Mohinder Chand / Ashish Dahiya

Understanding the Determinants of Embracing E-HRM in the Hospitality Industry

Abstract

This research examines the factors influencing E-HRM implementation in the hospitality industry and their effects on adoption intention. Drawing on prior research, the study developed a theoretical framework for E-HRM adoption. The study collected data through a self-administered questionnaire completed by 276 HR managers at tour operations and hotel enterprises. The study used partial least squares structural equation modeling (PLS-SEM) to analyze associations among the factors and behavioral intentions. The results show that compatibility, top management support, relative advantage, regulatory support, competitive pressure, organizational readiness, and firm size influence E-HRM implementation in the study area. These findings can inform strategic decisions and resource allocation in organizations implementing E-HRM systems. Complexity and cost were not significant at the 0.05 level. Although these factors may not directly affect adoption intention in this context, examining them adds depth to the analysis and supports a more nuanced understanding of E-HRM system dynamics. Overall, this study contributes to the growing body of knowledge on E-HRM adoption, particularly in the hospitality industry, and offers actionable insights for industry stakeholders.

Keywords: E-HRM, tourism, hospitality, industry, India

1. Introduction

Over the past two decades, the hospitality industry has faced a range of crises, epidemics, and pandemics, including terrorist attacks, SARS, the global economic crisis, 'Bird flu,' MERS, Ebola, plague, cholera, swine flu, and COVID-19. However, except for COVID-19, none of them have had long-term impacts. COVID-19 has had profound effects globally, not only on public health but also on economies and social structures. Hospitality businesses have been forced to adapt their models in response to the industry environment.

In the management literature, the term E-HRM is used interchangeably with terms such as e-HR, virtual HRM, digital HRM, HR internet, web-based HR, computer-based human resource management systems (CHRIS), HR portals, HRM data mining, HRM cloud computing, augmentation of HRM (for mobile technologies), SMAC (Social Media Analytics Clouds), AI-HRM, robotics HRM, and HRM big data (Vrontis et al., 2022; Tambe et al., 2019; Sharma et al., 2024). Bondarouk et al. (2009, p. 507) define "E-HRM as an umbrella term covering all possible integration mechanisms and contents between HRM and Information Technologies (IT), aiming at creating value within and across organizations for targeted employees and management." Marler and Parry (2016, p. 2) define "E-HRM as the integration of electronic technologies (computer hardware, software, and networking resources) to facilitate HRM activities. These technologies enable the coordination, control, and dissemination of data and information related to HR practices, policies, and services both within and outside organizational boundaries."

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Recently, scholars have highlighted the dual perspectives on E-HRM adoption and its outcomes. They argue that E-HRM can deliver administrative and strategic benefits, including cost reduction, service improvements, and a shift in HR professionals' roles (Marler & Parry, 2016; Strohmeier, 2009; Ruël & van der Kaap, 2012). However, some authors also acknowledge the need for more practical studies to better understand how E-HRM adoption is conceptualized and its actual outcomes. Similarly, several researchers (Bondarouk et al., 2009; Haines & Lafleur, 2008; Chand, 2015; Strohmeier, 2009) have called for more empirical research from various perspectives to better understand the influence of E-HRM adoption. Overall, researchers have noted numerous benefits of E-HRM adoption, while emphasizing the need for more empirical research to validate these assertions and provide a comprehensive understanding of its implications for organizations.

Although the E-HRM system offers many benefits to the service sector and is recognized as a disruptive innovation that has transformed HRM practices and policies in the global business world, hospitality sector companies remain hesitant and adopt wait-and-see attitudes toward implementing an E-HRM system. Recently, scholars have examined the application and usefulness of E-HRM practices (Chand et al., 2023; Chand, 2015; Teo et al., 2007; Umar et al., 2020; Voermans & van Veldhoven, 2007; Shilpa & Gopal, 2011). Few studies have explored the determinants of E-HRM adoption in other industries (Ruël et al., 2004; Omran & Anan, 2018). The management literature indicates that some scholars have conducted quantitative research; most have focused on E-HRM in non-hospitality industries (Guechtouli, 2010; Vrontis et al., 2022; Haines & Lafleur, 2008). Few studies examine hospitality firms, and their understanding and use of E-HRM practices in operations remain limited (Chand et al., 2023; Chand, 2015). Therefore, more in-depth empirical research is needed to identify the determinants that drive E-HRM adoption in the industry. Further, no quantitative research has examined E-HRM adoption in the hospitality industry using the partial least squares structural equation model (PLS-SEM) approach. To fill this gap, the present study has two objectives: to identify the determinants of E-HRM adoption and to explore the synergistic effects among these determinants.

2. Literature review

During the COVID-19 pandemic, HR managers recognized the importance of digital technology and were tasked with supporting employees as they navigated unprecedented changes. They must help employees build the digital skills they need, provide resources for remote work, and foster connection and well-being among team members despite physical distance. Additionally, HR managers should adapt their approaches to meeting employees' and the organization's evolving needs. In essence, the COVID-19 crisis has underscored the importance of agility and adaptability in both companies and their workforce. It has forced organizations to rethink traditional ways of operating and has accelerated the adoption of digital technologies in both business and employee management. In fact, management emphasizes facilitating and motivating employees to adopt digital technology in their operations (Ooi et al., 2018; Talukder, 2014; Dubey et al., 2018).

Resource-based theory underscores the importance of how organizations create and deploy resources and capabilities to achieve sustainable competitive performance (Saá-Pérez & García-Falcón, 2002; Grant, 1991; Zheng et al., 2013). The RBV suggests that adopting innovative HRM practices reinforces the role behaviors needed to use resources and achieve success in a competitive environment (Shaw, 2021). In fact, the theory emphasizes the organization's capacity to adapt to evolving business dynamics and capitalize on emerging opportunities. As a technological innovation, E-HRM can enhance the organization's capacity by providing real-time information and valuable human resources insights (Hsu et al., 2006; Oliveira & Martins, 2010; Gerhart & Feng, 2021). Furthermore, resource-based theory recognizes that firms have bundles of resources

and capabilities, including valuable human resources, that they can flexibly reconfigure to support emerging organizational strategies. Thus, implementing an E-HRM system prioritizes specific objectives to foster sustainable competitive advantage in the hospitality industry.

Noerman et al. (2021) suggest that integrating elements from both TAM and the Cognitive Model enables organizations to identify and address the explicit factors that significantly influence the continuous intention to use E-HRM in a highly dynamic environment. Additionally, recent research strengthening TAM-led HR offers further insights into the variables and relationships that influence technology acceptance and use to achieve business outcomes (Stone & Deadrick, 2015; Leung et al., 2015; Johnson et al., 2016; Marler & Parry, 2016). Indeed, the technology–organization–environment (TOE) framework facilitates effective technology adoption. Diffusion of innovation (DOI) theory offers clear insights into how new technologies diffuse from invention to adoption (Rogers, 2010). Many scholars have used the TOE framework to understand how organizations adopt innovations (Tornatzky et al., 1990; Nam et al., 2021; Clohessy & Acton, 2019). Despite their similarities, the TOE framework adds environmental factors to the DOI theory, significantly expanding the TOE model's application to technology adoption decisions in an organization (Abed, 2020; Hsu et al., 2014; Nam et al., 2021; Clohessy & Acton, 2019). Table 1 shows the three contexts of the TOE framework. The Technology Acceptance Model (TAM) also suggests that human behavior depends directly on the intention to perceive the system as useful and easy to use (Ruël & van der Kaap, 2012; Bondarouk et al., 2009; Ruël et al., 2004; Nikopoulou et al., 2024; Kundu & Kadian, 2012). Several related reasons include the adoption of digital technology in HRM and E-HRM, which is linked to the HR function's contribution to organizational performance (Kundu & Kadian, 2012; Chand, 2015; Strohmeier, 2009). Today, many hospitality organizations, including large multinationals, have spent billions of Rupees on digital HRM practices, but it remains unclear how E-HRM systems are applied and what their consequences are for organizational performance and sustainable benefits.

Moreover, the hospitality industry is generally considered fragmented, composed of small and medium-sized enterprises, and characterized by high-quality service and limited technological advancement. An E-HRM system (E-HRMS) can provide innovative solutions for a company's sustainability, streamline operations, improve HR efficiency, enhance competitive advantage, and support the development and launch of new services. Previous research on E-HRM has operationalized the construct in various ways. Some researchers have referred to it as high-innovative work systems (Noerman et al., 2021; Way, 2002). Nassoura and Hassan (2021) highlight the role of technology in fostering innovative behaviors through cloud-based HRMS and leadership support. Therefore, it can enable a paradigm shift toward greater assistance and reliance in the hospitality industry. Recently, many scholars (Chand et al., 2023; Bondarouk et al., 2009; Omran & Anan, 2018; Garbin Praničević & Mandić, 2020; Ruël et al., 2004) have inclined toward using innovative technologies in HRM systems across various industries; however, there is a dearth of empirical studies on the adoption of E-HRM systems within the human resource field in the hospitality industry, especially in developing countries like India.

The literature review revealed several important gaps in hospitality research on the factors influencing E-HRM system adoption in the hospitality industry, as outlined above. The present study aims to address these gaps by considering technology, organizational, and external environmental factors. Thus, we propose a conceptual model to empirically examine readiness to implement an E-HRM system and its determinants in the technology–organization–environment (TOE) context of the Indian hospitality industry. Figure 1 shows the proposed model.

Figure 1
Proposed research model

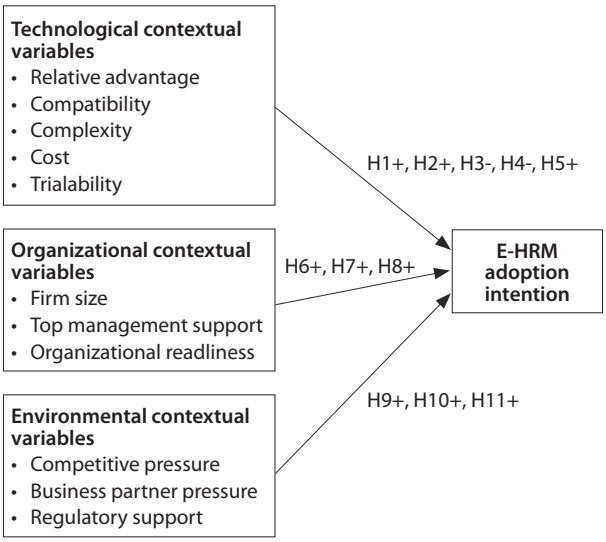


Table 1
Determinants identified based on literature review

Context	Variable identified in this study	Operational definition within the scope of the current research	Source(s)
Technological		The DOI provides an inclusive framework for innovation adopted, accepted and used.	Rogers, 1983
	Relative advantage	It indicates the degree of more benefits than a previous technology	Rogers, 2003; Zhu et al., 2006; Faliagka et al., 2014
	Compatibility	it is the degree of consistency with the existing values, past capability and potential adopters'	Rogers, 2003
	Complexity	Technological complexity is the perceived difficulty of using certain technology	Shih and Fang (2004); Pan et al., 2022
	Cost	It is pivotal and influences the enthusiasm to embrace technology	Tambe et al., 2019; Geyskens et al., 2006
	Trialability	It simplifies the effective implementation of technology	Lin, 2011 and Schalk et al., 2013
Organizational		It refers to the organizational structure, system, processes, organization size, and the internal resources	Hsu et al., 2006; Oliveira & Martins, 2010; Rogers, 2003; Garbin Praničević & Mandić, 2020.
	Firm size	It affects and control the innovation systems adoption	Chand et al., 2023 and Galanaki, et al., 2019
	Top management support	It indicates managerial approach to facilitate and motivate employees to take up digital innovations.	Ooi et al., 2018; Talukder, 2014; Dubey et al., 2018.
	Organisational readiness	Organization's ability to invest in modern technology	Kundu & Kadian, 2012 and Masum, 2015; Geyskens et al., 2006
Environmental		It describes the arena in which an organization operates, regulate, and survive in external environment	Hsu et al., 2006; Oliveira & Martins, 2010; Nikopoulou, et al. 2024
	Competitive pressure	It defines intensity of losing competitive advantages. Therefore , it is essential for adoption of technology	Nikopoulou, et al; 2024, Chand, 2015
	Business partner pressure	It defines as a business relationship to minimize costs, share risks, pool strengths, improving competitive strengths etc.	Chand & Katou, 2012; Panayotopoulou et. al., 2007
	Regulatory support	It refers that government is main driving force to adopt technology	Carter & Belanger, 2004; Bondarouk et al., 2017 and Jain et al., 2012

Source: Authors' own work.

2.1. Technological contextual variables

In 1983, Rogers proposed the Diffusion of Innovation theory (DOI), which provides a comprehensive framework for understanding how organizations adopt, accept, and use innovations (Rogers, 1983). According to this theory, the five primary constructs—Relative advantage, Cost, Compatibility, Complexity, and Trialability—are widely used as technological determinants of digital technology implementation in an organization.

2.1.1. Relative advantage

Rogers (2003) defined relative advantage as the degree to which a new technology is perceived to offer more benefits and opportunities than previous technology. Consequently, many scholars have found relative advantage useful for explaining technology adoption (Hsu et al., 2006; Zhu et al., 2006; Faliagka et al., 2014; Florkowski & Olivas-Luján, 2006). It reflects the perceived utility of technology in supporting HR activities within hospitality companies.

As a service-intensive industry, the hospitality sector recognizes E-HRM as offering several relative advantages, including flexibility, mobility, enhanced skills, and resource sharing, and it can increase service quality through improved employee performance. In summary, we hypothesize that:

H1: Relative advantage positively affects the willingness to adopt E-HRM.

2.1.2. Compatibility

It indicates the degree to which an innovative system is compatible with an organization's existing system. According to Rogers (2003), "compatibility is the degree to which an innovation is accepted as consistent with the existing three aspects such as values, past capability, and potential adopters' (p. 240). It also refers to how well new technology supports and integrates with an organization's existing values, practices, and requirements (Hanna et al., 2020; Lin, 2011; Nikopoulou et al., 2024). Thus, the hospitality industry is more likely to implement operational innovations, believing that an E-HRM system aligns with the current organizational ethos and managerial practices and can deliver several benefits to enterprises. With this background, we hypothesize that:

H2: Compatibility significantly affects E-HRM implementation.

2.1.3. Complexity

The term complexity is widely used when organizations adopt new mechanisms. Shih and Fang (2004) suggest that complexity is a dynamic factor in the technology adoption process. Managerial perceptions of complexity, driven by high-tech infrastructure, can hamper technology adoption (Pan et al., 2022). Ironically, the E-HRM system requires specialized infrastructure, efficient data transfer, an HR system, and management vision, etc. Consequently, we propose that:

H3: Complexity negatively impacts the intention of E-HRM system adoption.

2.1.4. Cost

Cost is a pivotal aspect of innovation adoption and influences enthusiasm for embracing technology. According to transaction cost theory, companies aim to minimize total cost (Geyskens et al., 2006), and E-HRM has a dual effect on total cost minimization. However, because of the outcomes of E-HRM structures and procedures, organizations cannot fully realize cost minimization (Tambe et al., 2019). Medium- and small-scale hospitality enterprises are discouraged from implementing new technology. Thus, despite the numerous benefits of adopting innovative technology, the hospitality industry remains slow to adopt it due to cost factors.

With these aspects, we propose to test:

H4: Cost negatively influences willingness to adopt E-HRM.

2.1.5. Trialability

Scholars (Lin, 2011; Schalk et al., 2013) suggest that trialability simplifies the effective implementation of innovations in any industry. Moreover, high trialability can increase technology acceptance among companies. In fact, it fosters a sympathetic understanding of the prospective advantages and helps accurately assess the value the innovation can bring to the organization. It also helps companies better understand potential benefits and more accurately assess the importance of innovative technology. Thus:

H5: Trialability positively stimulates the willingness to adopt E-HRM.

2.2. Organizational contextual variables

Previous research (Panos & Bellou, 2016; Colquitt & Zapata-Phelan, 2007) used theories such as the resource-based view, institutional theory, transaction cost theory, and behavioral theory to develop organizational contextual variables, including firm size, top management support, and organizational readiness. Thus, in the present context, the following organizational contextual variables are used:

2.2.1. Firm size

Many scholars argue that firm size significantly affects and moderates the adoption of innovation systems (Marler & Parry, 2016; Strohmeier, 2009; Ruël & van der Kaap, 2012). Empirical research also supports the inference that firm size is positively related to the degree of adoption of E-HRM systems (Chand et al., 2023; Galanaki et al., 2019). Therefore:

H6: Firm size positively influences the willingness to adopt E-HRM systems.

2.2.2. Top management support

Recent studies emphasize the organization's level and extent of understanding, commitment, facilities, and motivation among managers/executives toward new technology (Ooi et al., 2018; Talukder, 2014; Dubey et al., 2018). This construct specifies the support top management provides in accepting and implementing new technological systems. Top management motivates managers by providing direction, resources, information, and a vision to achieve organizational goals. Thus, the following hypothesis is proposed:

H7: Top management support positively influences E-HRM system adoption.

2.2.3. Organizational readiness

Many authors (Kundu & Kadian, 2012; Geyskens et al., 2006; Masum, 2015) reported that, as business models change, most organizations are investing in modern technology, including cognitive and resource readiness and IT systems. Recently, the COVID-19 pandemic has forced organizations to rethink the mix of resources, knowledge, expertise, and technical capabilities. Indeed, these factors significantly affect survival, sustainability, and long-term profitability. Thus, the following hypothesis is proposed:

H8: Organizational readiness significantly influences the objective of adopting an E-HRM system.

2.3. Environmental contextual variables

In the present context, we propose a conceptual framework for how environmental contextual variables, such as competitive pressure, business partner pressure, and regulatory support, may influence the implementation of E-HRM practices in the Indian hospitality industry.

2.3.1. Competitive pressure

Competitive pressure motivates firms to innovate in service quality and production, minimize costs, and increase the efficiency and effectiveness of the company's offerings (Gangwar et al., 2015; Garbin Praničević & Mandić, 2020). E-HRM can help organizations prepare employees to succeed in a volatile, competitive tourism marketplace. Moreover, this pressure is likely to increase hospitality enterprises' requirements for implementing an e-HRM system. Thus, the following hypothesis is proposed to test:

H9: Competitive pressure significantly influences E-HRM adoption.

2.3.2. Business partner pressure

In the hospitality business world, many terms refer to business partners, such as strategic alliances, strategic coalitions, and strategic networks (Chand & Katou, 2012). It is defined as a business relationship between organizations that minimizes costs, shares risks, pools strengths, and improves competitive strength. Thus, an E-HRM system may facilitate collaboration between partners in hospitality companies, strengthening their competitive advantage and increasing their market share (Panayotopoulou et al., 2007). Thus, the following hypothesis is suggested:

H10: Business partner pressure positively influences the likelihood of adopting E-HRM.

2.3.3. Regulatory support

Many scholars highlighted that governmental regulatory support has a more pivotal role in developing countries than in advanced nations like India (Carter & Belanger, 2004; Bondarouk et al., 2017; Jain et al., 2012). Thus, using an e-HRM system is essential to help Indian companies enhance informed decision-making, streamline HR processes, and better allocate human resources to advance this fastest-growing sector. Thus, we suggest the following hypothesis:

H11: e-HRM adoption is positively influenced by regulatory support.

3. Research methodology

In the present study, the hypotheses and the model were tested using partial least squares structural equation modeling (PLS-SEM, PLS 2.0 M3 software), as the PLS-SEM approach yields better results (Hair et al., 2019). In addition, the PLS-SEM technique is widely used with relatively small sample sizes (Willaby et al., 2015).

3.1. Measurement instrument

We prepared an initial list of measurement items from the existing literature, then conducted a pilot test with 10 HR managers and 10 academic experts. Input from both groups helped the researchers refine the items for final use. A total of 45 items were prepared for final research instrument within the technology–organization– environment (TOE) framework i.e. technological contextual variables; Organizational contextual variables; Environmental contextual variables- and respondents demographic variables namely job position, education, years of experience derived from previous studies (Ruël & van der Kaap, 2012; Bondarouk et al., 2009; Ruël et. al., 2004; Oliveira & Martins, 2010; Tambe et al., 2019; Geyskens et al., 2006; Troshani et al., 2011; Gangwar et al., 2015; Kumar et al., 2017; Hanna et al., 2020) (see table 2).

Table 2
Operationalisation of constructs/instrument

Constructs	Code	Items	Sources
Relative advantage (RA)	RA1	E-HRM system is offering more benefits and opportunities	Rogers, 2003; Hsu et al., 2006; Zhu et al., 2006; Faliagka, set al., 2014; Ruël, et al., 2012
	RA2	The openness and transparency of technology can promote HR data sharing viz-a-viz utilization of data	
	RA3	E-HRM application can get higher employee productivity.	
	RA4	E-HRM application can improve customer service	
	RA5	E-HRM system application can better utilize IT resources.	
	RA6	Its application can promote flexibility and integration	
Compatibility (CB)	CB1	The new technology supports and integrates with existing values, culture	Hanna et al.,2020; Lin, 2011; Nikopoulou, et al, 2024; Bondarouk et al., 2009
	CB2	It integrates with practices and requirements of an organisation	
	CB3	It is well compatible with the existing equipment and software infrastructure	
	CB4	Technical features are well compatible with the current working mode of the organisation	
Complexity (CX)	CX1	It will take considerable time and effort for my company to learn how to use E-HRM	Shih & Fang, 2004; Pan et al., 2022
	CX2	My company believes that E-HRM adoption requires many skills	
	CX3	Adopting E-HRM in my company will increase the cost of facility and hardware	
	CX4	My company must have more competent and trained staff	
Cost (CT)	CT1	The E-HRM System adoption will increase the cost of operations and maintenance	Geyskens et al., 2006; Tambe et al., 2019
	CT2	the cost of adopting E-HRM system will be expensive for my company	
	CT3	The cost of adopting E-HRM is unknown and difficult to comprehend	
	CT4	The adoption of technology driven HRM system demands more considerations which required more cost and time	
Trialability (TA)	TA1	My company intends to try out some technology in a small scope before fully adopt E-HRM System	Lin, 2011; Schalk et al, 2013; Ruël et al., 2004
	TA2	A trial period before E-HRM adoption will reduce risks	
	TA3	The ability to experiment with E-HRM is critical in deciding whether to adopt it	
	TA4	My company must develop technological structure before adoption of E-HRM	
Firm size (FS)	FS1	How many employees does your company have?	Chand et al., 2023; Galanaki et al., 2019
	FS2	How many years has your company been operating in hotel business?	
	FS3	Company's capital is higher than others in the hotel industry	
Top management support (TMS)	TMS1	The organisation has clear goals and objectives to adopt technologies	Ooi et al., 2018; Talukder 2014; Dubey et al., 2018)
	TMS2	Management is willing to take risks involved in the adoption of technology	
	TMS3	Management has a strong understanding of how technology can be used to increase HR performance.	
Organisational readiness (OR)	OR1	Our organisation has the special funds to adopt E-HRM system	Kundu & Kadian, 2012; Geyskens et al., 2006; Masum, 2015
	OR2	My organisation has the sufficient facilities and equipment to adopt E-HRM	
	OR3	Thetopmanagementofthecompanyiswillingtoprovidenecessarysupportandhelp for adoption of E-HRM System	
Competitive pressure (CP)	CP1	Did your company implement E-HRM based on the pressure from competitors?	Gangwar et al., 2015; Garbin Praničević & Mandić, 2020
	CP2	With the adoption of E-HRM, the peer will be more competitive in the market	
	CP3	The leading hotel companies in our industry are committed to the adoption of E-HRM system.	
	CP4	With fierce competition in the industry, our company must adopt E-HRM to ensure better services.	
Business partner pressure (BPP)	BPP1	Did you think the pressure from partners will help your company to implement E-HRM System?	Chand & Katou, 2012; Panayotopoulou et. al., 2007
	BPP2	It is Recommended by majority of business partners.	
	BPP3	Our partners are demanding the use of E-HRM in doing business with them.	

Table 2 ***(continued)***

Regulatory support (RS)	RS1	Did your company use technology based on government support?	Carter & Belanger, 2004; Bondarouk et al., 2017; Jain et al., 2012
	RS2	Did the government or competent agencies provide financial assistance	
	RS3	Did the government or relevant authorities provide technical guidance for technology adoption?	
	RS4	Technology can be implemented with the current set of laws and regulations	
Behavioural intention to adopt E-HRM (BIEHRM)	BIEHRM 1	I support the adoption of new technology in my organization	(Tornatzky, et al., 1990; Nam et al., 2021; Clohessy & Acton, 2019
	BIEHRM 2	I am willing to actively participate in the promotion and application of technology in the hotel industry	
	BIEHRM3	I hope to use technology more in my future work	

3.2. Data collection strategy

We used the survey method, with a self-structured questionnaire to collect data from respondents. To select respondents, we selected 1075 Indian hospitality enterprises from the Ministry of Tourism, Govt. of India, directory, located at various prominent tourist destinations. This directory serves as a Resource Center for hospitality companies in India. While selecting respondent firms, researchers aimed to include large and medium firms, as small firms cannot afford technology. To initiate the sample, we contacted HR managers/General Managers at more than 1075 organizations, resulting in a pool of 505 respondents, all of whom were sampled during January-September 2022. Of the total sample, respondents returned 276 usable questionnaires (54.65% response rate). Non-response bias was measured as suggested by Armstrong & Overton (1977).

4. Data analysis and results

4.1. Measurement model validation

In the first stage, measurement model evaluation focused on construct reliability, Convergent Validity, and discriminant validity, following Hair et al. (2011).

Construct Reliability: Construct reliability is assessed using Composite Reliability (CR) and Cronbach's Alpha (CA). The current study indicates that Composite Reliability (CR) values range from 0.809 to 0.945, and Cronbach's Alpha (CA) values range from 0.789 to 0.897; both are above the recommended threshold of 0.70, indicating good scale reliability (Table 3).

Convergent validity (internal consistency): We evaluated it using the average variance extracted (AVE) and item loadings. The AVE (0.720 to 0.887) and item loadings (0.702 to 0.849) exceed the recommended standard of 0.50 suggested by Fornell and Larcker (1981), indicating that the items converge well on their respective constructs (Table 3).

Discriminant Validity: To assess discriminant validity, we used cross-loadings and the Fornell–Larcker criterion. The Fornell–Larcker criterion is satisfied because the correlation coefficients are less than the square root of the AVE for each construct. Additionally, we present all cross-loadings and construct loadings below, further supporting discriminant validity (see Table 4).

Model Fit Analysis: To assess the structural model fit, we conducted a model fit analysis. In this study, we assessed model fit using SRMR, chi-square, and the normed fit index (NFI), following the model fit parameters suggested by previous studies (Bagozzi & Yi, 1988; Hair et al., 2014). As reported in Table 5, all parameter estimates meet the minimum threshold values, confirming the proposed model to be valid.

Table 3
Convergent validity and reliability results

Research construct/items		Standardized loading	C.R. Value	AVE Value	Cronbach's Alpha value
RA	RA1	0.782	0.893	0.720	0.868
	RA2	0.805			
	RA3	0.772			
	RA4	0.841			
	RA5	0.849			
	RA6	0.833			
CB	CB1	0.875	0.921	0.739	0.870
	CB2	0.787			
	CB3	0.825			
	CB4	0.750			
CX:	CX1	0.739	0.912	0.740	0.897
	CX2	0.821			
	CX3	0.843			
	CX4	0.883			
CT	CT1	0.902	0.945	0.887	0.837
	CT2	0.874			
	CT3	0.865			
	CT4	0.820			
TA:	TA1	0.845	0.809	0.743	0.861
	TA2	0.782			
	TA3	0.831			
	TA4	0.849			
FS:	FS1	0.702	0.880	0.778	0.854
	FS2	0.815			
	FS3	0.782			
TMS	TMS1	0.821	0.910	0.770	0.863
	TMS2	0.839			
	TMS3	0.823			
OR	OR1	0.775	0.890	0.780	0.890
	OR2	0.707			
	OR3	0.725			
CP	CP1	0.750	0.868	0.756	0.789
	CP2	0.730			
	CP3	0.751			
	CP4	0.743			
BPP	BPP1	0.803	0.850	0.745	0.805
	BPP2	0.815			
	BPP3	0.782			
RS	RS1	0.835	0.834	0.773	0.856
	RS2	0.809			
	RS3	0.840			
	RS4	0.821			
BIEHRM:	BIEHRM1	0.779	0.832	0.729	0,834
	BIEHRM 2	0.842			
	BIEHRM3	0.832			

Note. BIEHRM: behavioral intention to adopt E-HRM.

RA: relative advantage; CB: compatibility; CX: complexity; CT: cost; TA: trialability; TMS: top management support; OR: organizational readiness; FS: firm size; CP: competitive pressure; BPP: Business partner pressure; RS: regulatory support.

Table 4
Fornell–Larcker discriminant validity

Construct	RA	CB	CX	CT	TA	FS	TMS	OR	CP	BPP	RS	BI
RA	8.85											
CB	0.73	0.76										
CX	0.60	0.53	0.80									
CT	0.53	0.43	0.73	0.78								
TA	0.63	0.38	0.43	0.63	0.82							
FS	0.80	0.60	0.40	0.41	0.60	0.82						
TMS	0.70	0.52	0.54	0.34	0.55	0.64	0.74					
OR	0.78	0.48	0.52	0.38	0.38	0.58	0.78	0.72				
CP	0.54	0.56	0.51	0.34	0.34	0.44	0.54	0.54	0.70			
BPP	0.40	0.50	0.30	0.40	0.20	0.42	0.40	0.40	0.30	0.70		
RS	0.48	0.38	0.28	0.28	0.28	0.38	0.48	0.48	0.38	0.42	0.68	
BI	0.37	0.27	0.17	0.14	0.13	0.27	0.37	0.37	0.22	0.17	0.20	0.73

Table 5
Model goodness of fit

Model goodness of fit	Parameters estimates	Minimum cut-off
SRMR	0.069	<0.08
Adjusted chi-square/df	3.24	<5.0
Normal fit index (NFI)	0.962	>0.90

Note. The standardized root mean square residual (SRMR), chi-square, and the normal fit index (NFI).

The study also used a multiple-method approach, employing PLS-SEM in Smart PLS software to test the model and hypotheses and SPSS for descriptive analysis. By meeting these criteria, the study has confirmed that the measurement model is reliable and valid, providing a solid foundation for further investigation and interpretation of research findings. Figure 2 presents the validity and reliability results.

4.2. The structural model

We used partial least squares structural equation modeling (PLS-SEM) to test the study's hypotheses.

Table 6 presents the hypothesized associations.

We used a first-order factor model to examine the four individual research constructs in the conceptual model (Figure 1). Standardized loadings above 0.70 and t-values above 4.874 ($p<0.001$) indicate strong support for the measurement model's reliability and validity, as recommended by Hair et al. (2011). The results show that all items' outer loadings exceed the critical threshold of 0.70, suggesting that each item reliably measures its corresponding latent variable. This initial estimation allows us to include the four dimensions as first-order constructs in the model.

According to Hair et al. (2014), evaluating PLS-SEM structural models should consider three main indicators: a. Coefficient of determination (R2): This measures the variance explained in the endogenous constructs by the exogenous ones. In this study, although R2 values are below the threshold, they indicate a high level of explanation for the intermediate variables. B. Construct Cross-validated Redundancy (Q2): This assesses the predictive relevance of the model. C. Effect size (f2): This indicates the practical significance of the relationships within the model.

Chin (1998) suggests that R2 values around 0.670 indicate high explanatory power, 0.333 indicate moderate explanatory power, and 0.190 indicate weak explanatory power. In this research model, the R2 value is 65.2%. This indicates that the model significantly explains E-HRM adoption. However, in the present study, R2 values for the determinants of E-HRM were below this threshold (0.652), suggesting that while the explanatory power may be low in absolute terms, it remains meaningful for understanding the relationships among variables. SmartPLS typically estimates path significance using bootstrapping with 5000 resamples

(Chin, 1998). Overall, this study applied rigorous methods for evaluating the structural model in PLS-SEM, considering both the statistical and practical significance of the relationships among variables.

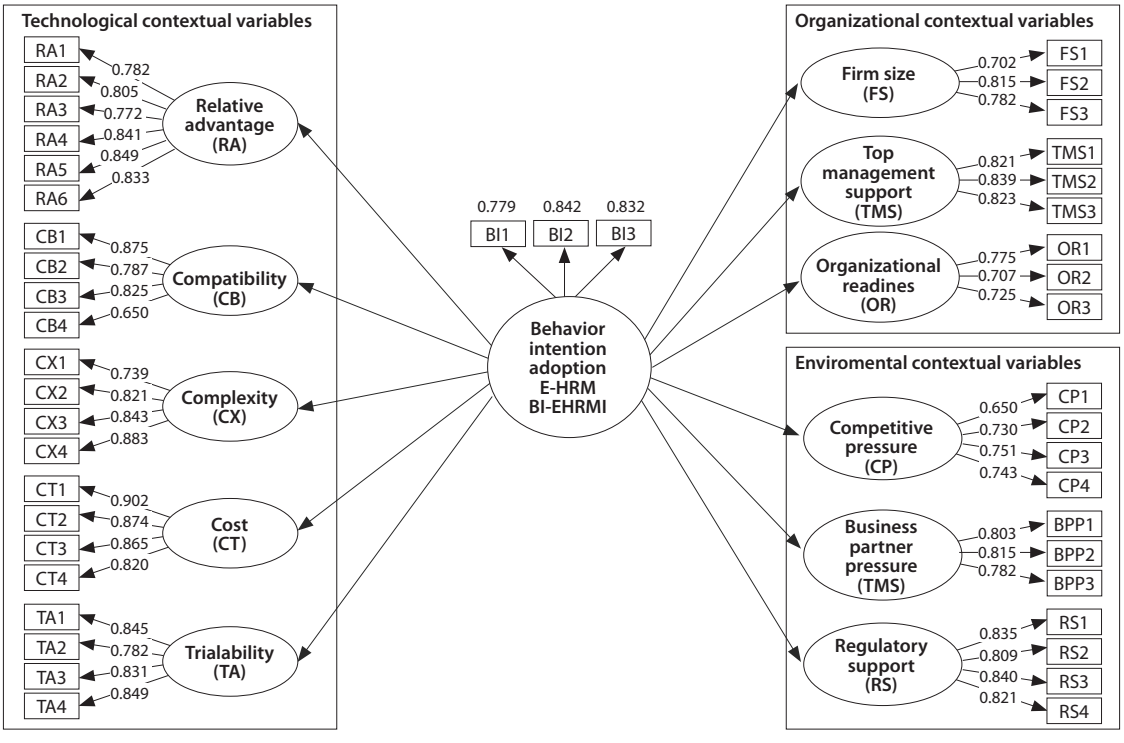
Finally, SmartPLS path analysis found that, among the factors examined (Table 6 and Figure 2), factors such as complexity and cost were not significant at the 0.05 level. However, others, such as Relative Advantage, Compatibility, Trialability, Firm size, Top Management Support, Organizational Readiness, Competitive Pressure, Business Partner Pressure, and Regulatory Support, significantly and positively influenced hospitality companies' willingness to adopt E-HRM systems. This indicates that factors such as the system's perceived advantages, compatibility with existing processes, ease of trial and experimentation, top management support, organizational readiness, external pressures, and regulatory support play crucial roles in determining the implementation of E-HRM systems in Indian hospitality companies.

Table 6
Path analysis results

Hypothesis (effects)	Hypothesis	Path coefficient (β)	t-Value	p-values	Conclusions
H1(+)	RA → BIEHRM	0.213	3.450***	0.000	Supported
H2 (+)	CB → BIEHRM	0.104	2.872**	0.002	Supported
H3 (-)	CX → BIEHRM	-0.145	0.452	0.462	Not supported
H4 (-)	CT → BIEHRM	-0.048	0.568	0.298	Not supported
H5 ((+)	TA → BIEHRM	0.230	3.040**	0.000	Supported
H6((+)	FS → BIEHRM	0.087	4.365**	0.001	Supported
H7 (+)	TMS → BIEHRM	0.210	4.874***	0.000	Supported
H8(+)	OR → BIEHRM	0.120	2.734**	0.000	Supported
H9 (+)	CP → BIEHRM	0.076	2.371**	0.003	Supported
H10 (+)	BPP → BIEHRM	0.112	2.089**	0.000	Supported
H11 (+)	RS → BIEHRM	0.150	3.452***	0.000	Supported

Note. ***p < .001, **p < .01, *p < .05

Figure 2
Measurement model



5. Discussion

Within the technological contextual framework, relative advantage (H1) positively influences the willingness to adopt E-HRM in tour operations and hotel organizations ($\beta = 0.213$, $p < 0.000$). Relative advantages include flexibility, mobility, enhanced skills, resource sharing, and improved service quality, which can strengthen employee performance and refine operational and managerial efficiencies in hospitality firms. Previous studies on technological innovation adoption have also supported this supposition (Omran & Anan, 2018; Nassoura & Hassan, 2021). Compatibility (H2) significantly influences the purpose of adopting E-HRM in the hospitality industry ($\beta = 0.104$, $p < 0.002$), supporting the view that compatibility is a crucial factor in innovation adoption because it depends on corporate culture and business practices. Previous studies also support this (Hanna et al., 2020; Lin, 2011; Nikopoulou et al., 2024). The study indicates that complexity (H3) has a negative impact on E-HRM adoption ($\beta = -0.145$, $p < 0.462$), but the data do not support this effect. The reasons are clear: most tour operators and hotel organizations lack the resources to develop their own technology and must purchase it from technical companies at a higher cost. On the other hand, Cost (H4) also has a negative influence ($\beta = -0.048$, $p < 0.298$) on the intention to adopt E-HRM, as it appears to be a significant barrier to adoption, consistent with previous research indicating that financial considerations are a primary obstacle for businesses in this sector when it comes to adopting new technology. Implementing E-HRM systems typically entails higher hardware and facility costs, as well as ongoing operating and maintenance expenses. These findings are supported by Tambe et al. (2019) and Geyskens et al. (2006). Trialability (H5) positively affects the intention to adopt E-HRM among hospitality enterprises ($\beta = 0.230$, $p < 0.000$). This suggests that the ability to trial or test the technology before full implementation allows companies in this industry to better understand the potential benefits and accurately assess the value of the innovation (Lin, 2011; Schalk et al., 2013). Thus, the decision-making process for adopting E-HRM systems in tourism and hotel companies involves weighing the costs against the perceived benefits, and the ability to trial the technology could play a fundamental role in this assessment.

Within the organizational context, the study identified three main factors that influence the willingness of hospitality organizations to adopt E-HRM systems, such as:

Firm Size (H6) supported ($\beta = 0.087$, $p<0.000$): This research found that larger firms are more inclined to adopt E-HRM systems. This is attributed to the proficiency and resources available to larger firms, which enable them to implement and use E-HRM technology effectively. However, small and medium firms are less inclined to adopt new technology (Chand et al., 2023; Galanaki et al., 2019).

Top Management Support (H7, $\beta = 0.210$, $p<0.000$): The study highlighted the importance of top management support in driving E-HRM adoption. It found that when top management supports such initiatives, the likelihood of successful adoption increases significantly. This support is crucial for facilitating organizational change and ensuring resources are allocated to implement E-HRM systems (Ooi et al., 2018; Talukder, 2014; Dubey et al., 2018).

Organizational Readiness supported (H8, $\beta = 0.120$, $p<0.000$)): The study found that organizational readiness plays a noteworthy role in the adoption of E-HRM systems, especially considering events such as the COVID-19 pandemic. Organizational readiness encompasses factors such as financial resources, human expertise, wellbeing, and technical capabilities (Kundu & Kadian, 2012; Masum, 2015; Geyskens et al., 2006). The pandemic likely accelerated the need for hospitality organizations to adapt to technological changes, including adopting E-HRM systems, to survive, sustain operations, and support recovery efforts.

Overall, the study highlights the importance of organizational factors, such as firm size, top management support, and readiness, in influencing the adoption of E-HRM systems in the hospitality sector. These findings offer valuable insights for organizations seeking to improve HRM processes through technological advancements.

Within the environmental contextual framework, competitive pressure (H9) positively influences the willingness to adopt E-HRM in tourism and hospitality companies ($\beta = 0.076$, $p<0.003$). It supports firms in implementing innovation in service excellence and production, reducing costs, and increasing the efficiency and effectiveness of the company's offerings, as previous studies have shown (Oliveira & Martins, 2010; Troshani et al., 2011). Business partner pressure (H10) has a significant positive effect ($\beta = 0.112$, $p < 0.000$) on E-HRM system adoption in the sample organizations. These findings are also supported by Panayotopoulou et al. (2007) and Chand & Katou (2012). Regulatory support (H11) has a positive impact ($\beta = 0.150$, $p<0.000$) on the enthusiasm to adopt an E-HRM system in the sample firms, as government regulation supports the social acceptance of their offerings, similar to the conclusions of Carter & Belanger (2004), Bondarouk et al. (2017), and Jain et al. (2012).

Thus, the results supported all hypotheses except H3 (-) and H4 (-). This means that complexity (H3) has a significant negative effect on the adoption of an E-HRM system in hospitality companies. Similarly, cost (H4) has a significant negative impact on the intention to adopt an E-HRM system; this means high costs are a primary barrier to adoption in tourism and hospitality companies.

In conclusion, the results of the current study validate the importance of perceived technological, organizational, and environmental contexts as crucial drivers of E-HRM system adoption in the hospitality industry and as shapers of managers' and executives' intentions. The study emphasizes the need to align existing infrastructure, values, briefs, and practices with E-HRM systems to implement them successfully. PLS-SEM confirms prior relationships among the perceived constructs and offers new insights, strengthening understanding of E-HRM system adoption in the hospitality industry.

6. Theoretical and practical implications

Using the TOE framework and Rogers' DOI theory to assess E-HRM system adoption in Indian hospitality enterprises, along with PLS-SEM, has important theoretical implications. Conceptually, the TOE framework provides a theoretical foundation and integrates elements from cutting-edge knowledge in relevant research domains, while Rogers' DOI theory complements it by offering a more comprehensive perspective on E-HRM system adoption in the hospitality industry and improving the model's predictability. This theoretical implication suggests that the TOE framework and DOI theory can serve as a pivotal mechanism for researchers and practitioners in studying and promoting the adoption of emerging technologies, especially in developing economies. It also highlights the importance of using dual conceptual approaches to better understand complex adoption processes within an organization. Furthermore, applying PLS-SEM, which offers greater flexibility and efficiency for small samples and complex models, advances methodological approaches in innovation adoption research (Hair et al., 2019; Hanna et al., 2020; Lin, 2011). Thus, academically, the study contributes to the hospitality management literature by shedding light on the determinants of E-HRM adoption in a rapidly evolving industry within an emerging economy.

Practically, it guides industry professionals by highlighting the importance of factors such as top management support and regulatory backing in fostering E-HRM adoption. Moreover, managers should recognize how perceived cost, complexity, compatibility, and top management support influence E-HRM system adoption in Indian hospitality enterprises. These factors should guide strategies and initiatives to promote E-HRM adoption. Additionally, managers should develop an empowering technological environment by providing resources and training that enable E-HRM adoption within the hospitality organization. This underscores the growing importance of digitalization and innovation in navigating challenges and seizing opportunities in the hospitality industry.

By integrating adoption factors into the E-HRM system model, the study offers both theoretical insights and practical strategies for organizations in this sector. Additionally, by addressing the specific context of a

developing nation like India, it fills a gap in the prevailing literature and offers valuable guidance for stakeholders, including organizations, policymakers, and management. Overall, it is a significant contribution to both academia and industry.

7. Limitations and future research avenue

This investigation modestly bridges a gap in the literature on the key determinants of adopting an E-HRM system in the Indian hospitality industry post-COVID-19, using the TOE framework and DOI theory. This study drew on determinants of E-HRM adoption from prior research and examined them using PLS-SEM in the Indian hospitality industry. The TAM-TOE model relies on measures and subjective perceptions reported by previous scholars, which may be biased and subject to measurement error. Thus, this study is not free from pitfalls such as data limitations, sample size, limited determinant diversity, and a single industry, country, period, and method. To address these limitations, more empirical and theoretical studies from diverse perspectives may be conducted using mixed-method approaches that combine qualitative and quantitative data, providing a more comprehensive understanding of the determinants influencing adoption of an E-HRM system in the hospitality industry. Second, more longitudinal studies with extended periods can also help overcome these pitfalls and examine the contextual factors influencing the adoption of new technology, especially in the hospitality industry. Finally, more cross-cultural studies can be conducted to analyze the comparative influence of contextual factors across other sectors, industries, and countries, exploring specific issues, challenges, opportunities, and best practices.

Thus, diverse viewpoints not only strengthen the robustness of research conclusions but also ensure their applicability across contexts and populations. This will foster a more inclusive and well-rounded body of knowledge, benefiting both academia and society.

Declaration of Competing Interests

The authors declare that they have no known competing interests that could have appeared to influence the work reported in this paper.

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