Employee perception of electronic human resource management and COVID-19 restrictions in public organizations: the experience of Ghana Revenue Authority, Bono Region

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Abstract

The purpose of this study was to find out what measures were taken to manage human resources during the COVID-19 pandemic by the Ghana Revenue Authority in Ghana. This was necessary because, even though electronic human resource practices have been implemented in most public organizations in the country, it was uncertain whether or not these practices were vital in delivering public service during the peak of the pandemic at the regional level due to government restrictions implemented to curb the spread of the virus. The study used 78 employees of the Ghana Revenue Authority in the Bono Regional Office of the Ghana Revenue Authority. The study used inferential statistics by employing Pearson correlation and multiple regression techniques to test the effect of employee perceptions, electronic human resource management practices, and COVID-19 practices on electronic human resource adoption. The findings revealed that e-human resource practices had the strongest effect on e-human resource adoption with a beta value of 0.781 and a *p* value of 0.000, followed by employee perception with a beta value of 0.272 and a *p* value of 0.004. Significantly, the entire effect of the COVID-19 practices was statistically insignificant yet positive. Overall, the four regression models were significant ($p < 0.01$), with the fourth model indicating R^2 to be 0.677 points. Based on the findings, the study recommends that the Ghana Revenue Authority focuses more on transformational human resource management strategies to increase employee adoption of electronic systems. Furthermore, it is suggested that the organization includes employees in new technologies that improve their performance. Our findings are significant because the outbreak of COVID-19 made scholars focus more on flextime, health and safety, and remote working practices. Little has been done to determine whether or not the new normal has impacted how electronic human resource practices have been implemented in public sector organizations compared to the private sector. So, this study stands out as one of the critical studies in electronic human resource management practices in sub-Saharan Africa.

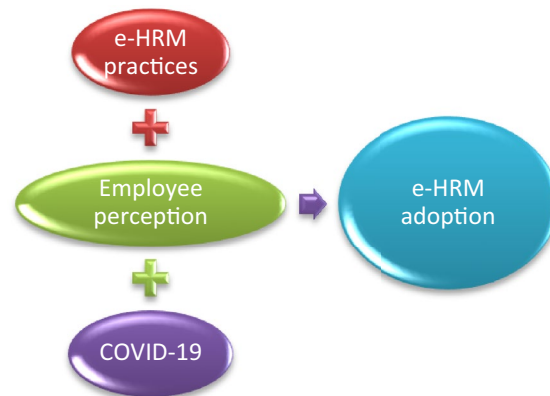**Keywords** e-HRM adoption, COVID-19 management practices, Employee perception

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Abane *et al. Future Business Journal*   (2023) 9:89

Page 2 of 19

Graphical Abstract

Introduction

In the heat of the COVID-19 pandemic, the term "electronic human resource management" (e-HRM) came into vogue [1]. E-HRM is the practice of using information technology and communication systems to store and retrieve employee data for human resource (HR) procedures to facilitate management and interaction [2, 3]. Although e-HRM is not a new concept, many firms in developing nations continue to use outdated brick-and-mortar workforce management practices [4, 5].

Generally, most standard HR processes, such as recruitment and selection, employee training, and performance evaluation, are difficult to undertake during crises such as the one witnessed by the COVID-19 pandemic. It was made even more difficult because the mode of spread made the traditional HRM approaches appear undesirable. The implication is that HRM practitioners and managers need to advance beyond traditional work and training methods to sophisticated techniques using internet-assisted platforms such as Zoom, WhatsApp, Twitter Space, Facebook, and others to implement virtual HRM practices that improve standard organizational operations. Thus, in response to the unique COVID-19 pandemic [6], e-HRM became one of the sources of HRM practices through virtual platforms.

In Ghana, COVID-19 reduced government revenue through direct production, service delivery, and taxes, resulting in a US$1 billion domestic revenue loss for the country by mid-2020 [7]. Meanwhile, due to the impact of COVID-19 on organizations, traditional HRM methods have become nearly impossible. The main issue was that public organizations in Ghana were unable to implement e-HRM practices [8], to deal with the pandemic. Major HR practices such as recruitment and selection, performance management, and employee training could not be carried out successfully without the use of e-HRM practices during the COVID-19 pandemic. It was made even more difficult because the mode of spread made the traditional HRM approach appears undesirable.

It is worth noting that during the peak of the COVID-19 pandemic, workers were unable to report to work, and emergency measures were implemented to ensure that organizations providing critical services remained operational. One such organization was the Ghana Revenue Authority (GRA), which allocated its employees on a shift and working-from-home basis during the peak period and lockdown period to provide quality services. Also, the GRA is mandated to mobilize resources for the implementation of government programs to achieve the country's development goals and, by extension, the sustainable development goals [9, 10].

It was important to devise proactive measures to sustain its functionality. Hence, the shift from strict brick-and-mortar HR practices to electronic HR practices using Zoom and other social media platforms for non-field staff was the result. Though e-HRM is not a new concept, it remains an unexplored area in sub-Saharan Africa (SSA) because many organizations on the continent are unable to invest in sophisticated ICT-driven e-HRM practices, and because of poor internet connectivity in the sub-region, the adoption of the former is more unrealistic than traditional brick-and-mortar HR practices [8].

The above suggests that the looming effects of COVID-19 and the lack of IT infrastructure to support e-HRM adoption create a missing link in research in this area to find solutions in post-COVID-19 Ghana. The COVID-19 pandemic has had a tremendous influence on enterprises, creating a complicated

Abane *et al. Future Business Journal*   (2023) 9:89

Page 3 of 19

environment for managers and human resource professionals. The expense of recruiting, maintaining, and keeping human resources is enormous, and sickness can deplete financial resources. The epidemic has also affected government revenue, with Ghana expected to lose $1 billion in domestic revenue by mid-2020. There have been few studies on the impact of the crisis on HRM. Consequently, the study sought to discover how employees' perceptions support the adoption of e-HRM practices in public organizations in crises to better understand how they could be implemented robustly in Ghana.

This paper contributes to the theoretical discussion of the relevance of electronic people management in the future pandemics. For example, the study will significantly alter the way human resources are managed in the country because COVID-19 affected the country's revenue mobilization efforts. The study organization is responsible for collecting government revenue for the development of the country. Furthermore, COVID-19 has had a substantial influence on enterprises, prompting creative solutions for managers and HRM practitioners to assure business continuity and employee coping strategies [11]. This study investigates the relationship between e-HRM practices and e-HRM adoption. It emphasizes the need to foster a positive view of e-HRM among employees through effective training, support, and rewards. Furthermore, the study emphasized the need to develop e-HRM practices that are employee-centric, user-friendly, accessible, and secure. The study's distinctive contribution to the e-HRM literature is in identifying the critical factors that can lead to increased adoption rates and effective HR systems. The following research question guided the study:

> *RQ1*: How does employee perception influence the adoption of e-HRM practices in public sector organizations in the Bono Region?

The introduction is followed by the theoretical framework, which discusses the variables that support e-HRM, and how employee perceptions influence its adoption in organizations. The third part discusses the relationship between e-HRM practices, COVID-19, employee perception, and e-HRM adoption from the current literature. The fourth part describes the

procedures that were used to conduct the empirical review, i.e., the methods and materials. The fifth and sixth sections discuss the data analysis and results, the discussion of findings, and the implications and conclusions of the paper.

Theoretical framework

Davis's [12] theory of technology acceptance model (TAM), which is derived from the theory of reasoned action, assumes that information technology that is accepted is based on the user's perception of the enhanced benefits and the support they receive before using new technology. The model emerged from Davis's study of International Business Machines Corporation (IBMC) employees while working with the Massachusetts Institute of Technology (MIT) in the 1980s, in which he sought to investigate the contributing factors to computer use [12, 13].

Davis utilized one hundred and twelve (112) users and forty (40) MBA students in a survey at Canadian IBM and Boston University in 1989 to test this concept. Davis [12] argues that TAM relies heavily on three (3) variables: perceived utility, perceived ease of use, and behavioral intention. The TAM is distinctive in that it emphasizes information technology as the most essential theoretical underpinning for accepting new technologies. The theory expresses the individual purpose of technological patronage, including its integration into the company's operations. Silva [13] observes that perceived usage had a greater influence on respondents' behavior than perceived facilitation. These variables are summarized in Table 1.

Employee perception

Five (5) variables explain employee perceptions in deciding whether to use a new technology or not [14–16]. These variables include "performance expectance," "effort expectancy," "behavioral intentions," "social influence," and "facilitating conditions."

In the first place, the performance expectation variable is linked to extrinsic motivation theory, which holds that an activity defined as critical to reaching unique objectives will be carried out by users. Tarhini et al. [17] described performance expectations as the encouragement of activities taken by users when utilizing

Table 1 Summary of technology acceptance model

Theory/author	Variables	Description
Technology acceptance model (TAM) Davis (1989)	Perceived usefulness (PU) Perceived ease of use (PEU) Behavioral intention (BIU)	The individual's notion of the impact of a system on their performance in an organization Technical assistance is not needed before one can use a system The impact on the behavior is influenced by user beliefs and behavior

Abane *et al. Future Business Journal*   (2023) 9:89

Page 4 of 19

information systems [15]. Available evidence shows that the technology acceptance model is used to test many different types of information systems, with the results indicating that performance expectations are a primary driver of users' behavioral intentions in the deployment of new technologies.

While it is difficult to introduce innovations in organizations, according to Ramayah and Kurnia [18], Galanaki et al. [19], and Školudová [20], the availability of young employees enhances the introduction of innovative systems because they are enthusiastic about new technology in comparison with older workers, who have developed in a diverse environment with unsophisticated, simple technology, if not completely vague, and have less high-tech attitudes. This age disparity among workers results in diverse interests in the use of technology and, hence, e-HRM practices. In comparison with the younger age group, the older age group prefers labor-intensive jobs.

In addition, effort expectation is connected to perceived ease of use or the degree to which a user expects a system's use to be less difficult [21, 22]. Moreover, social influence is embedded in the subjective norm theory of Ajzen [23], which states that many people are influential on a specific topic to either accept or reject a certain behavior and social influences [14, 15]. This is the person's understanding of the set of reference norms and specific interacting ties that the person has developed, particularly sociocultural conditions [21]. According to a study conducted by Mahfod and Khalifa [24], the increased usage of e-HRM is connected to the "social influence" that societies have over the opinions of others. This finding supports earlier research that argued that social influence and behavioral intentions were vital to human resource information systems (HRIS) adoption in Bangladesh's banking industry [25].

Thompson, Higgins, and Howell [21] deal with facilitating factors such as the impartial conditions in the environment that permit performance with the aid of computers [15]. Facilitating factors reflect the views of employees that an organization, as well as its official configurations, is supportive of information usage and adoption [26]. For this study, employee perception will constitute the conceptualization provided by Venkatesh et al. [16], which includes performance expectation, effort expectancy, social influence, and facilitating conditions. However, behavioral intentions will not be included in measuring employee perception because the assumption is that e-HRM adoption is an organizational decision or policy that may not be subject to choice behavior by employees [27].

Electronic human resource management (e-HRM)

According to Nivlouei [28], e-HRM incorporates the structures and procedures using technological infrastructure to execute HR bundles, as well as the outcomes of defined duties in creating HR systems across a business [29]. E-HRM combines information technology and HRM content that increases value across companies for individual workers and management [3]. E-HRM implementation in a business is crucial for budget reduction, re-orientation of HR managers to become more tactical in pursuing administrative operations, and service development [30]. E-HRM refers to the use of an IT application to engage with and support a group of individuals in the collective steering of HRM duties [31].

Evidence suggests that e-HRM can be viewed from three (3) perspectives: operational, relational, and transformational practices. In this regard, Ruël et al. [32] focused on operational e-HRM (OEHRM), which concerns HR applications [33]. It signifies the primary administrative function of HRM, and it includes payroll difficulties as well as employee data management. OEHRM practices also include managing HR roles and their presentation in workplaces to increase productivity as well as reduce costs [34].

Relational e-HRM places a strong emphasis on interpersonal contact. Relational e-HRM seeks to improve stakeholder communications and is interested in comforting occupational procedures such as performance management, recruitment, and training. Finally, processes such as continuous improvement, organizational support, strategic planning, and knowledge management are transformational e-HRM objectives [35, 36]. It guarantees that competent personnel with the aptitude and compatible knowledge of the corporate objectives may be trained and hired [37]. Table 2 shows the various dimensions of e-HRM practices and their indicators.

E-HRM adoption

According to Panayotopoulou, Galanaki, and Papalexandris [38], the size of an organization is a major predictor of e-HRM dissemination and acceptability. It is a significant driving force in innovation systems [1, 39]. Large corporations may readily absorb resources and risk throughout innovation implementation and recover their costs due to the economies of scale they enjoy [38]. Additionally, Panayotopoulou et al. [38] maintained that several internal and external variables that promote or hinder e-HRM influence its adoption and utilization.

Similarly, Weerakkody and Dwivedi [40] link economic, social, and political circumstances with businesses' ability to respond differently to identical internal and external issues, particularly when it comes to IT-influenced variation due to environmental constraints in which they operate [27]. A considerable body of the literature also suggests that different HRM approaches are impacted by contextual national variables [3, 8]. Because

Table 2 Dimensions of electronic human resource management practices

Variable	Dimension	Description
Electronic human resource management	*Operational*	1. Payroll 2. Publishing and making information available
	Relational E-recruitment and selection	1. Attracting potential employees through the use of the internet 2. Managing job descriptions and vacancies online 3. Maintaining a profile and following the recruitment process online
	Electronic training	1. Online test 2. Initial and final interview through video and audio conference
	Electronic compensation	1. Training program contents are placed on the internet 2. Video tapes, audio, or CD-ROM are provided to trainees
	Electronic learning	1. Track employee participation in beneficial programs, profit sharing, and retirement
	Electronic performance management	1. Student interactive, dynamic digital technology resource for learning
		1. Software programs to evaluate employees' performance 2. Performance records 3. Performance feedback
	Transformational Electronic career management	1. Collection, restoration, and update of data on the knowledge of employees 2. Collection, restoration, and update of data on the skills of employees 3. Collection, restoration, and update of data on the competence of employees and access to data when necessary
	Electronic HR planning	1. Computer-based guidance systems
	Electronic occupational health and safety	1. Personalized electronic risk information (occupational disease, accident, and disabilities to employees)

of country-specific concerns, e-HRM adoption and usage will vary across borders [1, 2, 4, 5].

According to Kumar and Lalitha [41] and Parry and Tyson [42], many firms have made a significant transition in the recent decade in the deployment of transactional HR systems and performance toward technology-oriented tactics [34, 35, 43]. Many of the tasks are carried out using online apps. E-recruitment is one factor responsible for e-HRM adoption. It relates to hiring potential employees for a company using the internet, and organizations use the internet to promote numerous job openings to scout prospective applicants [44]. As a result, Kumar and Lalitha [41] see e-recruitment as a process whereby organizations list jobs to attract potential applicants by enforcing guidelines and maintaining hiring procedures.

Also, another aspect of e-HRM adoption is e-selection, which focuses on shortlisting the best candidates for a job using online procedures assisted by the internet. Parry and Tyson [42] put forward the idea that e-HRM comprises virtual evaluations and audiovisual conferencing. This type of selection procedure eliminates difficulties and saves money and time. Similarly, e-HRM includes e-performance management, which comprises the use of software programs to assess employee performance, record performance reviews, and provide suggestions or feedback to employees, if applicable, for advancement [45].

In the e-HRM framework, e-training is becoming more prominent, especially during the lockdown period [1, 39]. E-training refers to teaching or developing competencies in employees who are necessary to carry out their jobs efficiently using the internet or intranet. The content of various training programs is uploaded on the internet, and the trainees are given audio or video tapes and CD-ROMs [39]. These trainees are required to use the content and acquire the requisite knowledge without any limitation concerning the place of training [29]. Internet/intranet training has become, particularly from the standpoint of the human resource profession, the most effective way to provide coaching within public enterprises, minimizing direct costs [46].

According to Rahman et al. [47], "e-compensation management" refers to an internet or intranet system that manages employee compensation issues and monitors employee participation in benefits programs such as insurance, profit sharing, and retirement. It is beneficial to both employees and management because the information is easily accessible [48]. Similarly, e-HRM utilizes e-human resource planning. E-HRM structures ensure the gathering of available data on supply and demand for labor. This offers quicker and more well-informed policy-making on expansion and growth decisions and new market penetrations [49]. E-HRM structures provide tools that improve the collection, restoration, and alteration of available data related to the knowledge, abilities, and proficiencies of the organization's workers and available

Abane *et al. Future Business Journal*   (2023) 9:89

Page 6 of 19

data as required [50]. This allows for a more rapid and well-informed policymaking process if new enterprises are required by various divisions inside the company [49].

COVID-19 and E-HRM

According to Aguinis and Burgi-Tian [51] (2020), enterprises must retain and strengthen their performance management systems during a health crisis [52, 53]. The authors maintained that providing vital information to employees to support a company's strategic direction is central during emergencies. COVID-19 has had varying effects on organizations [54, 55]. Several companies have had their operations drastically folded up, resulting in a temporary shutdown [56], while others have seen their firms thrive during COVID-19 [55]. As a result, the effects of COVID-19 on employment vary depending on the industry [52].

However, a substantial issue is created for businesses, given that, aside from being realistic in terms of unforeseeable variations, such practices are novel for both managers and workers who are not mentally or physically equipped to handle such changes, which has the propensity to enhance the feeling of person–environment mismatch and discontent if employees prefer the conventional face-to-face, which was utilized before the pandemic [57]. Nonetheless, employees are more inclined to accept and adapt technological improvements if they believe that the system will benefit them and lead to a better job fit.

Essentially, to expedite communication among workers and superiors, remote working entails the accessibility of high-tech tools such as Team Viewer, Zoom, Microsoft Team, and Remote Desktop [58], which not all organizations can afford, bearing in mind that fiscal capacities vary from one organization to another. Notwithstanding, it is imperative to note that remote working entails the availability of high-tech tools such as Team Viewer, Zoom [59], Microsoft Team, and Remote Desktop to facilitate communication among workers and superiors [58], which not all organizations can afford given that fiscal capacity varies from one organization to the next. For this study, COVID-19 was measured using lockdown restrictions, protocols, and other forms of containment strategies deployed during the peak of the virus.

Empirical review

Mutahaba's [60] findings revealed that there are several challenges confronting the adoption of e-HRM practices, such as financial costs, e-HRM system alignments to business goals, data protection, and individual user orientation, among others. Because the initial capital required for e-HRM adoption and implementation may be substantial, businesses regard e-HRM as costly. The initial money necessary to adopt and implement e-HRM may be too expensive, making e-HRM expensive, and businesses are hesitant to set aside funding for its implementation [60]. Hence, the main barriers to human resources are critical jobs, limited resources, incompetent technology, and skill gaps.

Blasco, Castella, and Raso's [61] findings revealed that the impact of COVID-19 on Jordanian enterprises during the lockdown prevented most employees from reporting to work. As a result, they were compensated in part. Furthermore, some enterprises were unable to pay their employees and were forced to temporarily suspend operations, with some permanently closing. According to the findings of the study, most organizations in the sample did not want to hire new employees during the lockdown but rather preferred cost-cutting and layoffs.

Fobang, Wamba, and Kamdjoung [62] tested the Unified Theory of Acceptance and Use of Technology (UTAUT) model from Cameroon's perspective by focusing on employees working in human resource divisions in small and medium enterprises (SMEs). The findings indicate that social influence and performance expectancy significantly influenced the intention to embrace HRIS. Mwita [63] similarly observed in Tanzania that businesses were no longer ready to recruit new staff since they needed to cut wasteful spending. The reason for this was that institutional operations were slowing, and as a result, the normal functions that these organizations used to do were being reduced. It was also revealed that job opportunities were advertised online.

By July 2020, the virus had infected 770, 258 individuals across Africa, killing 16, 446 people, including 29, 672 positive cases and 153 deaths in Ghana [64]. Employee productivity suffered as Ghana halted and reorganized the services of several formal sector companies in response to the COVID-19 outbreak. Employees in certain industries had been streamlined, while others, notably higher education institutions, were closed. Crises, such as the COVID-19 outbreak, destabilized organizations and their human resources [65]. Employees in Ghana's formal sector had experienced career shocks, postponed promotions, compensation reductions, and job losses. According to a study done at selected Ghanaian state businesses, 50% of staff promotions were delayed until late 2020 [7]. Export-led firms were compelled to halt production due to business closures. From March to August 2020, 42, 000 and 770, 000 workers in the formal sector lost their jobs, respectively. Wage reductions impacted 25.7 percent of the country's total workforce. Employees could not stay away from work if they felt uncomfortable or unwell since the case would influence their income because the Ghanaian government did not declare the closure

of corporate institutions for 2020 [7]. Employees in Ghana were being compelled to work in hazardous conditions, putting their health and safety at risk, while the coronavirus infection rate increased. Labor productivity is a problem that affects both the government and private businesses. Non-essential manufacturing operations were limited, resulting in an 84 percent decline in domestic supply and revenue on average [66].

From the above review and the theoretical, conceptual, and empirical discussions, the following framework (Fig. 1) displays the existing relationship between the independent and dependent variables in this study. It demonstrates the link between perceptional aspects of e-HRM adoption.

There are clear and pertinent objectives for electronic human resources as espoused in the literature. The importance of electronic human resource management is to adopt and use technology in the prevailing circumstances of an organization [1]. It is, therefore, highly imperative for organizations to communicate the right objectives to enable them to take the right measures toward the adoption of technology more adequately.

To be able to adopt e-HRM, perceived usefulness is an effective characteristic of the human resources of an organization because employees are extremely ready to know and understand whether the adoption of technology will enhance their efficiency, for example, considering the cutdown in cost and time management even in a situation like the COVID-19 pandemic [11]. Perceived ease of use is also exemplified as effort expectancy in TAM and UTAUT, which considers the complexity of using the technology, for example, the difficulties of learning and using an item or system. What employees perceive about e-HRM will also influence their behavior in adopting the system. Facilitating conditions will also influence the intention and behavior to adopt e-HRM

based on technological grounds, notwithstanding the COVID-19 crisis [2, 10]. Thus, user support on technical grounds will influence the individual and his intention to some extent, as well as his effort expectancy, which is very important in the organizational context.

Accepting and using technology in an organization by its users is to suggest that it is useful, which could be analyzed by efficiency in productivity. Social influence, which is also exemplified in the UTAUT model, also considers the influence coming from the surroundings of the employee [14], for example, colleagues, to adopt technology. Amid the COVID-19 pandemic, an influence from a colleague might have a positive influence on human resources' intention to adopt e-HRM. However, management influence, for example, through policies, may have an overriding influence on an individual's decision to adopt a new technology, especially during the COVID-19 pandemic. Therefore, the following hypotheses are used to guide the study:

H_1 With the emergence of the COVID-19 pandemic, employee perception has had a positive and significant impact on e-HRM adoption.

H_2 E-HRM practices used during the COVID-19 pandemic had a positive and significant relationship with e-HRM adoption.

H_3 The COVID-19 restrictions implemented during the peak period of the pandemic have had an impact on e-HRM adoption.

Methods/experimental
Study setting and sampling procedures
The GRA in the Bono Region was used for the study between August 2021 and January 2022. The GRA comprises the Internal Revenue Service (IRS), Customs Excise and Preventive Service (CEPS), Value-Added Tax (VAT) Service, and the Revenue Agencies Governing Board (RAGB) Secretariat, which was amalgamated in December 2009 to form the GRA Act, 2009 (Act 791). As a result, GRA has taken over tax management and customs, managing the borders and checkpoints in the country. The sample included senior managers, line managers, and operational-level staff stationed in Bono's regional capital, Sunyani. These categories of respondents were selected because they are relevant to the research questions under investigation [67]. The overall target population was 98, out of which the sample size for the study was determined using a 5% (0.05) margin of error and a 95% confidence level. Using

Fig. 1 Research framework

Abane *et al. Future Business Journal*   (2023) 9:89

Page 8 of 19
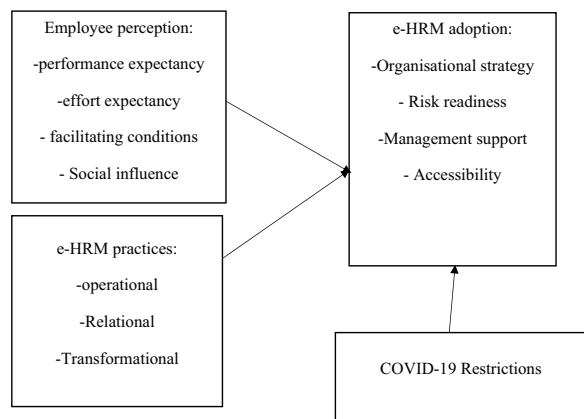
Yamane's 1967 formula, a total of seventy-eight (78) respondents were selected.

Data collection instrument and survey administration

The study used a self-administered questionnaire. The first component included participant demographic information such as gender, age, educational qualifications, and years of experience with the present organization. The second focused on employees' perceptions of e-HRM adoption issues. A seven-model system was created to analyze each measure using the recommendations from Venkatesh et al. [16] and Al-Ajlouni, Nawaeh, and Alsari [68]. The study distributed a total of seventy-eight (78) self-administered questionnaires (SAQs); however, sixty-five (65) were returned, providing an 83.3% response rate. The response rate was, therefore, enough to carry out the analysis and was deemed trustworthy for the study's target audience.

Measures

Employees' perception of e-HRM adoption was measured using the following indicators: performance expectancy [12, 16, 22], facilitation conditions [13, 23], and social influence [16, 21–23]. E-HRM practices and adoption measures are from [69]. These items were measured on a seven-item Likert scale with a rating of 7 to 1, with 7 being highly agreed with and 1 being strongly disagreed with. As a result, 1–3 were reported as low, 4 as neutral, and 5–7 as high. The measures are included as an appendix to this study. The internal consistency of the constructs was measured using Cronbach's alpha (α), and the reliability statistics showed extremely strong support for the items.

Missing data handling

The study had one main research question: *"RQ1: How does employee perception influence the adoption of e-HRM practices in public sector organizations in the Bono Region?"* and the three main hypotheses: H_1 (*with the emergence of the COVID-19 pandemic, employee perception has had a positive and significant impact on e-HRM adoption*), H_2 (*E-HRM practices used during the COVID-19 pandemic had a positive and significant relationship with e-HRM adoption*), and H_3 (*the COVID-19 restrictions implemented during the peak period of the pandemic have had an impact on e-HRM adoption*). To prepare the data for further analysis and answer and test the research question and hypotheses, the study examined participant responses for missing data. Of the 78 questionnaires that were distributed, 68 were returned. Further cleaning of the data revealed that only 65 of the questionnaires were usable; subsequently, three responses were dropped, and the remaining responses were cleaned and reported on using SPSS version 20 for further analysis. Further checks were made to identify probable inaccuracies and obtain insight into respondents' background profiles, including age, gender, and job experience. The study also used descriptive statistics and frequencies to identify missing values in some of the cases and correct them before proceeding with the analysis. It is important to note that SPSS offers various methods for handling missing values, such as listwise deletion, pairwise deletion, mean substitution, regression imputation, and multiple imputations, depending on the data's nature and research question [70]. Hence, a decision was made to use listwise for the bivariate and multiple regression analyses.

Normality test and the use of multiple regression assumptions

Multiple linear regression is a statistical technique for determining the association between many predictor factors and a response variable [71, 72]. Multiple regression focuses on five assumptions: linearity, no multicollinearity, independence, homoscedasticity, and multivariate normality. When these assumptions are violated, the findings might be untrustworthy. Understanding these assumptions is essential for doing reliable multiple linear regression analyses [73]. The data were explored using the SPSS software to run a multicollinearity test and a normality test for the main variables of the study. The results of the normality test showed that the data were normally distributed, indicating a good fit of the data for parametric analysis, thus ANOVA and linear regression
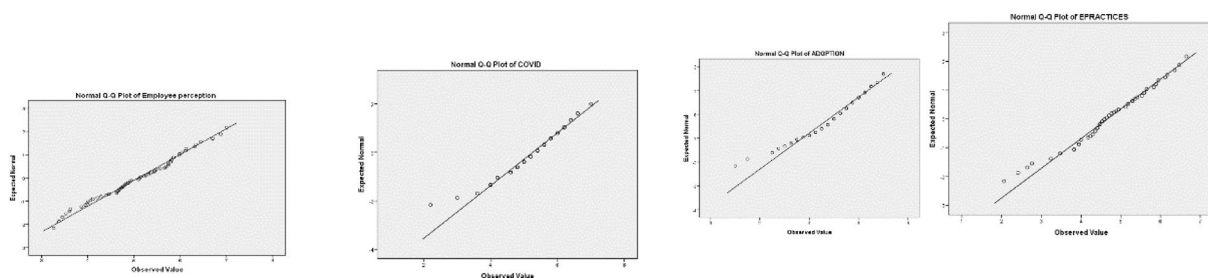
Fig. 2 Normal distributions for employee perception, COVID-19, e-HRM adoption and e-HRM practice, and COVID-19

Abane *et al. Future Business Journal* (2023) 9:89

Page 9 of 19

techniques (see Fig. 2a, b, c, and d). Also, the regression analysis included a test for multicollinearity using the tolerance and variance inflation factor (VIF). The multicollinearity test indicates that the tolerance and VIF were all greater than 0.50, which is the recommended value to rule out the incidence of multicollinearity or high correlations among the variables [74].

The results from the normality test indicated that further analysis using multivariate techniques was significant, and hence, the study utilized bivariate and regression analysis to test the study's hypotheses.

Data analysis and results

The results were presented using descriptive and multiple regression analyses. The study included 43 men and 23 women. This suggests that male employees outnumber female employees in GRA in this region, and this further demonstrates that there are fewer women in the formal service sector than males. The respondents' ages ranged from 26 to 40 + (50). The modal age was between 26 and 40 (42) while the least came from the age group between 40 and above (8). The educational level showed that two respondents had a certificate, five had a diploma qualification, 41 had a first degree, and 17 had a master's degree. The implication is that most of the respondents have a university degree (58). For experience, 33 had less than 5 years of experience, 14 had between 5 and 10 years, 12 had between 11 and 15 years, and six had more than 15 years of experience. The following sections present the reliability statistics and the descriptive as well as regression analyses. For the management level, 36 of the respondents were in the middle level, 23 at the operational level, and six at the senior/top management level, while four did not indicate their management level in the organization.

Reliability statistics

The results of the reliability study, which sought to test for internal consistency and observe the measures' suitability for further analysis, revealed that except for the sub-indicator of the e-HRM adoption measure (operational e-HRM), which had two items with an alpha Cronbach of 0.69, the rest of the items had reliability values of 0.7 or higher [75, 76]. The highest reliability results came from transformational e-HRM ($\alpha = 0.94$) with five (5) items. The implications of these results suggest that the items used to measure employee perception (0.88) and e-HRM adoption (0.88) were consistent and reliable over time and could predict the effects better (refer to Table 3 for details).

Furthermore, descriptive statistics were performed to show the mean and standard deviations of the sub- and main variables. The results suggest that performance

Table 3 Reliability statistics

Variable	Cronbach's alpha (α)	Number of items	N
Performance expectancy	0.77	3	65
Effort expectancy	0.70	4	65
Social influence	0.72	5	65
Facilitating conditions	0.89	5	65
COVID-19	0.70	4	65
Operational e-HRM	0.69	2	65
Relational e-HRM	0.72	9	65
Transformational e-HRM	0.94	5	65
Employee perception	0.88	17	65
e-HRM practices	0.88	16	65
e-HRM adoption	0.86	4	65

expectancy had an average mean of 5.74 with a standard deviation of 1.03, with effort expectancy having the lowest mean of 4.70 for the employee perception sub-constructs, indicating that most of the respondents moderately agreed that their perceptions are linked with the e-HRM adoption in the organization. Furthermore, COVID-19 had a mean of 5.46 and a standard deviation of 1.02, indicating that employees' use of e-HRM was linked with the COVID-19 pandemic. Similarly, e-HRM components suggest that operational e-HRM practices had the highest mean of 5.52 and a standard deviation of 1.19, while relational e-HRM practices had a mean of 4.50 and a standard deviation of 0.98, indicating that the organization used e-HRM for mostly recruitment and selection, training, compensation, and learning. Additionally, the overall e-HRM practices had a moderate average of 4.66 and a standard deviation of 1.04, implying that the respondents neither agreed nor disagreed with whether e-HRM practices were commonplace in their organization. Employee perception showed a moderate fit for the items since respondents agreed to the questions that sought to find out if their expected performance, the intended effort, social influence from team members, and the existence of facilities were likely to influence their use or adoption of e-HRM (refer to Table 4).

Correlation analysis

The Pearson correlations showed that the sub-constructs of employee perception had positive and significant associations between the individual scales. For example, the highest significant relationships are between e-HRM adoption and transformational e-HRM ($r = 0.741***$), transformational e-HRM and relational e-HRM ($r = 0.648***$), and effort expectancy and social influence ($r = 0.633***$). Also, COVID-19 and operational e-HRM provided statistically significant correlations with

Table 4 Descriptive results

	Mean	Standard deviation	Minimum	Maximum
Performance expectancy	5.744	1.03	1	7
Effort expectancy	4.704	1.207	1	7
Social influence	5.222	1.094	1	7
Facilitating conditions	4.883	1.305	1	7
COVID-19	5.461	1.026	1	7
Operational e-HRM	5.523	1.190	1	7
Relational e-HRM	4.506	0.985	2	7
Transformational e-HRM	4.609	1.636	1	7
e-HRM practices	4.665	1.044	1	6
Employee perception	5.092	0.904	3	7
e-HRM adoption	5.042	1.325	1	7

$N = 65$

$r = 0.610$ and $p = 000$, while the relationship between relational e-HRM and social influence was positive but insignificant (refer to Table 5). The results further showed that both relational e-HRM and performance expectancy had the lowest positive correlation ($r = 0.247$**) at $p < 0.05$. It is instructive to note that all the indicators of employee perception were statistically significant and positive with COVID-19, with the least correlation being performance expectancy ($r = 0.247$**) but significant at $p < 0.05$ (refer to Table 5).

More so, the bivariate analysis suggests that the sub-constructs of e-HRM practices had strong correlations between them and with COVID-19 and e-HRM adoption. The relationship between operational e-HRM and transformational e-HRM had the highest value of $r = 0.498$***, followed by relational e-HRM and transformational e-HRM ($r = 0.648$***). However, operational e-HRM and relational e-HRM had the least positive yet statistically significant association ($r = 0.376$***). Additionally, COVID-19 and operational e-HRM had

a positive relationship of $r = 0.610$*** and were significant at $p < 0.01$, while transformational e-HRM had a strong and positive association with e-HRM adoption ($r = 0.741$**). The sub-indicators of employee perception revealed further that social influence and effort expectancy had the highest association ($r = 0.633$**, $p < 0.01$), followed by performance expectancy and social influence ($r = 0.610$***, p 0.01). However, the relationship between facilitating conditions and performance expectancy had the lowest positive correlations but was statistically significant ($r = 0.369$***, $p = 000$).

To test for robustness, a bivariate correlation was performed to test the relationship between employee perception, COVID-19, and e-HRM adoption. Table 6 shows that e-HRM adoption and e-HRM practices had the highest positive and significant relationship at $p < 0.01$, while e-HRM practices and employee perception had the least significant positive relationship at $p = 0.000$. This shows that the variables have strong direction and better variance, which could help explain the changes in the dependent variable (refer to Table 6).

The above results demonstrate that e-HRM practices and e-HRM adoption are positively correlated, with the former contributing the highest coefficients ($r = 0.781$), while COVID-19 correlated the least with e-HRM practices but was statistically significant and positive ($r = 0.421$). Further observation showed that employee

Table 6 Correlation results for main constructs

	1	2	3	4
1. E-HRM adoption	1			
2. COVID	0.439***	1		
3. e-HRM practices	0.781***	0.421***	1	
4. Employee perception	0.637***	0.460**	0.588***	1

**Correlation is significant at the 0.01 level (two-tailed).

$N = 65$

Table 5 Bivariate analysis for e-HRM adoption, COVID-19, employee perception, and e-HRM practices sub-constructs

	1	2	3	4	5	6	7	8	9
1. e-HRM adoption	1								
2. COVID	0.439***	1							
3. Relational e-HRM	0.632***	0.317**	1						
4. Operational e-HRM	0.585***	0.610***	0.376***	1					
5. Transformational e-HRM	0.741***	0.339***	0.648***	0.498***	1				
6. Performance expectancy	0.367***	0.283**	0.247**	0.276**	0.425***	1			
7. Effort expectancy	0.558***	0.435***	0.409***	0.416***	0.369***	0.434***	1		
8. Social influence	0.430***	0.362***	0.229	0.380***	0.392***	0.610***	0.633***	1	
9. Facilitating condition	0.594***	0.353***	0.492***	0.416***	0.560***	0.369***	0.556***	0.381***	1

***Correlation is significant at the 0.01 level (two-tailed).

**Correlation is significant at the 0.05 level (two-tailed)

perception and e-HRM adoption correlated at $p = 0.000$ with a beta value of 0.637, indicating a good fit.

Regression analysis

Four (4) standard methods of regression were used to test the effect of three (3) independent variables: employee perception, e-HRM practices, and COVID-19 and their combined effect on e-HRM adoption. The first model showed that e-HRM practices contributed more to the total variation in the dependent variable, providing a beta value of 0.781, while COVID-19 provided the least regression weight to explain an $R^2 = 610$ or 61.0 percent in e-HRM adoption (see Table 7). The overall model showed a robust effect of the independent variables (employee

perception, e-HRM practices, and COVID-19) on the dependent (e-HRM adoption) with a 1.000 tolerance and a 1.000 variance inflation factor (VIF). The model showed a good fit since collinearity statistics indicate that the variations of the predictors on e-HRM adoption are a better fit. The implications are that the predictors are not highly correlated because a value of 0.5, or a higher level of tolerance and a smaller VIF suggests an absence of multi-collinearity [74]. The second model further indicates that both e-HRM practices and employee perception predicted the effect on e-HRM adoption better than the third independent variable (refer to Table 7). The implication is that e-HRM practices did better in explaining the variation in the dependent variable with regression

Table 7 Regression results

Model	Variable	B	Beta	*t*-stat	Sig	Collinearity statistics tolerance	VIF
1	(Constant)	0.62		− 1.536	0.120		
	e-HRM practices	1.068	0.781	9.926	0	1	1
2	(Constant)	− 0.959			0.112		
	e-HRM practices	0.85	0.621	6.766	0.000	0.654	1.529
	Employee perception	0.400	0.272	2.957	0.004	0.654	1.529
3	(Constant)	− 1.218		1.806	0.076		
	e-HRM practices	0.827	0.605	6.426	0.000	0.625	1.600
	Employee perception	0.367	0.249	2.587	0.012	0.599	1.669
4	(Constant)	− 1.01		− 0.84	0.404		
	e-HRM practices	0.852	0.623	6.175	0.000	0.567	1.763
	Employee perception	0.369	0.251	2.527	0.014	0.587	1.705
	COVID-19	0.098	0.068	0.736	0.465	0.672	1.488
	Gender	− 0.009	− 0.003	− 0.042	0.967	0.893	1.120
	Age group	− 0.179	− 0.15	− 1.386	0.171	0.495	2.018
	Education	− 0.025	− 0.012	− 0.144	0.886	0.834	1.199
	Experience	0.191	0.148	1.407	0.165	0.520	1.925
	Management level	− 0.008	− 0.004	− 0.405	0.965	0.769	1.301

R	R^2	S.E	*F*-stat	*p* value
Model summary 1				
0.781	0.610	0.83434	98.531	0.000
Model summary 2				
0.811	0.658	0.78734	59.696	0.000
Model summary 3				
0.814	0.662	0.78944	39.809	0.000
Model summary 4				
0.823	0.677	0.8054	14.669	0.000

1. Predictors: (Constant) and e-HRM practices

2. Predictors: (Constant), e-HRM practices, and employee perception

3. Predictors: (Constant), e-HRM practices, employee perception, and COVID-19

4. Predictors: (Constant), e-HRM practices, employee perception, COVID-19, gender, age group, education, management level, and experience

5. Dependent variable: e-HRM adoption

d. Durbin–Watson = 1.653

weights of 0.621, while employee perception contributed a 0.272 coefficient. However, the combined effect of both variables provided an R^2 of 0.658 ($R^2 = 65.8$, $p = 0.000$) and F/df (59.696, 62), suggesting a 0.048-point change in the dependent variable.

Furthermore, the third model improved when all three variables were entered: e-HRM practices, employee perception, and COVID-19. The total variation explained was $R^2 = 0.662$ with e-HRM practices contributing high values of beta (0.605), followed by employee perception (0.249) and COVID-19 (0.070). It is instructive to observe that, though COVID-19 contributed the least to explaining e-HRM adoption, its relevance during the pandemic cannot be overemphasized since it had a positive relationship yet was statistically insignificant.

Similarly, a fourth model was run to include the demographic information of respondents to observe whether there is a statistically significant difference if an observed case is female or male, older, or younger, had more years on the job, or if the differences in education are a matter of concern in the dataset. The results showed that 0.015 points in the dependent variable, which represents about a 1.5% difference (refer to Table 7), changed in the total variation explained by the eight variables with $R^2 = 0.677$ or 67.7%.

This is highly negligible, and hence, the first three models provide a better fit of the data than the control model. Further observation showed that all the control factors were not statistically significant, implying that there is little influence of age, gender, experience, education, and level of management on e-HRM adoption. Nonetheless, except for gender and experience, which had a positive relationship with the dependent variable, the remaining factors—education and management level—were negatively related to e-HRM adoption. This is the case because most of the respondents (58 out of 65) had a first degree, which is the entry requirement for middle-level management in this sample.

Another point to be made is that the results showed that the variation of the three independent variables on the dependent had no case of collinearity, with the results showing a very good fit of the dataset from the regression plot (refer to Fig. 3 and Table 7).

Hypothesis testing

To test the three hypotheses of the study, the results of the regression coefficients were used. Consequently, the results showed that H_1 was statistically significant with a coefficient of 0.272 at $p = 0.004$, indicating that during the COVID-19 pandemic, employee perception had a positive effect on e-HRM adoption. The findings further revealed that H_2 was supported, with e-HRM practices
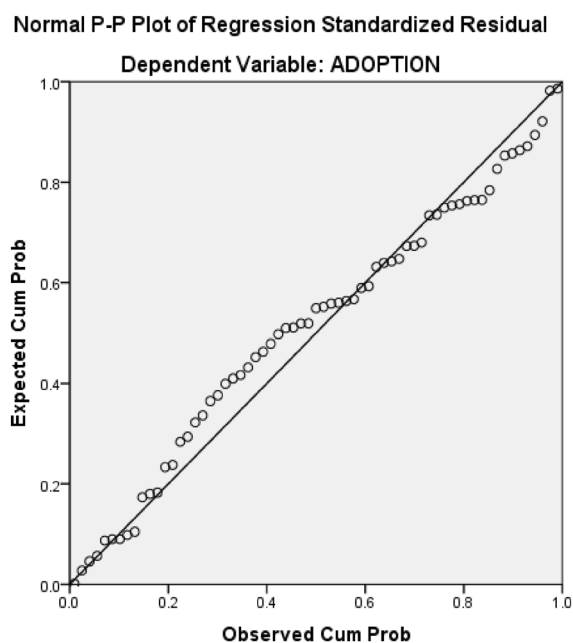
Fig. 3 Regression standardized residual normal plot
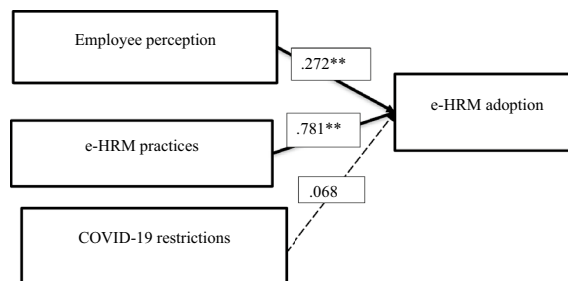
Fig. 4 Revised electronic human resource management adoption model

contributing the highest regression weight of $r = 0.781$ and being statistically significant at $p = 0.000$. This implies that the presence of operational, relational, and transformational practices was visible in the GRA even before the emergence of the coronavirus outbreak.

This is consistent with the previous literature that suggests that electronic HRM practices tend to lead to their implementation since they are considered a normal operational function [2]. The findings on the relationship between COVID-19 and e-HRM adoption (H_3) indicate that COVID-19 had a positive effect but was statistically insignificant ($r = 0.068$, *ns*). Hence, the hypothesis was not supported that the coronavirus pandemic had a significant effect on e-HRM adoption. However, further analysis showed that the correlation coefficient between e-HRM adoption and COVID-19 from the Pearson correlation was statistically significant ($r = 439$, $p = 0.000$). The possible explanation might be the presence of other

independent variables in the model. Consequently, H₃ was rejected because the acceptance region for this sample was between 95 and 99%. Based on the findings of the hypotheses, the study's model was reframed to reflect the outcome of the ANOVA test (refer to Fig. 3).

Discussion

From the findings of the hypotheses, it is evident that e-HRM adoption is influenced more by the presence of e-HRM practices and employee perception than the COVID-19 pandemic. However, COVID-19 pandemic practices positively affected e-HRM adoption [1, 2, 27, 39, 59]. The research framework that was used to guide the study can be seen (refer to Fig. 4) to be partially supported since the prediction was that COVID-19 restrictions would have a statistically significant effect on e-HRM adoption. The findings, however, imply a positive connection with no impacts because the p-value is larger than 0.05 (see Table 7).

However, the findings demonstrate that COVID-19, e-HRM practices, and employee perception do have a positive relationship with e-HRM adoption [1, 11]. The findings further revealed that employee perception took several forms, including performance expectancy, effort expectancy, social influence, and facilitating conditions [14]. However, social influence and facilitating conditions were the most significant factors that influenced employees of the GRA to use e-HRM, since this perception had a favorable and substantial relationship with the adoption of e-HRM [14].

Another key finding of this study revealed that there are several practices of e-HRM carried out by the GRA. The three (3) main types of e-HRM practices include transformational, operational, and relational [1, 2, 77]. Transformational e-HRM practices had the strongest relationship with e-HRM adoption, which involves e-HR planning and e-career management [65], and e-occupational health and safety practices were better predictors of e-HRM adoption [15, 39]. Relational e-HRM practice was observed to have predicted e-HRM adoption better than operational e-HRM. Relational e-HRM includes e-recruitment and selection bundles through online recruitment platforms, web-based interviews, and e-training assisted by e-resources, WhatsApp, Facebook, and Zoom teams [59]. E-performance management was also used in relational e-HRM practices for performance records and feedback [78].

However, operational e-HRM involved payroll activities and the publication of organizational information on its websites. These e-HRM bundles supported the management in maintaining normal organizational functions throughout the peak of the pandemic [1].

The findings further revealed that employees at GRA will adopt e-HRM if they believe that they will always receive dependable technical help, which is the facilitating condition when they encounter problems. This finding is not unique because studies such as [14, 15] equally found evidence that supports user training and competency-building as instruments for adopting technology [78]. However, the findings also demonstrated that performance expectation had little impact on the GRA's adoption of e-HRM, providing a value of 0.251* ($p < 0.05$) less than the rest of the three indicators of employee perception (social influence, effort expectancy, and facilitating conditions). This is consistent with the findings of [57], who found that employees adopt technology if they believe that the system will help them. However, in the case of unforeseen circumstances such as the COVID-19 outbreak, employees may not prefer the traditional face-to-face meetings to which they were accustomed because of workplace restrictions and general lockdown policies witnessed during the peak [59].

The findings further indicate that COVID-19 had no statistically significant effect on the adoption of e-HRM since GRA personnel were unprepared for it [11]. Again, the findings are consistent with the works of Cakmak et al. [79] and Bondarouk et al. [30], corroborating that workers always try to reject modern technology, and the organization is likely to be incapable of overcoming the rejection by staff who does not acknowledge the benefit of new technology having an impact on their performance expectations. Another probable explanation could be that since the GRA was not fully prepared for the pandemic, staff productivity was adversely hampered by the inability of staff to complete their assigned tasks due to the COVID-19 restrictions. This supports the findings of Akkermans et al. [65] that staff productivity was affected by psychological resources such as competencies and resilience.

Moreover, the study made use of the TAM, which guided the empirical data collection. The findings support the theory and show how e-HRM adoption is influenced by the perceived subjective norms of employees (social influence). Also, theory focuses on technical competency and support given to employees (facilitating conditions) as well as ease of use (effort expectancy). The findings on the usefulness (performance expectancy) of the technological system added information on the TAM [13–16, 21, 80].

The study's findings imply that employee perception is important in the adoption of e-HRM practices. Employers should focus on maintaining a good reputation by providing appropriate training, support, and incentives to encourage employee desire to embrace e-HRM practices. Employers must also ensure that their e-HRM processes

Abane *et al. Future Business Journal*   (2023) 9:89

Page 14 of 19

are structured to fit the demands of their employees and are user-friendly, accessible, and secure. Employers may boost e-HRM adoption rates in this way, resulting in more efficient and effective HR systems [16, 17, 25].

According to the findings of the study, there is a favorable relationship between employee perception and the implementation of e-HRM practices [1, 5, 7]. Employees who have a positive attitude about e-HRM are more inclined to implement these practices. Employers should prioritize fostering a positive view of e-HRM among their employees through effective training, support, and incentives in light of these results. Furthermore, e-HRM practices should be built in such a manner that they meet the demands of employees while also being user-friendly, accessible, and secure.

Conclusion

The study concludes that there is a strong relationship between employee perception, e-HRM practice, and e-HRM adoption at the regional office of the GRA, which represents the subnational level of management. The study found that employees' perceptions, especially effort expectancy, which deals with ease of use and knowledge of the technology, and social influence, which relates to subjective norms or peer influence, impacted positively on e-HRM adoption. Also, facilitating conditions deal with employee perceptions of technical support and competency highly influenced e-HRM adoption. As a result, e-HRM practices have a substantial influence on employee perception and adoption. Companies must engage in e-HRM practices to improve employee perception and acceptance, which will lead to enhance workplace productivity and efficiency. Furthermore, to realize their advantages, organizations must ensure that their e-HRM practices are user-friendly and accessible to all workers.

The implication of these findings suggests that the GRA as an organization must invest in training employees to be able to use technologies that are built into the HR system as well as utilize the e-HRM platform to reinforce HR planning, performance management, occupational health and safety, and e-learning, among others. This will foster and embolden staff to consider the adoption of e-HRM as an instrument for performance expectations since employees have lower expectations of the adoption being useful for their performance.

Similarly, the GRA should focus on building resilience and transformational e-HRM practices to address HR planning and career management through computer-based systems and developing information on risk-related incidents that could support employee health and safety in times of crisis. Also, relational e-HRM practices should focus more on training and learning,

e-compensation through gains-sharing and benefits-sharing, and creating digital content for employees to use to help them build their competencies in using the e-HRM system in the organization. Although operational e-HRM focuses on payroll issues, which is important, there is a need for GRA to place activities that directly link employees to the e-HRM system.

Additionally, integrating HRM methods has a significant impact on employees' perception and acceptance of new technologies. It is critical to analyze how these practices are viewed in terms of usefulness and convenience of use, as these factors influence employees' readiness to embrace technological changes considerably. The research findings reveal that e-HRM practices align with the assumptions of Davis's et al. (1989) Technology Acceptance Model. The study specifically supports the notion that workers' views toward e-HRM adoption are impacted by how useful and simple they consider it to be. As a result, future research on technology acceptance should investigate how e-HRM practices influence perceived utility and simplicity of use, and hence workers' adoption of technology in the workplace.

Policy implications for future pandemics

Furthermore, the findings have implications for future pandemics. Even though COVID-19 had no statistical impact on e-HRM adoption, it would be necessary for the government, under the office of the Public Services Commission (PSC), the chief government human resources manager in the country, to establish and implement proactive policies on technological-based employee management for state institutions. This is necessary to ensure compliance on the part of GRA and other government agencies to design and implement electronic practices in their human resource information systems (HRIS) to forestall incidences where employees are unable to access traditional brick-and-mortar workplaces but can still perform their tasks from remote locations.

Also, to secure the future and ensure the sustainability of public organizations, policymakers should provide information technology communication (ITC) infrastructure to public organizations to ensure that future pandemic-based HRM systems are being utilized to manage work schedules both at the operational and administrative levels. This is instructive because the internet and other technological infrastructure that could help build their resilience to meet their targets are essentially non-existent in most remote locations in the country. Internet connectivity is poor, and many communities are completely cut off from the internet services provided by the telcos in the country.

According to the conclusions of the study, organizations must prioritize their employees' perceptions of the

Abane *et al. Future Business Journal*   (2023) 9:89

Page 15 of 19

usefulness and ease of use of their e-HRM practices. To do this, organizations should provide enough staff training and support, as well as design user-friendly and simple e-HRM solutions. Furthermore, firms must analyze the possible influence of e-HRM practices on employee attitudes and behaviors, since these aspects can have a substantial impact on the effectiveness of technology adoption projects. In general, the study stresses the need to take into account employees' technology-related attitudes and views while implementing e-HRM practices in the workplace.

Managerial implications

The core mandate of the GRA is revenue mobilization, which is considered an essential service that must be managed properly to support government domestic revenue and enable recovery after the post-pandemic economic slump. It is imperative that future HR planning should focus on building emergency HRM practices that consider technological architecture. The inference is that GRA was unprepared for the COVID-19 pandemic, and it did not affect e-HRM adoption in the sample population.

Interestingly, e-adoption has implications for a strong organizational culture. The study's findings demonstrated that in a typical Ghanaian working culture based on effort and performance, there is a proportional imbalance; thus, most public agencies lack a strong organizational culture that engineers technological acceptance. Consequently, it makes the introduction and acceptance of new technologies in public organizations difficult. In this regard, the provision of an enabling environment and resources for a modern, state-of-the-art e-HRM platform for operational, relational, and transformational HRM practices is highly placed to mitigate any unforeseen events during emergencies.

Also, digital e-HRM content that supports the e-training of employees on new technology should be mounted in the GRA offices across the country to ensure access and utilization, which will result in acceptance of the era of e-HRM in the public institutions in the country.

Limitations of the study

It is critical to recognize that a sample size of 78 may have significant aspects such that the findings may not apply to the wider population and that sampling bias may play a role. As a consequence, it is critical to be cautious when interpreting the findings and to consider the study's potential limitations. Therefore, the paper has a few limitations, which are associated with most survey research. However, these limitations do not invalidate the findings of the study. First, the sample size of 78 was not large enough to generalize the findings to another context. However, this limitation was resolved since the sampling error was set at a 95% confidence level. Besides, using the margin of error of 0.05 to draw the respondents from the target population of 98 helped mitigate the limitations associated with survey research. Furthermore, the study's limitation lies in the fact that only quantitative research techniques were used, which might have affected the contextual factors that may impact e-HRM adoption, such as cultural norms and the fact that the GRA is made up of two divisions: para-security (customs excise and preventive service) and regular civil employees (revenue staff). Consequently, future studies should focus on these unique differences and inculcate organizational culture as a mediation variable to test their effect on e-HRM adoption. The study recommends that more regional offices of the GRA should be studied using both qualitative and quantitative techniques to add to the findings of this study for theory building in the area of e-HRM.

Appendix
See Table 8

Table 8 Appendix—Summary of scales

Variable	Indicator	Scale	No. of items
Employee perception:			17
1	Performance expectancy	PEREX 1: e-HRM aids in accomplishment of work	
		PEREX 2: Using e-HRM improves productivity	
		PEREX 3: My duties are performed in a more suitable way with e-HRM	
2	Effort expectancy	EFFEX 1: The use of e-HRM is understandable and less difficult	
		EFFEX 2: High efforts are not required to use e-HRM	
		EFFEX 3: The use of e-HRM requires less knowledge of new skills	
		EFFEX 4: The use of e-HRM can easily be learned	

Table 8 (continued)

Variable	Indicator	Scale	No. of items
3	Facilitating condition	FACONS 1: Vital resources are provided by the organization (hardware, software, and finance) related to e-HRM use	
		FACONS 2: Employees are provided with the requisite knowledge in relation to e-HRM use	
		FACONS 3: The use of e-HRM in the organization is supported by qualified team	
		FACONS 4: Help desk is provided by the organization for issues related to e-HRM use	
		FACONS 5: Essential systems in the organization are compatible with e-HRM use	
4	Social influence	SOCINF 1: If my work partner uses e-HRM, then I will also use it	
		SOCINF 2: My partner is of the belief that we should use e-HRM	
		SOCINF 3: My intention to use e-HRM was influenced by its usage in other public institutions	
		SOCINF 4: My partner is of the belief that the use of e-HRM is important for our work	
		SOCINF 5: Our organization supports e-HRM	
COVID-19 practices		COVPRAC 1: GRA has a crises plan for pandemics	4
		COVPRAC 2: Unexpected decisions were taken to ensure best practices of human resource deployment	
		COVPRAC 3: Work routine was re-strategized to ensure safety	
		COVPRAC 4: There were imposed restrictions on my work	
Electronic human resource management (e-HRM) practices:			16
1	Operational e-HRM	OPEHRM 1: Payroll services have been available electronically	
		OPEHRM 2: Personal data been made available electronically	
2	Relational e-HRM	RELEHRM 1: Potential employees are attracted through the use of internet	
		RELEHRM 2: Job description and vacancy are done online	
		RELEHRM 3: Recruitment processes are done online	
		RELEHRM 4: Test for potential employees is done online	
		RELEHRM 5: Training programs are placed on the internet	
		RELEHRM 6: Performance feedback is done electronically	
		RELEHRM 7: Employee participation in beneficial programs is tracked online	
		RELEHRM 8: Software programs are used to evaluate employees' performance	
		RELEHRM 9: Performance records are kept on HR information systems assisted by the internet for easy retrieval	
3	Transformational e-HRM	TRANSEHRM 1: Data on employees are collected, stored, and updated electronically	
		TRANSEHRM 2: Collection, restoration, and update of data on skills of employees are done electronically	
		TRANSEHRM 3: Collection, restoration, and update of data on competence of employees and access to data are done electronically	
		TRANSEHRM 4: Career guidance system that is computer based	
		TRANSEHRM 5: Risk information such as occupational disease, accident, and disabilities to employees are computerized and made accessible to employees	
Electronic HRM adoption (EHRMADO)		EHRMADOP 1: e-HRM has been adopted as a national innovation strategy	4
		EHRMADOP 2: Most human resource activities are done electronically due to the capacity of GRA to invest and absorb risk in using the system	
		EHRMADOP 3: e-HRM has been adopted to realize the organizational strategies of GRA due to management support	
		EHRMADOP 4: GRA activities are accessible online to meet global and local demands	

Abbreviations

BIU	Behavioral intentions
CEPS	Customs Excise and Preventive Service
CD-ROM	Compact disk read-only memory
COVID-19	Coronavirus 2019
e-HRM	Electronic human resource management
GRA	Ghana Revenue Authority
HR	Human resource
HRM	Human resource management
HRIS	Human resource information system
IBM	International Business Machines
IBMC	International Business Machines Corporation
ICT	Information Communication Technology
IRS	Internal Revenue Service
IT	Information technology
MBA	Master of business administration
MIT	Massachusetts Institute of Technology
OEHRM	Operational electronic human resource management
PEU	Perceived ease of use
PU	Perceived usefulness
PSC	Public Services Commission
RAGB	Revenue agencies governing board
SMEs	Small–medium enterprises
SSA	Sub-Saharan Africa
TAM	Technology adoption model
UTAUT	Unified Theory of Acceptance and Use of Technology
VIF	Variance inflation factor
VAT	Value-added tax

Author contributions
JAA analyzed and interpreted the regression results as well as the literature review and was the major contributor to writing the manuscript. EB reviewed the soundness of the analysis and the literature. ABA designed the instrument and collected the data.

Availability of data and materials
The datasets used and/or analyzed during the current study are not publicly available due to the privacy of the participants who provided the information for the study, but are available from the corresponding author on reasonable request.

Declarations

Ethical approval and consent to participate
We declare that this study does not involve human subjects; however, respondents participate by agreeing to the questionnaire protocol that was used.

Consent for publication
We collectively put this piece of research work together as a team, and we do give our approval for the publication of the contents of the research paper.

Competing interests
The author declares that they have no conflict of interest.

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