INTENTION TO ADOPT E-HRM (ELECTRONIC - HUMAN RESOURCE MANAGEMENT) IN INDIAN MANUFACTURING INDUSTRY: AN EMPIRICAL STUDY USING TECHNOLOGY ACCEPTANCE MODEL (TAM)

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ABSTRACT

E-HRM is the adoption and implementation of the web enabled technology to the various HR processes. It directly contributes to the organizational effectiveness and it creates various alternatives to get the work done in a relatively shorter period of time. Limited research has been done in this field and its full potential is yet to be anticipated as it is still growing at a remarkable pace. This research paper aims at quantitatively analyzing the intention of adopting the E-HRM technology by HR Professionals with the help of the TAM (Technology Acceptance Model) model specifically in the manufacturing sector of India. The responses of 200 HR Professionals were collected

through convenience sampling method by the help of structure questionnaires distributed to selected manufacturing companies with different categories in India. To analyze the impact of different identified factors on Attitude towards Technology Acceptance and Intention to use, Structural Equation Modelling (SEM) using AMOS Software has been executed in this paper. Adoption of E-HRM technology in the manufacturing industry will help HR Professionals to do their work in an effective manner and it will also help them in handling immense work pressure.

Keywords: e-HRM; TAM model; Intention to use, Indian Manufacturing Industry, Structural Equation Modelling (SEM)

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1. INTRODUCTION

Information and Communication Technologies are continuously evolving and embedding itself in the modern society. From an industrial point of view, the internal service providers, as for example, the HR department, are also adapting to these new technologies in order to meet the volatile demands of the market (Gloet & Berrell, 2003). Thus, the adoption of ICT (Information and communications technology) by the HR department of the various organizations in order to increase their organizational effectiveness is known as e-HRM. The function of e-HRM is to create social as well as intellectual capital in the organization by the enhancement of knowledge amongst the employees (Lengnick-Hall & Moritz, 2003). Accordingly, the administrative functions of the HR department might be improved drastically. Technology can be used to facilitate various HR processes such as strategic contribution, personal credibility as well as HR delivery on time. The HR department can act as a facilitator and an agent of change in the organization and help the employees to suitably transition to this change in a smooth manner without any hitches. The HR department should also look after the fact that all the policies; processes as well as practices must complement the overall strategy followed by the organization. All these functions stated above can be covered through the adoption and subsequently implementation of the proper technology. The adoption of the technology can be explained in accordance to the TAM Model.

2. LITERATURE REVIEW

The TAM (Technology Acceptance Model) was developed by Davis, in the year 1989 and it was further modified by Venkatesh, in the year 2003 (Venkatesh & Bala, 2008). This model, basically, helps to understand the acceptance level as the attitude towards the IT systems adopted by the organisation. This model focuses upon two factors which are the perceived usefulness of the technology as well as the perceived ease of use of the said technology. These two factors are related to the employees of the organizations and thus, internal in nature. They are based on the perception of these employees when they are asked to utilize the technology. A positive perception on their part would lead them to have a positive intention to utilize the technology which would lead to the actual system use (Dosajh & Sujlana, 2012).

Source: Davis et al. (1989), Venkatesh et al. (2008)

Figure 1: Technology Acceptance Model (TAM)

Perceived usefulness is taken as one of the external factors which affect the behavioural intention of the employees. The relationship between the two factors of perceived usefulness and behavioural intention has been studied and it was seen that the behavioural intention of the recipients is most significantly influenced by their perception of the level of usefulness of the technology. It has been observed that the perceived usefulness is a crucial factor which urges them to use the e-learning management systems which inculcates the behavioural intention of using that particular technology (Ho, 2010). Perceived ease of use is regarded as another external factor which affects the behavioural intention of the respondents. Complicated systems which are hard to understand are not preferred by the respondents as they lose interest quickly and a negative attitude towards that particular technology is built up in their minds. In a similar manner, the perception of ease of use towards a particular technology is beneficial to build a positive impression on the minds of the respondents. This positive impression would help in the building of a positive behavioural intention to use that particular technology instead of transgressing to the manual way of work (Lin, et al., 2011). The previous two factors, that is, perceived usefulness and perceived ease of use are mainly focusing on the individual perspective of the employees. However, the organizational perspective should be considered as well. This is because the employees are ultimately working for the growth of the organization on a whole and this growth will lead to their individual growth also in the long run. Thus, the expected benefits in the organizational context are taken as well. The government can also come up with certain models which would integrate the private firms as well through the use of PPP models and their sole objective would be to come up with certain social as well as economic benefits for the people (Liang, 2017). Attitude of the respondents significantly affects the intention to adopt the technology (Robey, 1979 & Swanson, 1982). The TAM model depicts that the perceived ease of use and perceived usefulness of a technology affects the attitude of the respondents which further transforms into a behavioral intention to use the technology whenever required. Thus, E-HRM technologies must be adopted as such which will be desirable to use by the HR Professionals and it would result in a pleasant experience for them as well. In order to do this, the background of technology-users should be taken into consideration and also the type of work that needs to be done. Attitude is considered as a passive urge. Until and unless the attitude directly influences the behaviour of the respondents, it does not have any significance. Hence, the respondents must develop an intention on their own to utilize the technology at hand. It is an intrinsic factor which might be influenced by several extrinsic factors (Thiruselvi, et al., 2013). The actual usage of the technology is the main goal of any organisation. This would result in various effective and efficient processes in the long run. The expectations of the employees must be met with. Thus, the usage level would determine the overall acceptance level of the particular technology.

3. HYPOTHESES AND RESEARCH MODEL

H1: ‘Perceived Usefulness of e-HRM’ positively influences ‘Attitude towards using e-HRM’ in Manufacturing Industry.

H2: ‘Perceived Ease of Use e-HRM’ positively influences ‘Attitude towards using e-HRM’ in Manufacturing Industry.

H3: ‘Expected Benefits of e-HRM’ positively influences ‘Attitude towards using e-HRM’ in Manufacturing Industry.

H4: ‘Perceived Usefulness of e-HRM’ positively influences ‘Intention to Adopt e-HRM’ in Manufacturing Industry.

H5: ‘Attitude towards using e-HRM’ positively influences ‘Intention to Adopt e-HRM’ in Manufacturing Industry.

H6: ‘Expected Benefits of e-HRM’ positively influences ‘Intention to Adopt e-HRM’ in Manufacturing Industry.

H7: ‘Intention to Adopt e-HRM’ positively influences ‘Actual Use of e-HRM’ in Manufacturing Industry.

Figure 2: Hypothesized Research Model

4. RESEARCH METHODOLOGY

In this study, secondary data has been used to create the hypothesized research model (Figure 2) and primary data has been used to support the model. A structured questionnaire (Annexure 1) with 5 point Likert scale from ‘Strongly Agree-5’ to ‘Strongly Disagree-1’ was prepared for collecting the primary data. In this study, convenience sampling technique was used. Different types of manufacturing industries (For example, Electronic & Electrical Equipment Manufacturing Industry, Oil & Chemical Industry, Food Industry, Textile Industry, etc.) were selected for the collection of sample-elements. In the first stage, companies from different manufacturing industry-categories in India were selected by convenience sampling technique and responses from HR Professionals were collected from those companies through same sampling technique in the second stage. Total 200 responses were collected for this study. The survey period was from 5th February, 2019 to 15th April, 2019.

5. ANALYSIS AND FINDINGS

In this study, Structural equation modeling (SEM) through AMOS software has been used to create the research model. Also hypothesis and fitness indexes of model have been checked through Path-Analysis. Cronbach alpha value has been checked for testing the reliability of

collected primary data and the alpha value of 0.784 proves acceptable range of reliability. Exploratory Factor Analysis (EFA) through SPSS software has been used to validate the data set and extract necessary factors for this study.

Table 1: KMO and Bartlett's Test

Bartlett's Test of Sphericity	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.680
	Approx. Chi-Square		3246.041
	Df		105
	Sig.		<0.001

KMO and Bartlett's Test (Table 1) proved the aptness of executing exploratory factor analysis (EFA). Total 6 factors, containing variables with 'factor loadings' more than 0.5 have been extracted through Rotated Component Matrix (Table 2) and explain total 84.197% of variance in research model.

Table 2: Result of factor analysis - Rotated Component Matrix

Variables	Factors					
	Perceived Ease of Use	Expected Benefits	Perceived Usefulness	Attitude towards Using	Intention to Adopt	Actual Use
q6	.966	.046	.049	.103	.000	-.020
q4	.950	.057	.062	.115	.044	-.059
q5	.926	.067	.070	.044	.060	.019
q8	.030	.921	.055	.073	.078	-.049
q9	.033	.884	.081	.136	-.060	-.068
q7	.097	.861	.011	.103	.025	-.038
q1	.036	.074	.910	.110	.062	-.002
q2	.065	.026	.883	.006	.074	.097
q3	.075	.046	.855	.197	-.026	-.101
q11	.114	.157	.132	.932	.189	-.029
q10	.152	.181	.188	.911	.208	-.011
q12	.046	.013	.016	.121	.946	-.077
q13	.043	.022	.086	.229	.920	-.019
q15	-.020	.017	.028	-.097	.054	.818
q14	-.022	-.140	-.026	.066	-.137	.720
% of Variance Explained	18.370	16.449	16.149	12.606	12.448	8.174
Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 5 iterations.						

The fitness indexes (Table 3) have been checked for determining the appropriateness of research model. Also, Path Analysis has been executed for checking the influences of independent factors on dependent factors.

Table 3: Fit indices for Research Model

Fit Index with Acceptable Range	Research Model Values
χ^2/df (Values less than 3)	0.148
RMSEA (Values less than 0.06)	0.001
GFI (Values greater than 0.90)	0.999
AGFI (Values greater than 0.90)	0.995
NFI (Values greater than 0.90)	0.998
CFI (Values greater than 0.90)	0.999

Figure 3: Output of Structural Equation Modeling

Multi-co-linearity in the research model has been checked through VIF (Variance Inflation Factor) which must be less than 3 for acceptable range and it has been observed that all VIF values (Table 4) are in acceptable range which indicates variables are free from Multi-co-linearity.

Table 4: Co-linearity Statistics

'Attitude towards using e-HRM' as dependent variable			'Intention to Adopt e-HRM' as dependent variable		
	Tolerance	VIF		Tolerance	VIF
Perceived Usefulness of e-HRM for HR Professional	.848	1.179	Perceived Usefulness of e-HRM for HR Professional	.685	1.460
Perceived Ease of Use e-HRM	.820	1.219	Attitude towards Using e-HRM	.461	2.169
Expected Benefits of e-HRM towards Organization	.788	1.269	Expected Benefits of e-HRM towards Organization	.591	1.693

Table 5: Path analysis of Research Model

Measurement Path			Hypothesis	Estimate	S.E.	C.R.	P-Value	Assessment
Attitude towards Using	←	Perceived Usefulness	H1	.328	.048	6.887	<0.01*	Supported
Attitude towards Using	←	Expected Benefits	H3	.460	.055	8.328	<0.01*	Supported
Attitude towards Using	←	Perceived Ease of Use	H2	.216	.046	4.662	<0.01*	Supported
Intention to Adopt	←	Attitude towards Using	H5	.279	.166	2.682	0.033**	Supported
Intention to Adopt	←	Perceived Usefulness	H4	.347	.130	2.662	0.008*	Supported
Intention to Adopt	←	Expected Benefits	H6	.271	.157	2.725	0.045**	Supported
Actual Use	←	Intention to Adopt	H7	.671	.073	9.134	<0.01*	Supported

Note: * & ** indicate 1% & 5% level of significance

5.1. Path Analysis for Hypothesis Testing (From Figure 3 & Table 5)

H1: ‘Perceived Usefulness of e-HRM’ positively influences ‘Attitude towards using e-HRM’ in Manufacturing Industry.

Significant P-value ($p < 0.01$) with positive (+.328) path co-efficient supports the above hypothesis. A study has found out that the perception of the HR Professionals regarding the usefulness of a particular technology has a deep impact on their attitude for the adoption of that particular technology (Cakmak, et al., 2011). This study was conducted in Turkey regarding the assessment of the acceptance level of the Tax Office Automation System (VEDOP) amongst the HR Professionals. The coupling effect of perceived usefulness as well as the required positive attitude towards a particular technology leads to the development of the intention to utilise a particular technology in the optimal manner.

H2: ‘Perceived Ease of Use e-HRM’ positively influences ‘Attitude towards using e-HRM’ in Manufacturing Industry.

Structural model supports the above hypothesis because path coefficient is having significant value ($p < 0.01$) and expected positive sign (+.216). It was addressed in the TAM model that the perceived ease of use has a significant positive relationship with the attitude level of the respondents related to the usage of the technology. TAM model has also revealed that the effect of perceived ease of use on the attitude level of the respondents can be either direct or indirect.

H3: ‘Expected Benefits of e-HRM’ positively influences ‘Attitude towards using e-HRM’ in Manufacturing Industry.

Significant P-value ($p < 0.01$) with positive (+.460) path co-efficient supports the above hypothesis. The information technologies used today are highly innovative in nature as they integrate numerous activities together in order to come up with a consolidated product which

would cater to numerous works. The application of such systems would significantly increase the efficiency levels and also cut down costs (Yang, et al., 2018). Thus, the expected benefits would have a direct impact on the attitude for using the technology as well.

H4: ‘Perceived Usefulness of e-HRM’ positively influences ‘Intention to Adopt e-HRM’ in Manufacturing Industry.

Structural model supports the above hypothesis because path coefficient is having significant value ($p=0.008$) and expected positive sign (+.347). It has been seen that the perceived usefulness of the technology of the part of the respondents plays a crucial role in the development of the intention regarding the usage of the E-HRM technology.

H5: ‘Attitude towards using e-HRM’ positively influences ‘Intention to Adopt e-HRM’ in Manufacturing Industry.

Significant P-value ($p=0.033$) with positive (+.279) path co-efficient supports the above hypothesis. It is a well-known fact that attitude influences the behavior of a person (Reeve & Deci, 1996). The respondents must like working with the technology, otherwise a negative perception would be developed in their minds regarding the usage of the technology which would prove detrimental to their behavioral intention of its usage.

H6: ‘Expected Benefits of e-HRM’ positively influences ‘Intention to Adopt e-HRM’ in Manufacturing Industry.

Structural model supports the above hypothesis because path coefficient is having significant value ($p=0.045$) and expected positive sign (+.271). It has been seen that the perception of the respondents regarding the beneficial aspects of the technology used plays a decisive role in the development of the intention regarding the usage of the E-HRM technology in their minds.

H7: ‘Intention to Adopt e-HRM’ positively influences ‘Actual Use of e-HRM’ in Manufacturing Industry.

Significant P-value ($p<0.01$) with positive (+.671) path co-efficient supports the above hypothesis. The intention of using the technology motivates HR Professionals to use the product being given to them to develop value and also to get the work done in a specific period of time. The usage of the technology will be further promoted if the HR Professionals are satisfied with the technology in hand. The satisfaction index can be measured with the service level of the given technology. Actual use of the technology could lead to increasing productivity of the firms as the work could be done within a stipulated period of time.

6. IMPLICATIONS

New and innovative technology is paving the path for a new future. Due to globalisation, the human resources are under a lot of stress and pressure in order to deliver the work on time. Technology can help the human resources department of the manufacturing industries to deliver the work on time without compromising with their quality despite of their tight schedules. The growth of the HR Professionals is also focused as they are trained to use the various E-HRM technologies to get the job done within a stipulated period of time. Sending information and receiving information can also be done with the snap of a finger. Global workforce can be recruited using proper E-HRM technology and they can be compensated as well. Training and Development models can be accessible through various online portals wherein employees can log in and build their competencies in their relevant specialisations. Various extra curriculum activities could also be developed to help the employees to tackle the ever increasing work load with minimum effort. With the advent of self automation systems in the manufacturing industries, feedback is very important. It helps HR Professionals to diagnose the problems well in advance before it causes any significant error which would result in huge losses for the

organisation. Manufacturing industry is responsible for directly contributing to the GDP of the nation. It has economic consequences as well. This industry must be developed and one of the fastest ways to do so is by adopting relevant technology to get the work done in a faster manner. E-HRM software could be used by HR Professionals in the recruitment and selection of the suitable candidates for the various job roles. The information about the employees could be stored in a centralised system so that it can be accessible for anyone in need. Thus, the adoption of the various E-HRM technologies will be having many social as well as economical results as well.

7. CONCLUSION

E-HRM technology enables the HR department to generate process efficiency as they have to deal with the people of the organisation on a daily basis. The people are there from all the brackets from top level management to bottom level management. This paper delves into the manufacturing industry of India and tries to find out the intention of adoption of the various E-HRM technologies by HR Professionals in this particular industry. The respondents in the study have shown a positive inclination towards adopting the various technologies. The degree to which this will be done would depend on the organisation's decision for the implementation of a suitable technology that will be positively perceived by the respondents in terms of usefulness, ease of use as well as certain expected benefits. Conventional methods are becoming obsolete now and already the organisations have started relying on web based technology for getting their job done like using emails, printers, LAN network, centralised system for storing information, payment of salary with money transfer, etc. Thus, the manufacturing industry is making progress in terms of adoption of E-HRM technologies but many avenues need to be explored in the long run. Such a situation can increase the profitability of this particular industry by leaps and bounds.

Annexure 1

Factors	Questions on different Items
Perceived Usefulness	q1: Perceived usefulness of E-HRM technology positively influences the attitude of the HR Professionals regarding its usage.
	q2: Perceived usefulness of the E-HRM technology positively influences the mindset of the HR Professionals regarding the usage of the technology.
	q3: Perceived usefulness of the E-HRM technology creates an interest in the minds of the HR Professionals to further explore the product.
Perceived Ease of Use	q4: Perceived ease of use of E-HRM technology positively influences the attitude of the HR Professionals regarding its usage.
	q5: Perceived ease of use of a particular E-HRM technology will help the HR Professionals to clearly understand it which will help in its usage.
	q6: Higher levels of Perceived ease of use will help in the creation of a positive mindset of the HR Professionals regarding that particular technology.
Expected Benefits	q7: Expected benefits will help to positively influence the attitude of the HR Professionals regarding the usage of the technology.
	q8: Expected benefits will result in the growth of the organisation by the means of adoption of the E-HRM technology.
	q9: Expected benefits of the E-HRM technology to be adopted will result in certain social and economical benefits as well.
Attitude	q10: A positive attitude of the adoption of E-HRM technology will result in the development of the intention to use the same.

towards Using	q11: Usage of the E-HRM technology must be a desirable and pleasurable experience for the HR Professionals to develop a positive attitude regarding that.
Intention to Adopt	q12: Attitude for the E-HRM technology usage is responsible for the development of the intention to adopt the technology.
	q13: Higher degree of the intention of the HR Professionals of the organisation to adopt the E-HRM technology results in its actual usage.
Actual Use	q14: Actual usage of the E-HRM technology would make the operations very efficient and effective.
	q15: Actual usage of the E-HRM technology would help to quantitatively measure the satisfaction index of the HR Professionals through technology acceptability.

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