
Technology adoption model for HRM practices

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Abstract: e-HRM has acquired a commonplace status in HR management practices of developed countries; however, its implementation is scarce and scattered in developing countries. The present study highlights the current scenario of e-HRM practices in the service and manufacturing sector of India and provides insights regarding the technology adoption into HRM practices in India. The study uses a theoretical and empirical approach; a review of literature provides that two factors, namely: Attitude of employees and Attitude of employers, affect the decisions regarding the adoption of technology in HR practices. To prove this, the current study was conducted among 438 employees and employers from 63 companies in the service and manufacturing sector of India. The findings of the study have been used to develop a conceptual model regarding technology adoption decisions in HR practices of service and manufacturing organisations. The model shows that employee attitude is influenced by factors of benefits to employees and ease-of-use; while employer attitude is influenced by the benefit to employers, IT infrastructure, and cost. Additionally, organisational characteristics like size and type of company are also significant in decision-making regarding technology adoption for HRM practices.

Keywords: e-HRM; e-HRM practices; service; manufacturing; developed; developing; India.

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1 Introduction

In the past few years, developed countries have increasingly used ICT-integration in human resource management to not just improve HR functional efficiency but also develop organisational agility (Hamidianpour et al., 2016). The use of technology-based HRM (e-HRM) practices emerged with the introduction of internet and web technologies in the 1990s for payroll management and employee communication (Strohmeier, 2020; Legnick-Hall and Moritz, 2003). Over the years, e-HRM practices have been widely used across traditional HR, transactional activities, and transformation practices (Johnson et al., 2020; Qureshi et al., 2013; Qadir and Agrawal, 2017). The success of e-HRM models in developed countries is well established; studies have shown conventional HR have been either replaced or blended with new technologies to provide benefits like smoother functioning of HR, improved employee-manager cooperation, trust and increased organisational performance (Armstrong, 2016; Oswal and Narayanappa, 2015).

However, in developing countries, the current research into e-HRM and its applications remain scant (Bondarouk et al., 2017; Johnson et al., 2017; Rahman et al., 2018). It is important to note that these economies have emerged as labour hotspots and lucrative destinations for foreign investments (Paul et al., 2019; Budhwar et al., 2017). In a highly competitive global economy, organisations in developing countries must adopt new practices that can offer administrative or strategic benefits, and boost overall productivity and efficiency (Bondarouk et al., 2017; Rahman and Aydin, 2020). In India, e-HRM implementation is low and scattered across a few large, multinational organisations. While these organisations have shown a pattern of positive relationships between technology integration and organisational success (Kumar and Parumasur, 2013, Paul et al., 2019). Socio-cultural and infrastructural challenges can pose hurdles in the widespread adoption of these newer systems (Totolici et al., 2013; Dilu et al., 2017). These challenges show that e-HRM systems have not been adequately implemented or utilised in developing countries. Thus, there is a need to find solutions towards the increased adoption of technology into HRM practices of developing countries. The present paper seeks to fulfil this need by examining the existing practices of e-HRM implementation in Indian organisations and the gaps in their optimal utilisation, along with the limitations and challenges faced in the country-wide adoption of these practices. On the basis of these findings, the paper includes a new Technology Adoption Model regarding e-HRM practices in the Indian service and manufacturing sector. The model developed in this paper highlights the factors which play a key role in organisational decision-making regarding technology adoption in HR practices. This study, thus, shall be beneficial to service and manufacturing sector organisations in India to identify the essential areas which require improvements in order to make an organisation e-HRM-friendly.

2 Review of literature

HRM can be defined as a rational approach towards personnel management – it includes simple HR functions such as recruiting, skill training, assessing employee performance (Armstrong, 2016). e-HRM applies web-based systems or mobile technologies like e-recruitment, e-learning and e-rewards to change the nature of HR interactions and improves organisational efficiency by reducing costs, improving strategic planning and digitising HR functions (Johnson et al., 2020; Hamidianpour et al., 2016; Ruel et al., 2004). However, the use of e-HRM is widely prevalent only in developed regions of the world; it is rather scarce in developing countries (Sinha and Mishra, 2014; Paul et al., 2019). Among the few studies that have examined the cases of e-HRM implementation in developing countries, several challenges have been highlighted, (Rahman and Aydin, 2020; Dilu et al., 2017; Jaradat et al., 2013 and Totolici et al., 2013).

In India, the past two decades have seen a rise of MNC culture in the service and manufacturing sectors, especially in large-scale Indian organisations based in metropolitan areas. There is cutthroat competitiveness in the Indian economy; due to shifting employee expectations among the new workforce and the changing work environment caused by globalisation. In this context, technological advancement becomes a crucial factor in maintaining high performance and productivity in an organisation. Regarding e-HRM practices currently in use, Qureshi et al. (2013) found their use to be commonly accepted in IT and BPO industries. Rastogi and Srivastava (2017) and Paul et al. (2019) provided that E-recruitment and E-Selection systems are being used by Indian companies for hiring the best talent among the massive labour capital available. Sylvester et al. (2015) stated that e-database systems give employers a significant advantage in saving paperwork, money and making employee management efficient and streamlined. Rahman et al. (2018) highlighted the ease of using e-HRM tools for organising documents and information, such as safety procedures, employee guidelines, or emergency protocols in the company. E-learning and e-Training programs are efficient ways to encourage personnel to update their skills according to changing work environments; these tools include programs like computer-based learning, virtual classrooms, online expert consultations, etc. (Iqbal et al., 2019; Gueutal and Stone, 2005; Sanjeev and Makkar, 2014). Patel and Dhal (2017) highlighted how the use of e-HRM methods like the Integrated Software Suite Application enables the company to process its data faster than ever before; it thus enables high efficiency and facilitates the administration of employees. The following table provides a summary of some existing studies that point out the e-HRM practices currently prevailing in India.

A glance into existing studies on e-HRM has also brought attention to the perspectives of employers and employees regarding the integration of technology into HR. E-HRM practices affect both employees and employers in the organisation. At the organisation level, benefits include reduced administrative overheads, greater competence of the organisation at a global level, a transformation in the role of HR in the organisation, provision of real-time metrics for prompt decision-making, and the improved access to data regarding employees for employers and managers (Sareen and Subramaniam, 2014; Johnson et al., 2017).

Table 1 e-HRM practices prevailing in service and manufacturing sector of India

<i>S. N.</i>	<i>Citation</i>	<i>State</i>	<i>Sector</i>	<i>e-HRM practices</i>
1	Kumari (2018)	Metropolitan Cities	Real Estate (Knight Frank Pvt. Ltd.)	E-employee profile, E-learning through online audio-video aids, e-tracking, e-grievance handling
2	Budhwar et al. (2017)	Delhi	Banking (State Bank of India)	E-performance appraisal E-recruitment, Grievance redressal, retirement, and voluntary vacation
3	Bankar et al. (2017)	Jharkhand (Jamshedpur)	Automobile (Tata Motors)	E-employee profile, E-recruitment; e-selection, e-learning
4	Patel and Dhal (2017)	Orissa	Public and Private (Large Corporates)	Intranet, HR Extranet, IVR, Employee self-service, HR Portal, Integrated Suit Application
5	Kumar and Lalitha (2016)	Tamil Nadu	Private Banking	E-Selection and recruitment, E-Training and Development, E-promotion, Performance evaluation, Grievance-handling
6	Sareen (2014)	Maharashtra (Pune)	Private	E-Recruiting Subsystem, HRIS Job Analysis, Training and Development, Succession Planning, Skills Inventory
7	Sareen and Subramaniam (2014)	Delhi NCR	Private Manufacturing	E-recruitment, e-learning, e-training, web-based HR administration
8	Sharma and Shukla (2013)	Metropolitan cities	BPO (Infosys)	Performance appraisal, Payroll, Recruitment, and selection
9	Varma and Gopal (2011)	Maharashtra	Private (Services and Manufacturing)	E-Recruiting, Applicant Tracking System, Salary Administration System, Employee Payroll and Attendance

Table 2 Relationship between e-HRM and organisational performance in developed countries

<i>S. N.</i>	<i>Citation</i>	<i>Country</i>	<i>Sector</i>	<i>Parameters for e-HRM</i>	<i>Performance parameter</i>	<i>Relationship</i>
1	Findikli and Bayarcelik and Findikli (2016)	Turkey	Service Industry	Functions of e-HRM: E-Recruiting and selection, e-compensation, e-training, e-career development	Expected use of e-HRM, perceived benefits of use of e-HRM.	Most commonly used function of e-HRM is E-recruitment and selection. Benefits of e-HRM include cost-saving and lesser paperwork. E-learning function of e-HRM had limited practical applicability.
2	Alsabbah and Ibrahim (2014)	Switzerland	Private	HRM practices- recruitment, selection, training, compensation	Employee competence	Using e-HRMS effectively enhances employee competence in terms of both hard and soft skills.
3	Erdogmus and Esen (2011)	Turkey	Private Sector	Based on dimensions of Parasuraman's technology readiness scale: Optimism, Innovativeness, Discomfort, Insecurity	Based on factors according to Davis' Technology acceptance scale: Usefulness, Ease of use, and Intention to use.	Optimism and innovativeness have a positive relationship with perceived usefulness and ease of use of e-HRM among employees. User's personalities affect the use of e-HRM technology.
4	Laumer et al. (2010)	Germany	Fortune 1000 firms in Germany, and IT	Five key functions: planning, training, and staffing, assessment and compensation systems	Perceived effectiveness of e-HRM, Development of business-partner relationships	The major challenge of using e-HRM is staff retention. The importance of e-HRM in effectively filling vacancies and make efficient use of scarce resources.

Table 2 Relationship between e-HRM and organisational performance in developed countries (continued)

<i>S. N.</i>	<i>Citation</i>	<i>Country</i>	<i>Sector</i>	<i>Parameters for e-HRM</i>	<i>Performance parameter</i>	<i>Relationship</i>
5	Haines and Lafleur (2010)	Canada	IT	IT support for e-HRM	Perceived technical effectiveness by managers, Perceived quality of strategic roles	The study found a positive relationship between the degree of IT support for e-HRM functions and the technical and strategic effectiveness of e-HRM among HR Managers.
6	Espinosa and Luján-Mora (2010)	Spain	Academic (University)	Intranet support for e-HRM was measured by two factors- adaptability and scalability.	Ease of communication, conflict management, perceived trust between employees and HR supervisors	Intranet support is preferred for e-HRM systems due to its high flexibility according to the objectives of an organisation and increases efficiency in the implementation of e-HRM policy.
7	Strohmer and Kabst (2009)	Europe	Private	Size of organisation, type of organisation, configuration of HRM	Adoption, Usage, and effectiveness	e-HRM is commonly adopted and widespread practice in most European countries. The adoption of e-HRM depends on company size and configuration of HRM.
8	Ruel et al. (2004)	Netherlands	Public Administration	Job relevance, Quality of e-HRM tools, Ease of use of e-HRM tools	Strategic and technical effectiveness of HRM	Perceived assessment of the quality of e-HRM is positively related to technical and strategic HRM effectiveness. Good support from colleagues and managers, and better information provision leads to a more positive quality assessment.

3 Employees' perspective on e-HRM

According to Megginson (1977), the main component of an organisation is its 'human resource' or the 'people at work.' The e-HRM strategy employed by an organisation must be in sync with characteristics like employee attitude, employee skills and technology literacy among employees (Marler and Fisher, 2013). The adoption of e-HRM supports employee development, by having a positive effect on the job satisfaction and well-being of employees (Veld and Alfes, 2017; Oyebanji and Kassim, 2017). e-HRM allows flexibility of time and space regarding entering information into the system, by the use of biometric devices, personal digital assistants, or self-reporting activities and evaluation of appraisals (Yusoff et al., 2010; Iqbal et al., 2019). While e-HRM adoption proved to be beneficial to employees in many ways, several studies have also suggested grievances regarding its use in the organisation. Ramya and Neelima (2017) stated that employees can show alienation and resistance to change. The shift to e-HRMS requires technological literacy, which can pose an additional burden for employees (De Alwis, 2010). These studies are in corroboration with Davis' Technology Adoption Model, which provides that if employees do not perceive that a new technology system is useful, they will reject its adoption into the organisation (Davis, 1989). Thus, the perspective of employees regarding the implementation of e-HRM is significant and cannot be ignored.

Null Hypothesis: Attitude of employees does not affect the technology adoption decision for HR functions in the organisation.

4 Employers' perspective on e-HRM

Several multinational companies today are employing internet and communication technologies to recruit personnel, reduce headcount (Dilu et al., 2017), or engage in talent discovery and selection decisions online (Ahmad and Allen, 2015). The process of e-recruitment is faster and more efficient than conventional modes due to the ability to reach out to a huge number of talented professionals at once (Jaradat et al., 2013). The value of e-HRM lies in the elimination of transactional functions of HR, thus saving time and costs for the employer (Ahmad and Allen, 2015; Marler and Fisher, 2013). Other functions of e-HRM also aid efficiency; like, the E-compensation system for equitable distribution of salary increases, and E-training through virtual classrooms, and e-appraisal systems which reduce paperwork and increase ways to share information. Despite these advantages of using e-HRM, some studies have noted dissatisfaction regarding its effectiveness among employers. Hinds and Kiesler (1995) and Oiry (2009) stated that advanced technologies are lacking in richness and personal contact, which is available in conventional face-to-face methods of HR management (Skudiene et al., 2020). Stone and Lukaszewski (2009) pointed out that over-using e-HRM can imply that an organisation is more concerned with cost-effectiveness instead of its employees, which can change the employees' attitude towards the organisation.

Null Hypothesis: Attitude of employers does not affect the technology adoption decision for HR functions in the organisation.

4.1 e-HRM practices and size of the companies

The decision regarding the adoption of e-HRM practices may also be affected by other characteristics such as the size of the organisation. Ahmad and Allen (2015) and Marler and Parry (2016) have examined the relationship between the size of an organisation and its decision to implement modernised HR methods. The number of employees significantly impacts the scale and scope of any proposed modernisation, which can have a bearing on the management decision due to investments of time and money (Nyame and Boateng, 2015; Chakraborty and Mansor, 2013).

Null Hypothesis: Size of the company does not affect the technology adoption decision for HR functions in the organisation.

4.2 e-HRM practices and type of companies

The adoption of e-HRM practices may depend on the type of organisation as well. Companies that operate in high-technology fields, for instance; banking or telecommunications, have a robust IT support structure in place (Yusoff et al., 2010). Hence, they can afford to adopt and implement more complex e-HRM systems without incurring additional investments. In the manufacturing sector as well, the type of ownership of the company has a significant impact on several aspects of HRM (Cech et al., 2016; Nyame and Boateng, 2015).

Null Hypothesis: Type of the company does not affect the technology adoption decision for HR functions in the organisation.

5 Research gaps

An examination of the existing literature regarding e-HRM adoption shows that while there are multitudes of studies regarding the functions and performance of e-HRM in developed countries, few studies are available which can provide a comprehensive perspective of technology adoption for HR practices in developing countries. While there have been some studies that have developed conceptual models regarding the adoption of e-HRM technology, it must be noted that these studies do not provide clarity regarding factors that have a significant influence on the decision to adopt a technology-oriented model for HR management. These models particularly do not provide insights regarding technology adoption for HRM to organisations in the service and manufacturing sector. The present paper seeks to fulfil these research gaps by providing an assessment of e-HRM practices currently prevailing in the Indian service and manufacturing sector and the challenges to decisions regarding its adoption. Based on the results of this analysis, the study provides a new technology adoption model that identifies the key factors that influence the decision to adopt e-HRM practices in an organisation.

6 Objectives

- To study the e-HRM practices prevailing in the service and manufacturing sector of India.
- To develop a technology adoption model for HRM practices of the service and manufacturing sector of India.

7 e-HRM conceptual models

Researchers have attempted to provide conceptual models regarding the benefits, use and implementation of e-HRM. A summary review of these models is as below:

Mannivannan and Chandramohan (2013) developed a conceptual model to establish the relationship between e-HRM and user satisfaction. The researchers have identified nine dimensions of the e-HRM portal, namely; timeliness, efficiency, communication, layout, information, ease-of-use and convenience of access. The researchers have developed this model in the perspective of large organisations only, and have not included the aspect of the size of a company. Also, the user satisfaction variable pertains to any general user of e-HRM, and no marked distinction between the different perspectives of employees and employers has been provided.

Njoku and Ebie (2015) have inked e-HRM and creativity and innovation in an organisation in their framework regarding the benefits of e-HRM. The study examines how e-HRM can be utilised for the development of human talent and innovative solutions in an organisation. The researchers have argued that e-HRM can be used for influencing employee creativity and building employee innovativeness, thereby leading to better business performance. The developed model does not provide the perspective of employers and managers and is limited in its scope and application.

Wiblen (2016) framed a conceptual model to provide the case for the usefulness of e-HRM in talent management. The model provided that two sets of talent identification processes were in use, and these processes had varying implications over the way, stakeholders perceived the usefulness of e-HRM in an organisation. The first talent identification process measured talent in quantifiable terms through e-HRM; this process was viewed as the dubious in its effectiveness among stakeholders since it could lead to the development of talent clones. On the other hand, the second process favoured the techniques of 'observation' of employee behaviour and performance via e-HRM; this process framed e-HRM as a supportive tool regarding enhancing employee performance by true assessment of strengths and weaknesses. The conceptual models hence provide unique insights into the e-training, e-performance appraisal and e-learning functions of e-HRM systems. However, the overall impact of e-HRM on employees, and the general organisation, has not been discussed.

8 Research methodology

The study was purely based on the primary data collected with the help of the questionnaire method. Researchers have selected the top 100 companies listed on the Bombay Stock exchange based on their market capitalisation in the year 2018. A request

form was sent to the HR Manager of the head offices of these companies to participate in the survey explaining the purpose of the study. Out of 100, only 63 companies participated in the survey through online and offline mode. The size of the company has been divided into three categories based on market capitalisation such as; large size companies (market capitalisation > 1,000,000 crores), medium-sized companies (market capitalisation from 100,000 to 400,000 crore), and small size companies (market capitalisation from 10,000 to 40,000 crore). The mode of data collection used in the study was both online through Google docs, emails, and offline (in person or by post). There was a rejection rate of 27% among the 600 employees selected from eh survey, while the same was 35% among a group of 180 employers. Thus, responses by a total of 438 employees and 117 employers were used for data analysis.

Two surveys were conducted, one for employees and one for employers from the same company to record the opinions of the employees as well as employers towards the technology adoption decision for HR functions. From each company, people in the senior management were considered as employers while middle-level management was considered for employees' survey. Researchers used a five-point Likert scale to measure the opinions of the respondents. The questionnaire for measuring employees' perceptions consists of 14 statements, while a questionnaire for measuring employers' perception consists of 16 statements. Other than these, three separate questions were framed for measuring the attitude of employees, the attitude of employers, and technology adoption decisions. Responses of these questions have been considered as separate variables for the model development, while the statement related to technology adoption decision was the same for employer and employee.

9 Data analysis and findings

Findings of the study have been discussed in two different sections – the first section depicts the results of the survey conducted for the employees and employers to measure their opinions towards technology adoption decision for HR functions, while the second section highlights the technology adoption model for HRM function in service and manufacturing sector.

9.1 Attitude of employees

The total number of employees in the sample was 438, which consists of 46% of the employees from 25 to 35 years of age, while only 12% of the employees were above 55 years of age. 68% of the employees were male, while 32% of the respondents were female employees. 42% of the employees were from the finance department, 29% of the employees were from the production department, and the remaining employees were from the Administrative and HR department. 52% of the employees were working at lower management posts, while 27% of the employees were from middle management, and the remaining 21% of the employees in the sample were executives.

The questionnaire for employees was found to have a reliability value of 0.859, using the Cronbach Alpha method, which shows that the questionnaire is reliable. The value of the KMO test was 0.713, while the value of Bartlett's test was also found to be significant, which shows the sampling adequacy and internal consistency of the data for applying factor analysis.

Table 3 KMO and Bartlett's Test (Employees' Perspective)

S. N.	Statements	Factor loadings	Mean	Var.	Skewness
F1	The system is more trustworthy due to an increase in transparency level.	.879	2.26	1.692	.758
F1	Skill gaps are being effectively identified to schedule training programs.	.878	2.61	.940	.208
F1	Decision making by managers has become fast due to ready access to related information.	.865	2.60	1.146	.102
F1	There is an increased level of confidence regarding the security of private information, access to it, being password controlled.	.863	2.50	1.756	.710
F1	Employees can access any HR policy at any point and from any location.	.827	2.66	1.934	.187
F1	Any important communication or information is not missed even when out of office.	.825	2.50	1.660	.279
F1	Initiation of self-appraisal and conclusion by manager on portal avoids any chances of bias.	.818	2.50	1.257	.430
F1	Various training tools of e-HRM have helped increase the effectiveness of learning	.804	2.50	1.354	.481
F1	Training utilising web portals offer flexibility to the employee to learn at a time convenient to them.	.757	2.40	1.948	.815
F1	e-HRM imparts a feeling of empowerment as it provides a tool to take charge of one's own career.	.736	2.76	1.886	.219
F2	HR practices using technology, are intuitive, time- saving and hassle-free to use.	.924	2.75	.992	.510
F2	The system provides a simple and easily navigable interface for all users.	.873	2.60	1.544	.163
F2	The online system uses customised layouts that attract employee participation. (Readable font, company colours and recognizable icons)	.856	2.80	1.166	.161
F2	The system is configured to the company's specific policies and systems. (Example: Company policies for training, recruitment, and payroll)	.715	2.60	.946	-.113

Notes: (KMO = 0.713, Chi Square = 13297.242, Sig. = 0.000)

Factor 1 = Benefits to Employees (Variance = 61.938), Alpha Value = 0.852

Factor 2 = Ease of Use (Variance = 20.024), Alpha Value = 0.734

Total variance (81.962) Overall Reliability of the questionnaire = 0.859

Exploratory factor analysis showed that there are mainly two major factors which lead to forming the attitude of the employees towards the e-HRM practices. These two factors explain 82% of the variation in the attitude of employees, while only 18% of the variation remains unexplained. The first factor was extracted as benefits to employees using e-HRM practices, which consists of a total of ten statements explaining the different benefits of the application of e-HRM practices in an organisation. Employees

derive certain benefits from the implementation of e-HRMs in an organisation. These benefits occur in the shape of increased transparency, faster decision-making and reliable communication, and the recognition of skill gaps among employees. The use of e-HRM enables effective training and learning for the employees, as the modules may be customised according to individual requirements of employees, or as per the organisation's set objectives. This factor explains a total of 61.832% of the total variation in the attitude of employees, and the reliability analysis showed that the Alpha value for this factor was 0.852, which is above 0.70 and hence found to be reliable. Variables having factor loadings above 0.50 have been retained in the solution extracted using the Varimax solution method, and a highly loaded variable has been considered under a particular factor. Further, the mean value of the statement "e-HRM imparts a feeling of empowerment as it provides a tool to take charge of one's own career" was 2.76, which is the highest mean value and showed that employees mainly favour e-HRM practices as it helps in increasing the employees' empowerment. While the lowest mean value under the factor benefits to employees was 2.10 for the statement "System is more trustworthy due to increase in transparency level," which indicates that the employees have not perceived e-HRM practices as trustworthy, and have shown their disagreement towards this statement. Overall, the mean value of all the statements was above 2, which showed an average response of employees towards the e-HRM practices useful due to its benefits for employees. Rastogi and Srivastava (2017) highlighted that the e-HRM process is decentralised, transparent, and free from human bias. e-HRM has been instrumental in improving performance measurement techniques, and salary distribution systems, to the increased satisfaction and company loyalty among employees.

The second factor extracted is termed as the "ease of use" factor. The training and learning processes in e-HRM are often flexible and provide a range of time and space as per the convenience of the employees. By enabling employees to enter and manage their own information, and revisit their performance statistics from time to time, e-HRM is an effective tool for employees to take charge of their own career path in an easy way. This factor consists of a total of four statements, and the variation explained by this factor in the attitude of employees was only 20.024, and the Alpha value of the factor was 0.734, which is above 0.70. Hence, the Ease of Use factor was found to be reliable as well. Further, the mean value showed that the most important variable which forms the attitude of employees is 'Customised layouts that attract employee participation (Readable font, company colours, and recognisable icons).' Researchers have studied user-friendliness as a factor influencing the adoption of e-HRM practices and suggested that the system complexity should be reduced for easier acceptance of these technologies (Qureshi et al., 2013). Even when the employees are well-informed and willing to cooperate regarding the implementation of technology-based HR, the system complexity can be off-putting and incite resistance to change. These can be overcome by making e-HRM processes more appealing and friendlier towards employees. Johnson et al. (2017) suggested the use of legible fonts and company colours in the user interface of web portals to encourage engagement with technology among employees. As per Gueutal and Stone (2005), e-learning programs offer a wide range of interactive activities that cater to every learning preference of an individual; such as virtual classrooms and web-based learning for introverted employees, or expert consultations and group-building for extroverted employees.

Thus, the findings of the study suggest that employees' attitude is directly related to decision-making regarding technology adoption in HR practices. A deeper look shows

that two major factors are responsible for positively influencing employees' attitudes regarding e-HRM adoption. These two factors are; Benefits to Employees and Ease of Use of e-HRM. Similarly, the next section discusses the factors responsible for the attitude of employers regarding e-HRM adoption in their organisation.

9.2 Attitude of employers

The total number of employers in the sample was 117, which consists of 67% of the male employees, while only 33% of the female employees working as HR Managers, Assistant HR Managers, or the Senior HR Manager. 43% of the employers who have participated in the survey were from service industries, while 57% of employers were representing manufacturing companies of India. 62% of the employers were working in the current organisation for more than 15 years, while only 15% of the employers were working for less than 5 years, and the remaining 27% of the employers were working for the last ten to fifteen years with the current organisation.

The questionnaire for employees was found to have a reliability value of 0.758, using the Cronbach Alpha method, which shows that the questionnaire is reliable. The value of the KMO test was 0.792, while the value of Bartlett's test was also found to be significant, which shows the sampling adequacy and internal consistency of the data for applying factor analysis.

Table 4 KMO and Bartlett's test (employers' perspective)

<i>S. N.</i>	<i>Statements</i>	<i>Factor loadings</i>	<i>Mean</i>	<i>Var</i>	<i>Skewness</i>
F1	Reduced dependability on HR staff due to relevant information available on the shared portal.	.844	3.59	1.010	-.893
F1	Carrier planning of employees becomes easier due to accessibility to all related information.	.839	3.72	1.159	-.680
F1	HR staff are able to focus more on strategic activities such as capacity building	.837	3.69	1.192	-.561
F1	A visible improvement is witnessed in designing and disbursement of incentive schemes.	.835	3.51	1.005	-.916
F1	Manual work of maintaining and storing files has considerably reduced.	.834	3.71	1.168	-.668
F1	The data bank of the company has enough suitable candidates available, whenever a vacancy arises.	.816	3.61	1.098	-.794
F1	The time and amount spent on recruiting candidates has reduced considerably	.810	3.69	1.178	-.666
F1	There have been considerable savings on the training expenses	.794	3.54	1.013	-.941
F2	e-HRM uses updated technology and infrastructure for improved efficiency. (Such as Bio-metric identification, internet connectivity, scanner, etc.)	.775	2.76	1.150	-.071

Table 4 KMO and Bartlett's test (employers' perspective) (continued)

<i>S. N.</i>	<i>Statements</i>	<i>Factor loadings</i>	<i>Mean</i>	<i>Var</i>	<i>Skewness</i>
F2	e-HRM implementation does not require complex and disruptive IT infrastructure installations.	.754	3.52	1.014	-.034
F2	IT support and infrastructure required for e-HRM are compatible with the existing resources of the company.	.731	3.02	1.042	-.314
F2	The involvement of IT support in management and security tasks does not affect organisational culture.	.719	3.28	1.238	-.194
F3	Annual software subscription costs for HRIS are affordable and justified.	.668	2.75	.973	-.110
F3	The internal and external costs of designing/building and implementing e-HRM are manageable.	.664	3.62	.907	-.166
F3	Additional costs are not faced by the company for providing e-HRM training to employees, or additional modules in the system.	.628	3.32	.990	-.260
F3	The long- term benefits of e-HRM outweigh the expenses incurred in its adoption and use.	.609	3.43	.941	-.260

Notes: (KMO = 0.792, Chi Square = 2816.847, Sig. =0.000)

Factor 1 = Benefits to Employers (Variance = 42.958), Alpha Value = 0.785

Factor 2 = IT Infrastructure (Variance = 22.472), Alpha Value = 0.865

Factor 3 = Cost Factor (Variance = 22.282), Alpha Value = 0.812

Total variance (87.712) Overall Reliability of the questionnaire = 0.758

Exploratory factor analysis showed that there are mainly three major factors which lead to forming the attitude of the employers towards e-HRM practices. These three factors explain 88% of the variation in the attitude of employees, while only 12% of the variation remains unexplained. The first factor was extracted as benefits to employers using e-HRM practices, which consists of a total of eight statements explaining the different benefits of implementing e-HRM practices in an organisation. The benefits to employees include advantages like easier career planning and management of employees by employers; this is because the manual work of maintenance and storage of HR records is eliminated by e-HRM implementation. Moreover, tools like biometric identification, ID scanners, and electronic access passes enable employers to be rid of inefficient ways of employee tracking. Another important benefit lies in the employee database systems, which reduce the dependability on HR staff and also the risk of human errors in the organisation. Further, the easy and anytime availability of information is helpful in fulfilling internal job vacancies and efficient redistribution of increments among employees. Several studies in existing literature have pointed out that e-HRM is beneficial to employers. The advantages of e-HRM implementation in an organisation are speed and accuracy in communication, cost reduction, and streamlining of operational procedures (Bankar et al., 2017). This factor explains a total of 42.958% of the total variation in the attitude of employers, and the reliability analysis showed that the Alpha value for this factor was 0.785, which is above 0.70 and hence found to be reliable.

Variables having factor loadings above 0.50 have been retained in the solution extracted using the Varimax solution method, and a highly loaded variable has been considered under a particular factor. Further, the mean value of the statement “Career planning of employees becomes easier due to accessibility to all related information,” was 3.72, which is the highest mean value and showed that employers found e-HRM as beneficial for the development of talent in an organisation through career planning. While the lowest mean value under the factor benefits to employees was 3.51 for the statement “A visible improvement is witnessed in designing and disbursement of incentive schemes”, which indicates that the employers have not perceived e-HRM practices as beneficial for developing a better incentive system for the employees, and have shown their disagreement towards this statement. Overall, the mean value of all the statements was above 3, which showed a good response of employers towards the e-HRM practices useful due to its benefits for employers. These findings are in accordance with existing studies about employers regarding the adoption of technology into HR practices. Jangra (2018) stated that Indian organisations lag in the implementation of e-HRM systems due to managerial reluctance and a lack of awareness about the benefits of e-HRM. Employers need to be made aware of e-HRM systems’ benefits such as digitisation of employees’ information, automated budgeting and payroll management, and accuracy of employee data for better compliance with a company’s statutory obligations (Karanja et al., 2018).

The second factor extracted is termed as the “Information Technology Infrastructure” factor. Here, Informational Technology (IT) infrastructure refers to the complete collection of software, hardware, data centres, networks, and facilities that are required in the development and management of e-HRM systems in an organisation. This factor consists of a total of four statements, and the variation explained by this factor in the attitude of employers was only 22.472, and the Alpha value of the factor was 0.865, which is above 0.70. Hence, the Information Technology Infrastructure factor was found to be reliable as well. Further, the mean value showed that the most important variable which forms the attitude of employers is ‘e-HRM implementation does not require complex and disruptive IT infrastructure installations.’ Bankar et al. (2017) pointed out that the lack of IT support and infrastructure is a major hurdle in the development of e-HRMS in India. The current scenario faces several challenges like expensive technology investments, a lack of skilled experts and outdated IT support in organisations. However, it must be noted that in several sectors such as banking, telecom, and healthcare, basic IT infrastructure is readily available in an organisation. This influences the employee attitude towards the adoption of e-HRM as no major disruptions are caused in the existing scenario. Owing the implementation of basic electronic systems for communication, payment of salary, or for complaint redressal, the addition of new modules and sub-systems like e-recruitment or e-employee tracking does not put a heavy load on the existing IT structure. Thus, in several service sector industries, as well as in large manufacturing companies, adding e-HRM to the company’s HR practices is feasible to the employers (Barzoki et al., 2013).

The third factor extracted is termed as “Cost factor”. The costs of e-HRM can exist in the form of expenses such as annual subscription, additional module charges, or other internal and external costs regarding its implementation. The expenses regarding the training of employees according to the new technologies also add to the cost of implementing e-HRM in an organisation (Dilu et al., 2017). This factor consists of a total of four statements, and the variation explained by this factor in the attitude of employers

was only 22.282, and the Alpha value of the factor was 0.812, which is above 0.70. Hence, the Cost factor was found to be reliable as well. Further, the mean value showed that the most important variable which forms the attitude of employers is. The internal and external costs of designing/ building and implementing e-HRM is manageable'. The benefit of e-HRM in saving costs for the organisation has been pointed out by several studies from developed countries (Bondarouk, 2011; Ruel et al., 2004). As per Oswal and Narayanappa (2014), the e-HRM function helps in saving costs and improving an organisation's efficiency, which makes it a very influential factor in the management's decision regarding its adoption.

Thus, the findings of the study suggest that the employer's attitude has a direct relationship to decision-making regarding technology adoption in HR practices. A deeper look shows that three major factors are responsible for positively influencing the employer's perspective and attitude regarding e-HRM adoption. These three factors are; Availability of IT Infrastructure, Benefits to Employers, and Reduction in Costs. Based on the results obtained from the assessment of these factors, the study has developed a new conceptual Technology adoption model for HRM practices in the service and manufacturing sector of India.

9.3 Technology adoption model for HRM practices

This section highlights the technology adoption model for HRM practices in the service and manufacturing industries of India. The model was based on the regression equation framed on the basis of the employers' and employees' attitude towards technology adoption decision for the HR the functions and two more variables, i.e., size of the company and the type of the company which has been taken as the control variable in the regression model. Results of the step-wise multiple regression analysis with control variables have been given in detail in this section:

$$Y = a + b_1.X_1 + b_2.X_2 + b_3.X_3 + b_4.X_4 + SE \quad (1)$$

Y = Technology Adoption Decision

X_1, X_2 (Control Variables) = Size of the company and Type of the Company

X_3, X_4 (Independent variables) = Attitude of Employees and Attitude of Employers

a = constant, b_1, b_2, b_3 are the regression coefficients and SE is the standard error.

As per the results of the regression model 1 both the control variables were found to have an insignificant relation with the technology adoption decision for the HR functions. When the major independent variable, i.e., the attitude of employees were added to the regression equation, the value of R -square increased from 0.008 to 0.497, and the change in the value of R -square was also found to be significant, based on the p -value. It indicates that employees' attitude has a significant impact on the technology adoption decision for the HR functions. Further, the addition of one more variable, i.e., employers' attitude to the regression equation, gives the result shown in regression model 3. The addition of the employers' attitude leads to an increase in the value of R -square from 0.497 to 0.761, while the change in the value of R -square was 0.264, which is also significant. Results of the regression model 3 indicate that Attitude of employees' and Attitude of employers, both have a significant impact on the technology adoption

decision for the HR functions, while type and size of the companies were found to be insignificant control variables and no impact on the technology adoption decision for the HR functions. The null hypothesis for the attitude of employees and employers got rejected, while the null hypothesis for the size and type of the company got accepted in the study.

Table 5 Regression analysis

<i>Description</i>	<i>Regression Model 1</i>	<i>Regression Model 2</i>	<i>Regression Model 3</i>
<i>R</i>	0.091	0.705	0.872
<i>R</i> -square	.008	.497	.761
Adjusted <i>R</i> -square	-.025	.471	.744
<i>R</i> -square change	.008	.488	.264
Sig. of <i>R</i> -square change	.780	.000	.000
<i>F</i>	.249	19.405	46.133
Sig. <i>F</i>	.780	.000	.000
Constant	3.119	-1.393	-5.527
Size of company	-.060	-.095	-.125
Type of company	.069	.006	-.017
Attitude of employees		.703*	.709*
Attitude of employers			.515*
Model 1: Predictors: (Constant), Type of Company, Size of company			
Model 2: Predictors: (Constant), Type of Company, Size of company, Attitude of Employees			
Model 3: Predictors: (Constant), Type of Company, Size of company, Attitude of Employees, Attitude of Employers			

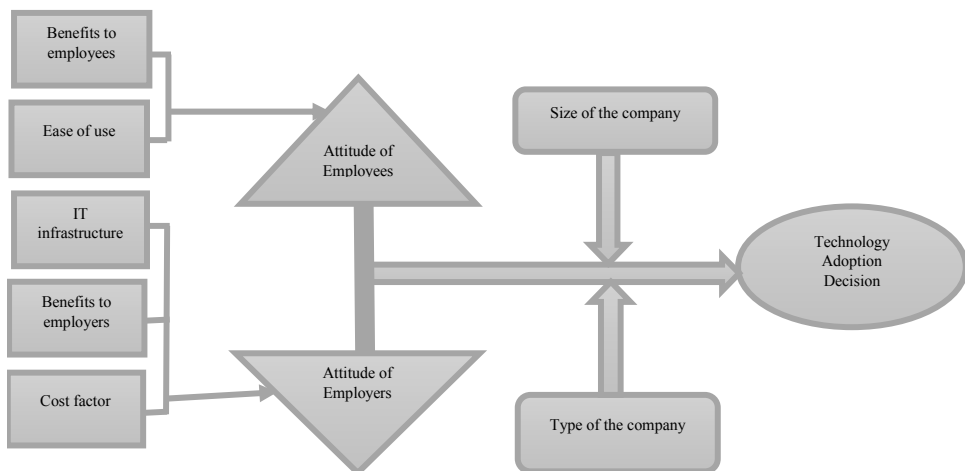
10 Discussion of results

The present study provides a detailed assessment of key factors that affect the technology-adoption decisions regarding HR practices in an organisation. The model has been derived on the basis of responses collected from employers and employees in service and manufacturing sector organisations, which have implemented e-HRM in their HR practices. Based on the findings of the study, key factors have emerged that influence decision making in an organisation regarding the technology adoption for HR practices.

The model provides that two major variables are responsible for shaping the decision regarding e-HRM integration into HR practices in an organisation. The first variable is the 'Employee Attitude'. The model provides that the attitude and behaviour of employees is a key influencer regarding the decision to implement technology into HR practices. Several studies regarding technology adoption decisions provide support regarding the need for an accommodating and welcoming attitude among the workforce in an organisation for the adoption of e-HRM (Phahlane, 2017; Behera, 2016). As per the assessment of responses in the study, the variable of Employee Attitude is affected by two key factors, namely 'Benefit to Employees' and 'Ease of Use.' This implies that in order to prepare a favourable attitude of employees regarding e-HRM implementation in an organisation, the management must work on areas related to these factors. Thus,

organisations must ensure that employees are made aware of the benefits of e-HRM in relation to employees. These benefits may arise in the form of increased transparency in the appraisal process, easy availability of information like payroll and vacation leave (Oyebanji and Kassim, 2017). The second major factor that influences employee attitude, and ultimately technology adoption decisions regarding e-HRM is the ease of use. Employee-friendliness and low system complexity in e-HRM system are necessary to reduce resistance to new systems of employee management (Bondarouk et al., 2017). In this manner, the findings of this model regarding employee attitude are in corroboration with Davis' Technology Adoption Model. The developed model is in corroboration with Davis' Technology Adoption Model, which provides that if employees do not perceive that a new technology system is useful, they will reject its adoption into the organisation (Davis, 1989).

Figure 1 TAM model for HRM practices



The second controlling variable that plays an influential role in decisions regarding technology – adoption in an organisation was the ‘Attitude of Employers’. As per the results of the analysis, the model provides that the perceptions and attitude of employers plays a significant role in affecting the decisions regarding implementing e-HRM in an organisation. Among the wealth of literature available regarding the adoption of e-HRM technologies in an organisation, several studies support the role of the employer’s attitude in the implementation of e-HRM. The model highlights that this variable is influenced by three key factors, namely; Benefit to employers, IT Infrastructure and Cost. According to Zahari et al. (2018), a major reason for the success of e-HRM in an organisation was support by the management. Thus, the model provides that there needs to be a positive and favourable attitude of employers regarding the implementation of e-HRM in their companies. Employers must be made aware that the adoption of technology into HR management is beneficial to the organisation by way of reduced costs, the accuracy of the information, and timeliness (Karanja et al., 2018). Other benefits of e-HRM included functional advantages in HR functions like payroll, employee placement, appraisals and reimbursements, grievance handling and training projections (Chakraborty and Mansor, 2013). Regarding the availability of IT infrastructure, Majeed and Ozyer (2016) pointed

out the requirement of plug-in support for the successful implementation of e-HRM; and Alam et al. (2016) listed technology vendor support as a key variable regarding e-HRM-related decision-making. Marler and Fisher (2013) suggested the formation of liaisons with e-HRM vendors for improvement in IT support regarding e-HRM, which can tilt the attitude of employers in favour of implementing these systems. The final affecting factor regarding the attitude of employers pertains to the costs of implementing e-HRM. The costs of implementing e-HRM in an organisation must not be too high or significant, as it dampens the spirit of the employer towards its implementation. These costs include all direct and indirect expenses, from annual subscription fees to training costs regarding the new systems. This factor has been discussed by several researchers in the field; researchers have pointed out that the cost of implementing e-HRM is balanced out in the long run since its improved efficiency saves the company time and money (Hamidianpour et al., 2016). e-HRM reduces labour and recruitment costs in an organisation (Qadir and Agrawal (2017); thus, its initial costs of development and adoption can be tolerated by the management in the organisation. Hence, the reduction or crossing-out of these costs is an important factor to be considered while deliberating on technology-adoption decisions in an organisation.

The model also highlights the effect of organisational characteristics like size and type of the company. These findings are in accordance with Hussain et al. (2007); Strohmeier (2020) and Zeebaree et al. (2019), who find that the size of the organisation influences the degree to which HR managers feel the need to invest in e-HRM to improve their strategic capabilities. Usually, larger organisations are more likely to use e-HRM (Marler and Fisher, 2013). Further, Nyame and Boateng (2015) linked the type of organisation to the need and effectiveness of e-HRM. In companies with an existing IT infrastructure, such as telecom or banking, e-HRM does not carry high additional costs to implement. This shows that the type of companies has a bearing on the decision to adopt technological advancements into a company's HR practices, (Agarwal and Lenka, 2018).

11 Conclusion

In concluding this paper, it was found that the attitude of employees is shown to have a notable impact on the decision to adopt technology into HR practices. When planning to implement a new e-HRM system, organisation owners should ensure that the employees' perceptions regarding e-HRM are positively inclined. The study also finds that the factors that have a huge impact on the attitude of employees, is the perceived benefits of e-HRM in their favour, and the ease of use. Similarly, the study provides that a second factor that impacts technology adoption decisions is the opinion and attitude of employers themselves. The factors that affect this attitude are perceived benefits of using e-HRM for the employers, the availability of IT infrastructure, and the cost factor. Only when these factors are in favour of the employer, the attitude of the employer is inclined towards the adoption of technology into classic HR practices. Lastly, the results of the study provide that organisational characteristics like size and type of company are also significant in influencing the technology adoption decisions in service and manufacturing organisations of India. The developed conceptual model regarding technology adoption in HR practices has several practical implications for organisations in the Indian service and manufacturing sector. The broader conclusions derived from the theoretical review

of literature in the study provides that while India is gradually widening the scope of e-HRM implementation in its organisations, it still remains at a far cry from the developed countries. The successful experiences of developed countries regarding the implementation of e-HRM practices need to be mirrored in India through widespread technology adoption in HR practices. In order to aid technology adoption in organisations, the conceptual model developed in the present study may be used by HR practitioners.

12 Practical implications

The results from the empirical study have led to the development of a comprehensive conceptual model regarding factors influencing technology adoption decisions in HR practices of an organisation. Through the findings of this study, HR practitioners – particularly in India – can acquire an in-depth understanding regarding the several factors that affect management decisions over the introduction of new technology systems, i.e., e-HRM implementation, in companies. Through the model derived in the study, organisations might become more conscious of focusing on factors that influence employee attitude regarding e-HRM, such as ease of use, before making the decision to adopt new technologies. Additionally, the factors that affect the employer's attitude, such as costs and IT infrastructure may also be seen as important factors by HR practitioners. Moreover, determining these factors would also help the decision-makers to enhance and improve the existing e-HRM systems in India. The organisations currently employing these systems may learn about the shortcomings in these systems from the findings regarding employee and employer perspectives, which shall aid in eliminating barriers to achieving the maximum potential of e-HRM in these organisations. On a larger level, this study contributes to the existing research in the field by providing insights into the current status of e-HRM in India, vis-à-vis e-HRM practices in developed nations. This study may then be of help to organisations and practitioners looking to emulate the e-HRM practices of developed nations or to expand the current scope of e-HRM in India.

13 Limitations and future scope

The empirical analysis in the present study is limited to the service and manufacturing sector organisations of India. In the surveyed companies, e-HRM practices were found to be customised as per the individual characteristics and the overall needs of each organisation. Moreover, these methods are also developed according to the workforce and the work culture adopted by the companies. It can thus be taken as a slight stretch to generalise the findings of this study as applicable to all sectors in the Indian economy or other developing countries. Hence, there is much scope for future research by validating the developed conceptual model in this study in different sectors of the economy or different geographical regions.

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