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Article

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OPERATIONS, INFORMATION & TECHNOLOGY | RESEARCH ARTICLE

Factors affecting the adoption of HRIS by the Bangladeshi banking and financial sector

Mohammad Anisur Rahman^{1,2*}, Xu Qi¹ and Mohammad Shahfayet Jinnah³

Abstract: Human Resources Information Systems (HRIS) has become a global HR practice in the developed nations for its strategic contributions. However, developing nations such as Bangladesh seemed to face challenges in deploying HRIS in different sector especially in Banking and financial sector. This study attempted to identify the salient factors affecting adoption of HRIS by Bangladeshi banking and financial sector through applying the unified theory of acceptance and use of technology (UTAUT) model. A structured questionnaire, designed based on the model construct, applied to pull data from 300 participants in the various banking and financial organization in Bangladesh. These data were analyzed through SmartPLS 3.0. We found social influence of market leader and behavioral intention of the management of the organization have a significant effect on the intent to adopt HRIS. However, social influence found to have both direct as well as partially mediated (by behavioral intention) effect on the adoption of HRIS. The findings suggest the practitioners to adopt the HRIS to gain the first mover advantage to avoid the bandwagon effect that make the HRIS-related competitive advantage evaporate quickly. The researchers in future may conduct a cross-cultural study to see whether

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PUBLIC INTEREST STATEMENT

Developed nations are deploying Human Resource Information Systems (HRIS) in the banking and financial sector for its crucial contribution in cost reduction, enhancing communication and attaining strategic goals. However, HRIS implementation has been a big challenge for developing nations such as Bangladesh. To address this challenge, we attempt to identify the factors that affect the adoption of HRIS in the Banking and Financial sector of Bangladesh. We found that social influence from the role models in the industry and behavioral intention of the institutional management have a significant effect on the adoption of HRIS in the said sector. We have also put suggestions in light of our findings for the practitioners and academicians in area of HRIS.

the same variables are influencing the adoption of HRIS in the other culture and the country or may include more variables in the study to accommodate the ever-changing technology and human preferences.

Subjects: Management of IT; Management of Technology; Human Resource Management

Keywords: HRIS; UTAUT; information systems; banking and financial institutions; Bangladesh

1. Introduction

With the remarkable growth of Internet along with advanced information communication and networking technologies, the Human Resources Information Systems (HRIS) has already been introduced in developed nations. HRIS has become an essential component in the banking and financial sector (Hendrickson, 2003). HRIS has been defined by DeSanctis (1986) as a

Systematic process for retrieving, maintaining, storing, validating and collecting the data that is required by the organization about the organization unit, personnel activities and human resources. It is a collection of databases that integrate together to form a vast record of all employee issues that exist within a company.

HRIS is considered as the combination of the software, database, and hardware that are capable of making the data store of the organization different departments and have the ability to pick up the necessary information as per the demand of the human resource department (Broderick & Boudreau, 1991).

HRIS initiatives have been worldily accepted as the best chance for improvement in any organization as well as in the banking and financial sector to accommodate the increasing demand and supply of fundamental services or banking services in both the developed and developing countries (Ahmer, 2013). Developed nations have already invested and continue to invest a considerable amount of resources in continuing the implementation of HRIS to improve the efficiency of banking and financial services (Chau, 1996). Despite the possible benefits of HRIS, its adoption remains a big challenge in developing countries (Ginzberg, 1981), especially in Bangladesh. Most of the studies carried out over the years had been conducted focusing primarily on developed nations (Karakanian, 2000). This research is an attempt to fill the gap by analyzing adoption issues of HRIS in the context of Bangladesh from banking and financial organization perspectives.

2. Literature review

Considering the last few decades, we can easily observe that the organization is monitoring, collecting, storing, and analyzing the human resources information with the use of HRIS software or anything that involves functionality for HRIS (Ball, 2001; Hussain, Wallace, & Cornelius, 2007). The importance of HRIS implementation also varies from organization to organization. It has a various purpose like reducing costs, accelerating better way of communication, making the reorientation of the HR activities make a strategic contribution of different departments.

In the Hong Kong organization, Ngai and Wat (2006) performed a survey for the implementation of HRIS. They found that HRIS helped to gain the quick response and the proper access to the information. Also, HRIS minimizes the overall HR costs, helps the employee to analyze, monitor, control the own information, conducts the proper analysis, contributes to making decisions and communicate with others without any help or consultation of HR expert.

Zhang and Wang (2006) asserted that a great fruitful way of running a good business in the present world is to make the use of the proper application and implementation of IT in HRM. However, Krishnan and Singh (2006) found in their study that there was a lack of knowledge from the HR department about the HRIS, and there was a lack of importance in HR department in implementing HRIS.

Table 1. Outcomes of previous research of HRIS adoption

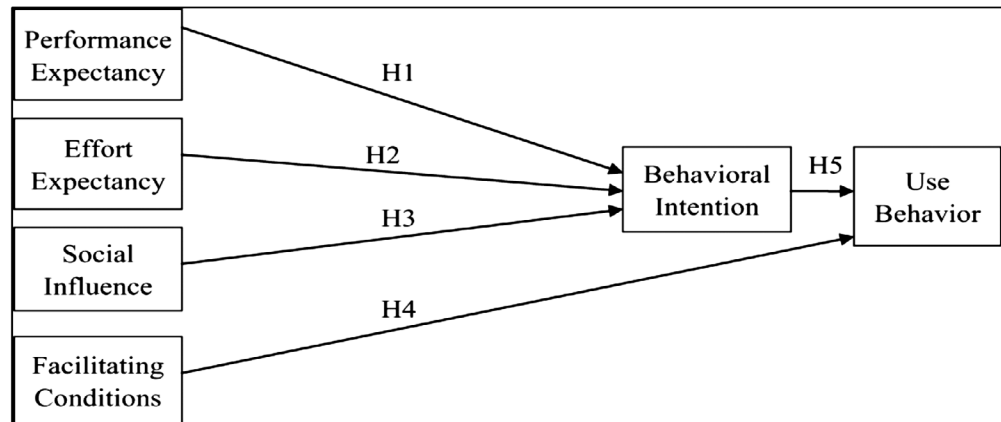
Serial	Outcomes	Reference/authors
01	Top management support is needed to ensure a favorable environment and running resource persons that positively make the relation of HRIS adoption	Premkumar and Roberts (1999), Yap (1989)
02	HR expertise is a significant determinant fact for selecting the new types of technologies in the organization. Currently, the number of an employee having expertise in HRIS is high that is why it has become easy to implement the HRIS smoothly	Chau and Hui (2001), Kwon and Zmud (1987), Warren (2004)
03	Relative advantage can be an internal prerequisite for the user technology adoption. It is theoretically considered as the positively related to the innovation adoption	Jeon, Han, and Lee (2006), Premkumar and Roberts (1999)
04	As per the analysis in Jordan bank sector, there is significant statistical effect evidence in the quality of the outcomes of the HRIS, training, stimuli with the organizational performance	Al-Tarawneh (2012)
05	HRIS benefits are another factor that should be demonstrated before the successful implementation of HRIS adoption. As per other findings, regulatory compliance can have a great impact on the successful HRIS adoption	Troshani, Jerram, and Gerrard (2010)
06	As per Hong Kong industries, quick response and access to information are the significant benefit of HRIS implementation where financial support is a barrier. Statistically, a significant difference of HRIS adopters and non-adopters is also analyzed for different kinds of organization	Ngai and Wat (2006)
07	As per the findings, organization size has a significant relation to the extent of HRIS adoption. Top management support and competition are also significant dependent variable	Teo, Lim, and Fedric (2007)
08	The extent of use and that extent of use is significantly related to all five outcome variables, considering the 4 out of 5 outcome variable, it has shown the significant predictors. It also analyzes different dimensions for this extent of HRIS	Kassim et al. (2012)
09	It represents the linkage between the e-government system acceptances with the organizational agility. Organizational benefits of e-government implementation are also analyzed here. Lastly highlights the research plants that can be valid for the experimental investigation	Almahamid (2013)

A considerable number of researches have been done on HRIS. Some important outcomes of the previous researchers regarding the adoption of HRIS have been summarized in Table 1.

3. Research design and method

Several theories such as theory of planned behavior, hype cycle, social cognitive theory, and technology model, technology acceptance model, the theory of reasoned action, the theory of life-cycle, diffusion of innovations theory and the bass diffusion model have been used to describe the purpose, acceptance and utilization of new technologies. However, unified theory of acceptance and use of technology (UTAUT), an updated version of TAM, has been widely used by the information systems researchers to identify the factors accepting adoption of different technology. For this study, UTAUT model has been used.

Figure 1. Research model.



3.1. The unified theory of acceptance and use of technology (UTAUT)

Venkatesh, Morris, Davis, and Davis (2003) and others formulated the UTAUT as a technology acceptance model. UTAUT aims to describe the intentions of users to use an information system (Kassim, Ramayah, & Kurnia, 2012). The UTAUT theory comprises five key constructs: performance expectancy, effort expectancy, social influence, facilitating conditions and user behavior and intention. Behavioral intention is also a direct determinant of use behavior (Carlsson, Carlsson, Hyvonen, Puhakainen, & Walden, 2006). Voluntariness, experience, age, and gender of use are imagined to moderate the effect of the five vital constructs on user behavior and intention. For the simplification of the study, the moderating effect has not been considered in this study.

Many types of research have been conducted explaining the role UTAUT in technology adoption in the different sector including HRIS. Oliveira and Martins (2011) stated that the UTAUT model offers incredible promises to enhance the knowledge for acceptance of the technology (Figure 1).

Hypothesis 1: Performance expectancy influences users' intentions for the adoption of HRIS.

Hypothesis 2: Effort expectancy positively influences users' intentions adoption of HRIS.

Hypothesis 3: Social influence affects users' intentions adoption of HRIS.

Hypothesis 4: Facilitating conditions of adoption of HRIS positively affects users' use behaviors of adoption of HRIS.

Hypothesis 5: Users' behavioral intentions for the adoption of HRIS positively affects use behavior of HRIS.

Hypothesis 6: Behavioral intentions mediates the relationship between social influence and use behavior.

3.2. Research setting

In consideration of little research in the adoption of HRIS that has been done previously, particularly in developing nations such as Bangladesh, exploratory studies were more justifiable (Zikmund, Babin, Carr, & Griffin, 2010). The research has followed the convenience sampling method which is cost effective and widely applied in information systems research (Eze, Manyeki, Yaw, & Har, 2011).

In the survey questionnaire, the target population for this research was employees working in various public and private banks and financial organizations in Dhaka, the capital city of Bangladesh. The respondents were informed about the purpose of the study. Measures for constructs used in the research model were developed from previous research and modified on HRIS context in Bangladesh.

3.3. Questionnaire design and data collection

A structured questionnaire was utilized for the collection of data and for measuring the constructs of the proposed research model. Among the three parts of the questionnaire, part one containing the

general information, part two the participants profile, and part three included questionnaires for various latent constructs as outlined in the research model, utilizing a five-point Likert scale ranging from (1) strongly disagree to (5) strongly agree. Table 2 outlines the original questions of every construct. Also, a study was carried out, and the feedback given was used in designing and testing the efficacy of the final questionnaire. The survey distributed questionnaires with all of them being returned resulting in a 100% response rate. The partial least square method which is the analysis method based on SEM (structural equation model), was used to validate the proposed extended UTAUT.

Table 2. Summary of measurement items

Construct	Measurement items	Sources
Performance expectancy	Utilizing the HRIS will merge well with the manner in which I will work	Oliveira and Martins (2011)
	Utilizing the HRIS will merge into my work style	
Effort expectancy	Affording HRIS would enhance my effectiveness	Jeyaraj et al. (2006)
	I would find HRIS system easy to use	
Facilitating conditions	I already have unlimited access to software, hardware, and services required to use the HRIS	Yusoff, Ramayah, and Ibrahim (2010)
	One constraint that I'm facing is inadequate resources for using HRI	
Use behavior	Having the proper ability, knowledge, resource to use the HRIS	Ngai and Wat (2006)
	Likely that I would use HRIS	
Behavioral intention	I plan to utilize the HRIS	Dery, Grant, and Wiblen (2009), Jeyaraj et al. (2006), Kamal (2006), Zhu, Dong, Xu, and Kraemer (2006)
	I plan to use the HRIS in the near future	
Social influence	We have sufficient human resources necessary to use/adopt HRIS technology	Al-Dmour and Shannak (2012), Dutta and Evrard (1999), Kapurubandara and Lawson (2008), Scupola (2003)
	We have the knowledge necessary to use/adopt HRIS technology	
	Having one computer expert in HR Department	
	The CEO's extent of technical and knowledge of IT compared to other people in similar positions	
	The decisions of the employees must have the top management's approval	
	The written form of rules and procedures	
	The employees are encouraged to make independent decisions in their work	
	Top management is likely to deliberate the adoption of the HRIS applications as strategically important	
Financial support of the senior management		

Table 3. Demographics of respondents

	Description	Frequency	Percentage
Gender	Male	235	78.3
	Female	65	21.7
Educational level	Bachelor's degree	146	48.7
	Masters	154	51.3
Age	Less 25 years	2	0.7
	25-30 years	70	23.3
	31-40 years	165	55
	41-50 years	55	18.3
	More than 50 years	8	2.7
Type of organization	Private	285	95.0
	Public	15	5.0

4. Data analysis and result

4.1. Demographic information

The demographic traits of participants have been shown in Table 3. The response rate between males and females was a big difference. Table 3 indicates that 78 and 22% of participants were men and women, respectively. The majority of the participants 51% were master's degree holders and 49% of the participants were bachelor's degree holders.

4.2. Demographics of respondents

4.2.1. Measurement model

Internal reliability, convergent and discriminant validity are used to assesses the measurement model (Hair, Hult, Ringle, & Sarstedt, 2016). Cronbach's alpha and composite reliability (CR) are used to measure the internal reliability; the preferred value of these measures is 0.70 (Hair, Anderson, Tatham, & Black, 1995). Convergent validity is measured by average variance extracted (AVE); the acceptable value is greater than 0.50. Items loading can also measure convergent validity; the acceptable value for item loading is higher than 0.50 (Hair et al., 1995). Discriminant validity is measured by the Heterotrait-Monotrait ratio of correlations (HTMT) criteria; the acceptable value is less than 0.90 (Henseler, Ringle, & Sarstedt, 2015).

Table 4 shows the CR, Cronbach's Alpha and AVE and Table 5 shows the HTMT results of this study. Cronbach's alpha value of the constructs ranges from 0.751 to 0.893 > 0.70, and CR of the construct ranges from 0.746 to 0.912 > 0.70, which indicate that constructs have strong internal consistency and reliability. For convergent validity, Table 4 shows AVE ranges from 0.512 to 0.839, which is greater than the acceptable value of 0.50. For discriminant validity, Table 5 shows all of the HTMT ratios of correlation of the construct are below acceptable value of 0.90. On the basis of the findings, the constructs have both reliability and validity.

Table 4. Constructs reliability and validity

Constructs	Cronbach's alpha	CR	AVE
Behavioral intention	0.808	0.912	0.839
Effort expectancy	0.860	0.746	0.613
Facilitating conditions	0.893	0.911	0.537
Performance expectancy	0.757	0.892	0.804
Social influence	0.880	0.904	0.512
Use behavior	0.751	0.889	0.800

Table 5. Heterotrait-monotrait ratio (HTMT)

Constructs	Behavioral intention	Effort expectancy	Facilitating conditions	Performance expectancy	Social influence
Behavioral intention					
Effort expectancy	0.020				
Facilitating conditions	0.073	0.179			
Performance expectancy	0.074	0.054	0.065		
Social influence	0.773	0.079	0.082	0.146	
Use behavior	0.752	0.095	0.111	0.076	0.800

Table 6. Structural model to test hypothesis using bootstrapping method

	Original sample (O)	Sample mean (M)	Standard error (STERR)	t-statistics (O/STERR)	p-value
Behavioral intention → Use behavior	0.584	0.581	0.059	9.838	0.000
Effort expectancy → Behavioral intention	0.007	-0.003	0.061	0.107	0.915
Facilitating conditions → Use behavior	0.081	0.101	0.050	1.638	0.102
Performance expectancy → Behavioral intention	-0.004	0.005	0.046	0.093	0.926
Social influence → Behavioral intention	0.660	0.659	0.056	11.825	0.000

Table 7. R² and R² adjusted

	R ²	R ² adjusted
Behavioral intention	0.435	0.429
Use behavior	0.351	0.347

4.2.2. The structural model

The structural model helps to assess the relationship between the constructs in the model to test the hypothesis using the bootstrapping method. Table 6 shows Behavioral intention → Use behavior ($t = 9.838$), Social influence → Behavioral intention ($t = 11.825$) has significant effect in the adoption of HRIS. Thus, these findings support our hypothesis H3 and H5. Social influence explains 43% of the variation in behavioral intention, while 35% of the variations in the use behavior is explained by behavioral intention to use HRIS (see Table 7 for R² results).

4.3. Mediation effect

The mediation effect of the behavioral intention has been assessed by a Sobel test developed by Sobel (1982) using the calculator of Soper (2016). See Table 8 for Sobel test results. It can be observed from the Sobel test result that Behavioral Intention mediates the relationship between Social Influence and Use Behavior (p -value is less than 0.05), which proves our hypothesis H6. The mediation is partial because the path coefficient decreases in value (from 0.652 to 0.468) in the presence of the mediator.

Table 8. Sobel test results

Path coefficient	Sample mean	Standard deviation	Test statistics: 2.52496335 (>1.96)	
Direct No Med: 0.652	SI to UB: 0.657	SI to UB: 0.055	One-tailed (0.05<)	Two-tailed (0.05<)
Direct W/Med: 0.468	SI to UB: 0.279	SI to UB: 0.108	0.00578552	0.01157104

5. Discussion

The research applied the UTAUT model to determine factors affecting the adoption of HRIS by banking and financial sector of Bangladesh. Our study reveals that the social influence and behavioral intention are the determinants of the adoption of HRIS for Bangladeshi banking and financial sector. Our findings conform the results of Scupola (2003), Kapurubandara and Lawson (2008), Dutta and Evrard (1999), Al-Dmour and Shannak (2012), Pande and Gomes (2012), Jeyaraj, Rottman, and Lacity (2006), Zhu, Dong, Xu, and Kraemer (2006), Kamal (2006), Dery, Grant, and Wiblen (2009). Social influence factor both directly and indirectly influences the adoption. Behavioral intention partially mediates the relationship between social influence and behavioral use.

Banking and financial industry in the world and Bangladesh per se are highly competitive and regulated by the central bank of Bangladesh. These institutions governed by the central bank have to maintain certain standard operating procedures, tools, and technologies to adhere to regulations and information sharing and common standards. Moreover, the competition among the banking and financial sector drive the industry members to remain efficient and to offer innovative services, if not to a level of what the competitors offer. As a result, the social influence works like a domino effect in the adoption of new technology and services. Our study seems to have the same findings what can be seen in practice.

Social influence from the market leaders or the role models, indirectly, ignite the intention to use HRIS and intention ultimately influence the use behavior of HRIS and other technologies such as e-governance and e-commerce (Panayotopoulou, Galanaki, & Papalexandris, 2010). Social influence may work as a direct effect on competitors, who based on the competition take the decision to use HRIS; for them, it is a question of survival or stays in the race.

6. Conclusion and implications

Despite the fact that HRIS is a promising aspect and its adoption into the banking and finance sectors remains a challenge in developing nations such as Bangladesh. Success in the adoption of HRIS will involve the engagement of end users and managers. This study has found social influence has both direct and indirect effect on the adoption of HRIS. The indirect effect comes from the mediation factor of behavioral intentions. The paper has approved the model using the UTAUT and framework for determining the banking and financial sector employee attitude toward adoption of HRIS in the Bangladesh. The outcome of this study has a positive contribution to the design of strategies to improve banking and financial services in Bangladesh. The research study has both theoretical as well as managerial implication.

6.1. Theoretical implication

The research work has been completed with the sample from the public and private banking and financial organizations situated in Dhaka, the capital city of Bangladesh. This outcome of the study might not be the perfect reflection of the entire scenario of Bangladesh as we have not covered the rural areas which are away from the social and economical privileges including the access to technology and bank and financial services. Future studies may expand the scope of the sample by including those living in rural areas. Another future recommendation for more studies should include more variables that have not been included in this study but have been conducted in existing studies in HRIS adoption.

6.2. Managerial implications

Banking and financial sector have been significantly benefited by the adoption of ICT throughout the world. Adoption of ICT facilitates offering new product and services through different delivery channels, remain efficient, cost effective, and innovative. To do so, one of the technology banking and financial sector throughout the world adopting is HRIS. Our findings suggest that managers should always look around for their competitors move and their market leaders to know about the technological adoption they are making. Quick adoption of HRIS may give them the same competitive advantage before the competitors. The negative effect of social influence is that there are a bandwagon

effect and all members in the industry quickly adopt competitors' move. The adoption of HRIS may have a short life cycle. Thus, managers should be the first mover to use the technology such as HRIS to get the first mover advantages in the market.

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