indirect effect)	β	SE	t-value	P-values	95%CI bias Corrected.	Interpre-tation	Decision
H7a	RAD -> ATT -> ACP	0.178	0.177	5.183	0.000	[0.127,0.240]	Mediation	Accept
H7b	CMX -> ATT -> ACP	-0.017	-0.016	1.456	0.073	[-0.037,0.000]	No mediation	Reject
H8a	FDC -> ATT -> ACP	-0.006	-0.006	0.336	0.368	[-0.036,0.024]	No mediation	Reject
H8b	MTS -> ATT -> ACP	0.022	0.024	0.900	0.184	[-0.014,0.067]	No mediation	Reject
H9a	PIN -> ATT -> ACP	0.113	0.113	4.714	0.000	[0.078,0.158]	Mediation	Accept
H9b	JSF -> ATT -> ACP	0.091	0.091	4.595	0.000	[0.062,0.128]	Mediation	Accept

*Note: ACP-Acceptance of PMS digitalization, ATT-Attitude, CMX-Complexity, FDC-Firm digital capabilities, MTS-Management support, PIN-Personal innovativeness,RAD-Relative advantage, SE-Standard error(sample mean), CI-Confidence Interval, *p<0.05;**p<0.001 (one-tail).*
(Source Author's own, 2023)

*Quadratic effect/Non-Linear Assessment of the model:*Prior studies have noted that the constructs used in behavioural research are not always linearly related but sometimes non-linearly associated (Basco et al., 2022). To this end, studies which fail to check for potential non-linear relationships are more likely to report misleading results (Becker et al., 2013). Thus, the 9 hypotheses confirmed at the bootstrapping level were further subjected to quadratic effect assessment to ascertain whether the relationships are linear or in quadratic form, $y=x^2 + x + C$. The results are shown in Table 7.

Table 7: Results of Quadratic test of confirmed hypothesized paths

	Linear statistic		Non-Linear statistic					
Path	β	P-values	β	t-value	P- values	95%CI bias C.	Interpretation	(f^2)
RAD -> ATT	0.459	0.000***	-0.019	0.685	0.247	[-0.067, 0.026]	Linear	0.011
RAD -> ACP	0.126	0.011*	-0.019	0.640	0.261	[-0.070, 0.027]	Linear	0.012
FDC -> ACP	0.159	0.001**	-0.052	1.514	0.065	[-0.117,-0.002]	Linear	0.002
MTS -> ACP	0.148	0.003**	0.053	1.732	0.042	[0.001, 0.102]	**Non-linear**	**0.002**
PIN -> ATT	0.293	0.000***	0.068	2.189	0.014	[0.017, 0.119]	**Non-linear**	**0.018**
PIN -> ACP	0.113	0.001**	0.017	0.658	0.255	[-0.025, 0.059]	Linear	0.001
JSF -> ATT	0.236	0.000***	-0.029	0.993	0.160	[-0.074, 0.020]	Linear	0.003
ATT -> ACP	0.387	0.000***	0.043	1.115	0.132	[-0.027, 0.100]	Linear	0.007
ACP -> EPF	0.615	0.000***	0.074	2.093	0.018	[0.015, 0.132]	**Non-linear**	**0.017**

*Note: ACP-Acceptance of PMS digitalization, ATT-Attitude, CMX-Complexity, EPF-Employee performance, FDC-Firm digital capabilities, MTS-Management support, PIN-Personal innovativeness, RAD-Relative advantage, *p<0.05; **p<0.001 (one-tail).. Bolded words and figures indicate the nonlinear paths and their corresponding effect sizes. (Source: Authors' own, 2023).*

The results in Table 7 shows that out of the 9 linear paths confirmed in model 1 (refer to Table 5), 3 are non-linear. A visual representation of the nature of the quadratic effect is shown in Figure 2. Although MTS has a significant linear association with ACP, further analysis also suggests that the relationship is indeed quadratic. Similarly, the relationships established between PIN and ATT and between ACP and EPF have also been proved as non-linear through the robustness analysis employed. However, after a careful analysis of Table 7, the three paths that turn out to be curvilinear have small effect sizes (i.e., 0.02 to 0.018). Thus, the author maintained the results produced by the linear model (Basco et al., 2022).

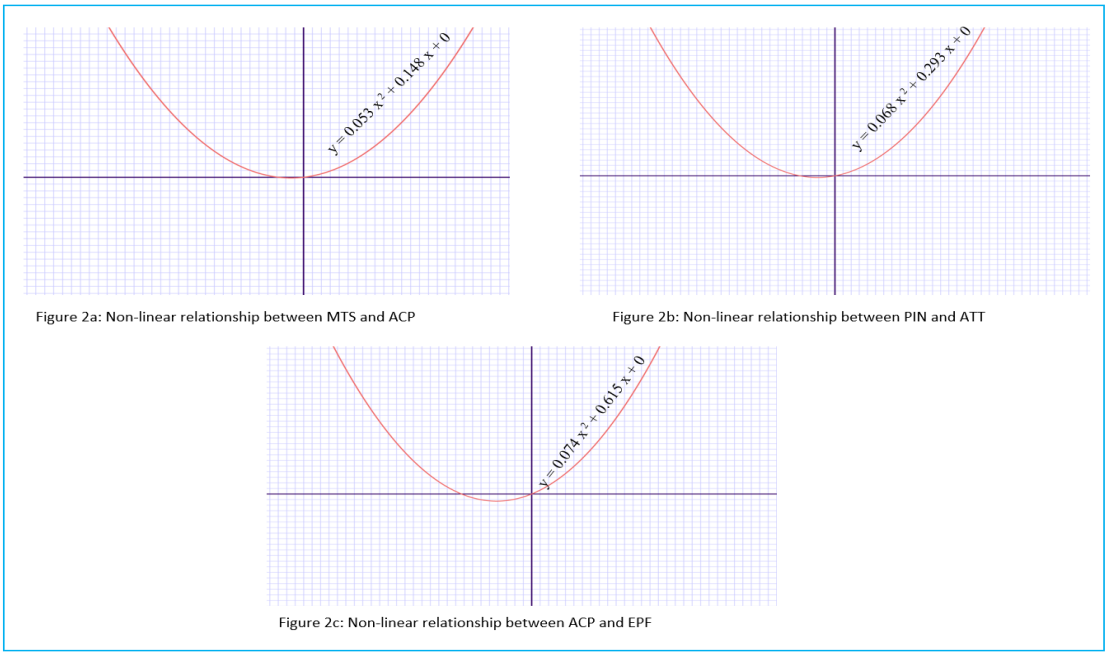

Figure 2: Quadratic path analysis in graph (Source: Author's own, 2023)

Importance performance matrix analysis: Due to resource constraints, it is appropriate for practitioners and managers to know the relative importance of each organizational variables. This knowledge will help them to prioritize and concentrate their few resources on the variables that have the most impact on achieving desired objectives (Ringle & Sarstedt, 2016). Importance performance matrix analysis (IPMA) is used to achieve this objective. In this study, SmartPLS 4.0.0 software was used to conduct the IMPA. The IMPA result is displayed in graphic form in Figure 3.

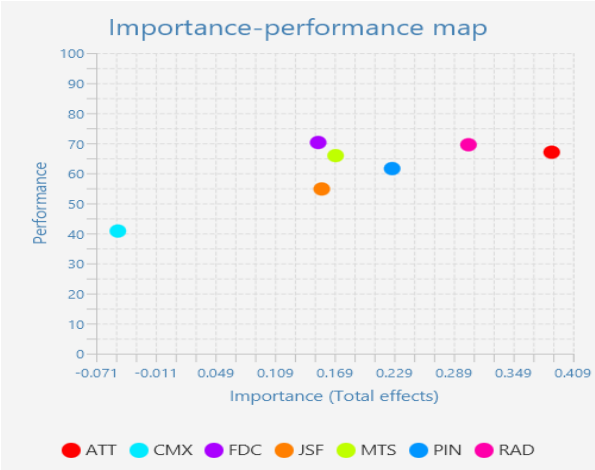

Fig. 3a. Importance performance for ACP

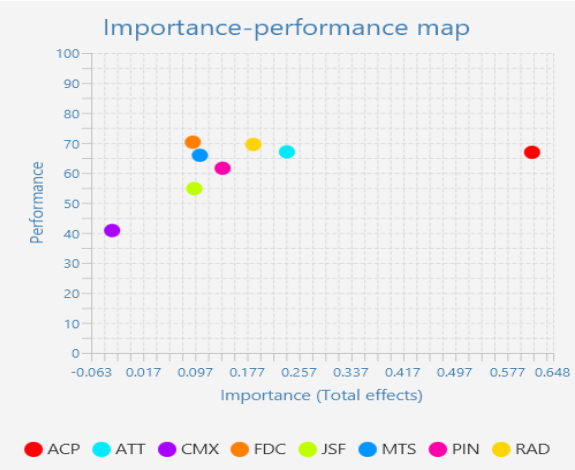

Fig. 3b. Importance performance for EPF

Figure 3: Importance performance map for ACP and EPF (Source: Author's Own, 2023)

Figure 3a indicate that ACP as target construct is influenced by seven predecessors, namely, ATT, CMX, FDC, JSF, MTS, PIN, and RAD. Figure 3a further demonstrates that RAD recorded the highest performance score of 69.5% suggesting that if the effort is dispensed to show the relative importance of PMS digitalization by one unit, employee acceptance of same will increase by 69.5%, all things been equal. This is closely followed by ATT (67%) suggesting that an increase in the effort to positively influence employee attitude by one unit will result in about 67% increase in the acceptance of PMS digitalization. The results further demonstrate that CMX could be treated as a low priority factor in PMS digitalization acceptance as it scored the lowest on both importance (-0.05) and performance (40.8%). Some efforts are required to work FDC, JSF, and MTS as they appear or at least close to the "concentrate here" quadrant. Indeed, the results also demonstrate that there is no investment in PMS digitalization acceptance which many need to be diverted as there is no predecessor in the "possible overkill" quadrant.

As depicted in Figure 3b the second target construct, EPF, has eight predecessors (ACP, ATT, CMX, FDC, JSF, MTS, PIN, and RAD). As expected, the results of IMPA demonstrate that ACP is the highest important predecessor for EPF. Given its score on importance (0.615) and performance (66.89%), it implies that a one-unit increase in acceptance in PMS digitalization will results about 66.89% increase in employee performance. Once again, the results further indicate that CMX is a low priority issue in the employee performance IPMA analysis. Since all the eight predecessors except ACP are indirectly related to the target construct, EPF, there is an indication from the results that efforts be concentrated on improving FDC, MTS, JSF, RAD, PIN, and ATT as they are close to the "concentrate here" quadrant.

4.3 Analysis of fsQCA results

In line with prior studies (Plugge et al., 2022), this study followed the main steps in conducting fsQCA, including calibration, necessity condition assessment(option), truth table development, and solution interpretation. To calibrate the variables, the standardized latent variable scores from the PLS-SEM output were imported into the fsQCA software 3.0 (Ragin & Davey, 2016). In the calibration process, the minimum, average, and maximum of each standardized latent variable score were checked, ranging from -3, 0, and 3 representing no set membership, cross-over point, and full set membership, respectively. Necessary condition analysis (NCA) conducted for PMS digitalization acceptance (fsqACP)

indicates that attitude (fsqATT) is the only single condition that can explain the acceptance of PMS digitalization by itself. Two truth tables for fsqACP and fsqEPF outcomes were generated. The truth tables were subjected to logical minimization resulting in removal of configurations that failed to meet the cut-off rule of 0.2 coverage and 0.8 consistency (Ragin, 2008). Following the completion of truth table generation and the logical minimization procedure, three alternative solutions were produced: complex, intermediate, and parsimonious (Ragin, 2008) for both ACP and EPF outcomes. In line with social science research and extant studies in general (Abbasi et al., 2022), the intermediate solution was selected in this study for further analysis. The solution for ACP and EPF are represented in Table 8 and 9 respectively.

Table 8: Configurations for acceptance of PMS digitalization(ACP)

CAUSAL RECIPE	SOLUTION										
Technologicalfactors	1	2	3	4	5	6	7	8	9	10	11
Relative advantage		●	●	●	●	●	●		⊗	⊗	
Complexity	●				⊗	●	⊗	⊗	⊗	⊗	●
Organiza. factors											
Firm digital capability	●	●	●			●		●		⊗	⊗
Management support		●	●	●	⊗	●	⊗	⊗	⊗	⊗	⊗
Personal factors											
Attitude	●	●	●	●	●	⊗	⊗	⊗	⊗	⊗	⊗
Job satisfaction	●	●		●	⊗	●	⊗	⊗	⊗	●	⊗
Pers. innovativeness	●		●	●	●	⊗	⊗	⊗	●	⊗	⊗
Consistency	0.971	0.977	0.971	0.975	0.973	0.961	0.921	0.919	0.908	0.907	0.868
Raw coverage	0.610	0.673	0.669	0.659	0.446	0.453	0.467	0.469	0.478	0.471	0.484
Unique coverage	0.015	0.027	0.025	0.015	0.006	0.008	0.002	0.000	0.005	0.002	0.004
Overall solution consistency	0.856										
Overall solution coverage	0.864										

NB: Black circle indicates the presence of a condition, and circles without shape fill (⊗) represent the absence of a condition. The large black(●) circle indicates core conditions, and the small black circle (●) indicates peripheral conditions. Blank spaces represent "don't care" conditions. (Source: Author's Own, 2023).

Table 8 indicates that there are 11 possible configurations(solutions) that can explain ACP and these solutions appear in a distictive combinatorial manner suggesting equifinality, thus H12 is accepted. This means various TOP factors (RAD, CMX, FDC, MTS, PIN, JSF, and ATT) are associated with ACP. For instance, solution 1 indicates that for high ACP, all the personal factors must be present, as well as the presence of FDC and CMX issues, regardless of the influence of RAD and MTS. In sum, the 11-solutions show that all the technological factors (RAD, CMX), one organisational factor (FDC), and two personal factors (JSF, PIN) are core conditions for ACP while ATT and MTS play a reinforcing role as peripheral conditions.

Table 9: Configurations for employee performance (EPF)

CAUSAL RECIPE	SOLUTION												
Technologicalfactors	1	2	3	4	5	6	7	8	9	10	11	12	13
Relative advantage	●	●	●	●	●	●	●	⊗	⊗	●	⊗	⊗	⊗
Complexity				●	●	⊗	●	●	⊗	⊗	⊗	⊗	●
Organiza. factors													
Firm digital capabilities	●	●	●	●	●	⊗	●	●	●	⊗	⊗	⊗	⊗
Management support	●	●	●	●		⊗	●	⊗	⊗	⊗	⊗	⊗	⊗
Personal factors													
Attitude	●	●	●	●	●	●	⊗	●	⊗	⊗	⊗	⊗	⊗
Job satisfaction	●		●	●	●	⊗	⊗	●	⊗	⊗	⊗	●	⊗
Personal innovativeness		●	●	●	●		⊗	●	⊗	⊗	●	⊗	⊗
Acceptance of PMS	●	●	●	●	●	●	●	⊗	⊗	⊗	⊗	⊗	⊗
Consistency	0.957	0.953	0.969	0.963	0.963	0.970	0.955	0.964	0.928	0.918	0.915	0.904	0.877
Raw coverage	0.641	0.635	0.517	0.567	0.565	0.431	0.431	0.437	0.457	0.450	0.464	0.465	0.473
Unique coverage	0.025	0.022	0.007	0.006	0.005	0.006	0.005	0.002	0.002	0.001	0.004	0.004	0.008
Overall solution consistency	0.861												
Overall solution coverage	0.827												

NB: Black circle indicates the presence of a condition, and circles without shape fill (⊗) represent the absence of a condition. The large black (●) circle indicates core conditions, and the small black circle (●) indicates peripheral conditions. Blank spaces represent "don't care" conditions. (Source: Author's Own, 2023).

Similarly, Table 9 also depicts equifinality leading to the acceptance of H13 and implying that different combinations of TOP factors (RAD, CMX, FDC, MTS, PIN, JSF, ATT) together with ACP are associated with EPF. Specifically, Table 9 indicates that 13 possible solutions can help explain EPF. For instance, solution 1 proposes that for high EPF, PMS digitalization must be accepted and combined with all the TOP factors except CMX and PIN. Solution 2 offers the same conditions as solution 1, except that it advocates the presence of PIN instead of JSF for high-level EPF. Table 9 further shows that RAD, CMX, FDC, JSF, and PIN are core conditions, whereas MST, ATT, and ACP appear as peripheral conditions.

Table 10: Summary of major findings from the study

#	Objectives	Key Findings
1	To identify the key processes involved in digitalization of PMS.	Key processes involved in PMS digitalization include identification and digitization of work processes; establishment of a digital data generation system, acquisition of database for big data; the use of AI programs; and validation. In addition, organizations are encouraged to use PDAM to manage behavioural issues involved in the acceptance of PMS digitalization.
2	To examine the role of technological factors in the acceptance of PMS digitalization.	RAD positively affects ACP. However, CMX has no influence on ACP.
3	To examine the role of organizational factors in the acceptance of PMS digitalization.	Both FDC and MST positively affect the acceptance of PMS digitalization.
4	To examine the role of personal factors in the acceptance of PMS digitalization.	PIN and ATT positively affect the acceptance of PMS digitalization.
5	To assess the mediation effect of personal factor (i.e., Attitude) on the relationship between technological factors and the acceptance of PMS digitalization.	ATT mediates the relationships between RAD and ACP but not between CMX and ACP.
6	To assess the mediation effect of personal factor (i.e. Attitude) on the relationship between organizational factors and the acceptance of PMS digitalization.	ATT does not mediate the relationships between organizational factors (FDC & MTS) and ACP.
7	To assess the mediation effect of attitude on the relationship between personal factors (i.e., job satisfaction & personal innovativeness) and the acceptance of PMS digitalization.	ATT mediates the relationships between personal factors (PIN & JSF) and ACP.
8	To evaluate the effect of the acceptance of PMS digitalization on employee performance.	ACP positively affects EPF.
9	To evaluate how varied combinations of technological, organizational, and personal factors influence employee acceptance of PMS digitalization and performance.	Varied combinations of technological, organizational, and personal factors influence ACP and EPF.

Note: *ACP-Acceptance of PMS digitalization, ATT-Attitude, CMX-Complexity, FDC-Firm digital capabilities, MTS-Management support, PIN-Personal innovativeness, RAD-Relative advantage, EPF-Employee performance. (Source: Author's Own, 2023.)*

5. DISCUSSION OF FINDINGS AND CONTRIBUTIONS

5.1 Discussion of findings

The study examined the processes in, and acceptance and impact of PMS digitalization on employee performance. The result indicates that for a firm to implement PMS digitalization, all work processes must be identified and digitized as much as possible. Further, relevant digital technologies such as performance monitoring software (e.g., workday) must be in place. More advanced digital technologies such as AI, big data, IoT, and many others could be procured. These advanced digital technologies will help them capture digital data quickly, automatically, and simultaneously store big data and provide performance feedback in real time. These findings are in tandem with extant studies (Chillakuri, 2018). The results also indicate that pre-implementation behavioral change techniques such as constant engagements/meetings with staff, the establishment of "change champions," and a manual on the new PMS are important for ACP.

The findings also show that RAD positively affects ATT and ACP. These findings corroborate past studies' findings (Lim et al., 2022; Safari et al., 2015). These findings also suggest that employees had a positive attitude toward PMS digitalization as they might have considered it to offer immediate, real-time, and frequent feedback. However, the results demonstrate that CMX) does not affect ATT and ACP. These findings' relationship with other extant studies is equivocal. For instance, while they contradict previous works (Al-Rahmi et al., 2019), they corroborate with other empirical findings (de Oliveira et al., 2022). One reason for the current result could be the opportunities that emerging digital technologies present to individuals to explore in their daily lives, which makes it easier for them to use digital technologies in organizational settings equally. Additionally, FDC, although does not affect ATT, affects ACP. This finding lends credence to previous works (von Arnim & Mrozewski, 2020). In detail, when employees find that their firm is a type that can leverage technology to transform its business, they are more likely to endorse new technologies the firm introduces.

Similarly, MTS does not affect ATT meaning the MTS experience they have enjoyed from their superiors is less motivating to affect their attitude. On the other hand, MTS positively affects ACP, suggesting that for employees to accept the PMS innovation, management needs to provide good support (Hsu et al., 2019). PIN was also found to positively affects ATT and ACP. These findings, while lending credence to existing empirical literature (Cheng & Huang, 2013), imply a high tendency for employees who score high on PIN to have a positive attitude toward new technology. Moreover, JSF also positively affects ATT. Indeed, this finding is supported by numerous past studies' outcomes (Schouteten

& Vleuten, 2013). This finding means that employees' emotional state about their jobs plays a seminal role in their attitude toward organizational innovations.

The results demonstrate that ATT mediates the relationship between RAD and ACP, PIN and ACP, and JSF and ACP. However, the individual relationship of CMX, FDC, and MTS with ACP was not mediated by attitude, and a possible mediation could be attributed to other factors. The results show that ATT positively affects ACP. This finding reinforces several empirical studies (Salloum et al., 2019), which have underscored the importance of attitude. Finally, it was found that ACP positively affects EPF (Al-Hawary & AlDafiri, 2017). This finding suggests that when employees accept PMS digitalization, it leads to increased performance.

The fsQCA results show that TOP factors interact in varied ways to explain the variation in ACP and EPF. Specifically, the results indicate that all the technological factors (RAD & CMX), one organizational factor (FDC), and two personal factors (JSF & PIN) are core conditions for ACP, while ATT and MTS play a reinforcing role as peripheral conditions. The finding implies that for employees to accept PMS digitalization, the organization should be able to showcase the relative advantage of the new system to employees and ensure the new PMS is easy to use. At the same time, acceptance will be high when they are satisfied with their job and their innovative skills are also high.

5.2 Theoretical contributions

The study contributes to the literature in varied ways. First, it has investigated the factors that motivate the acceptance and impact of PMS digitalization on performance, which is scarce, especially in the human resource literature. Second, extant studies have generally explored how firms can introduce digitalization in human resource management (Meijerink et al., 2021) However, none of these studies have clearly articulated the processes involved in digitalizing PMS as in the case of the current study. Third, further utility support for IDT is provided, and the study also appears as the first to integrate IDT and organizational and personal factors in explaining ACP. In this study, a mixed method approach plus several advanced analytical techniques were employed, producing comprehensive and more valid results. Most of the results produced by the different analytical techniques converge in a parallel manner giving more credibility to the results.

5.3 Managerial implications

The study’s findings have several important implications for firms and managers. First, the study has developed and validated a model for PMS digitalization and articulated the processes that firms seeking to digitalize their PMS can follow. Specifically, the PMS digitalization acceptance matrix (PDAM)

has been proposed. The PDAM is a proposed management tool that depicts six-stage innovation acceptance processes wherein characteristics that need to be emphasized from the perspectives of personal (user), technological (system), and organizational (firm) are provided as guidelines.

Second, the study informs organizations about the important role of technological, organizational, and personal factors in ensuring PMS digitalization's acceptance. For instance, it informs managers to showcase the RAD of the innovation they intend to implement to their employees. Third, the study's finding on PIN emerging as the important factor in all the analytical techniques employed implies and advises managers to place much emphasis on recruiting job candidates with high personal innovative skills. Additionally, the findings, especially from the IPMA results, advise managers to work on FDC, JSF, and MTS as they appear or at least close to the "concentrate here" quadrant. Finally, the study, through its fsQCA techniques, has implied that managers can combine TOP factors in varied ways to achieve high ACP and high EPF. For instance, the findings indicate that for high ACP, a firm can simply emphasize RAD (solution 7) or PIN (solution 9), or JSF (Solution 10) even though other TOP factors may be absent. Similarly for high EPF, the firm can simply concentrate on RAD (solution 10) or PIN (solution 11), or JSF (Solution 12) despite the absence of other TOP factors.

6. BUILDING A DIGITALISED PERFORMANCE MANAGEMENT SYSTEM BASED ON THE STUDY

6.1 Introducing PMS digitalization in an organization

When an organization decides to adopt PMS digitalization, it needs to be guided by the following steps:

1. *Work process identification and digitization:* The firm should identify all the work processes and agree to digitize them as much as possible.
2. *Establish systems to generate new data in the digitized form:* First, the firm should establish a database (e.g., HRIS) and ensure that all new data are captured in digitized form. Digital data collection tool devices must be available to collect thousands of performance data.
3. *Acquire the requisite database to store big data:* Where data become excessively high in volume and meet the big data requirements, the firm should acquire storage and management databases such as Cassandra because as data become big, it cannot be stored on a normal hard disk.

4. *Install AI programs on computers:* The firm should acquire some AI programs, install them on their computers, and link them to the databases.
5. *Feed (big) data with AI programs: (*Big) data should be fed automatically with AI as data is collected. In the case of PMS digitalization, the AI can learn, and glean varied insights, patterns, and trends from the data and eventually can make decisions and predictions on employee performance.
6. *Validation & data security:* Here. the firm should monitor, generate reports from AI, and validate them. As digitalization is usually plagued with cybersecurity issues, a data security strategy should be in place.

6.2 Proposed PMS digitalization acceptance matrix.

Based on the literature, empirical validation, and the discussion of the findings, the study proposes a PDAM. The PDAM is a proposed management tool that depicts six-stage innovation acceptance processes wherein characteristics that need to be emphasized from the perspectives of personal (user), technological (system), and organizational (firm) are provided as guidelines. The PDAM also shows general management behavior, which needs to be emphasized during each stage of the acceptance process. The six stages were adapted from Rogers and Shoemaker (1971), including awareness creation, persuasion, evaluation, trial and acceptance, and sustainability. For instance, in stage one (*Awareness stage),* Top Management must emphasize attitude. Management should showcase the relative advantage of the new PMS. The remaining stages are depicted in Figure 4.

Acceptance stages	User Characteristics	System Characteristics	Firm Characteristics	General Management Behaviour
Awareness	•ATT	•RAD	•FDC	•DiL
Persuasion	•JSF	•RAD	•FDC •MST	
Evaluation	•ATT	•RAD •CMX		•ChM
Trial	•ATT •PIN		•MST	•UEA •AoM •UBT •ChM
Acceptance			•MST	•SST
Sustainability	•PIN •JSF •ATT		•FDC	•DiL •ChM

ATT: Attitude; PIN: Personal innovativeness; JSF: Job satisfaction; RAD: Relative advantage; CMX: Complexity; FDC: Firm digital capabilities; MTS: Management support; DiL: Digital leadership; UEA: Use of Earlier adopters; AoM: Avoidance of Mistakes; UBT: Use of best trainers; SST: System support team, ChM: Chasm Management

Figure 4: PMS digitalization acceptance matrix (PDAM) (Source: Author's own, 2023)

7. CONCLUSIONS AND OUTLOOK FOR FUTURE RESEARCH

7.1 Conclusions

Many firms are desirous of digitalizing their PMS. However, the PMS digitalization processes and factors that affect its acceptance have yet to be clearly articulated in the literature. Therefore, the current study proposed a research model (TOP model) based on IDT, organizational and personal factors to predict ACP and its impact on EPF. The model was validated through several advanced analytical techniques. Findings indicate that technical and behavioral processes should be considered in ACP. Based on this finding, the study concludes that a firm seeking to digitalize its PMS should go through the following processes: identification and digitization of work processes; establishment of a digital data generation system, acquisition of database for big data; the use of AI programs; and validation. In addition, such firms should use PDAM to manage behavioral issues involved in ACP. The findings also demonstrate the role of TOP factors in predicting PMS digitalization acceptance. In line with this finding, the study concludes that RAD, FDC, MTS, PIN, and ATT are essential factors in ACP. For instance, ATT does not only directly affect but also plays a mediating role in ACP. Another important conclusion is that TOP factors interact in varied ways to explain the variation in ACP and EPF.

7.2 Limitations and future research

The first limitation is that the study sample was drawn from a single country. Although, this limitation was mimimised by the fact the participating firms were hetergeneous (i.e. local and foreign-based firms), future studies should focus on two or more countries to bring country dynamics in studying ACP. Second, the study had access to samples from only the banking, healthcare, and professional services firms. In the future, PMS scholars are encouraged to consider other firms, such as manufacturing firms. Additionally, the study is also limited in terms of its variable selection. Specifically, the study did not examine the influence of other IDT constructs apart from RAD and CMX on ACP. In the future, IDT constructs of observability and compatibility could be extended with organizational factors such as trust in management and moderate with firm type to examine ACP. Again, each firm's PMS digitalization level was not explored in this study, drawing the attention of future researchers to include it in their models. Finally, the current study was cross-sectional. Consequently, the study cannot track the changes that might happen in the ACP processes. Thus, future researchers are invited to adopt a longitudinal study approach to assess the changes in ACP, which might occur at different points in time.

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1. Kwarteng, M. A., **Ntsiful, A**., Osakwe, C. N., & Ofori, S.K. (2023). Modeling the acceptance and resistance to use mobile contact tracing apps: A developing nation perspective. *Online Info. Review.*(**WoS & ABS:1**).
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1. Lerma, D. F. P., Nwaiwu, F., Afful-dadzie, E., **Ntsiful, A.,** & Kwarteng, M. A. (2022, October). A Conceptual Framework for Integrating TPB With Context-Relevant Variables to Predict e-Learning Success During the Covid-19 Pandemic. In *European Conference on e-Learning* (Vol. 21, No. 1, pp. 365-372). Academic Conferences International Limited.
2. **Ntsiful, A.,** Popesko B. & Kwarteng, M.A. (2020) Adoption of E-performance appraisal for employee working from home in a less internet-penetrated territory–A Conceptual framework. In *16th Annual International Bata Conference for Ph.D. Students and Young Researchers (Vol. 16). Zlín*.
3. Sanda, A. & **Ntsiful, A**. (2013). Dynamics of employee retention among SMEs in developing economy In*: Proceedings of the International Conference on Business Admin., Marketing and Economics*, 119-127.

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