International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 01 | Jan 2020 www.irjet.net p-ISSN: 2395-0072

Implementation of HRIS by Hospitals in Bangladesh: An Analysis using the UTAUT Model

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Abstract - *Traditional HR practices have massively been transformed by the adoption of Human Resources Information Systems (HRIS) in HR management of hospitals worldwide. Increased operational efficiency through the implementation of HRIS in HR management is primarily influencing the decisions regarding HRIS adoption by the hospital authorities. However, the deployment decision of HRIS in hospitals, especially in a developing country like Bangladesh, is significantly influenced by different socio-economic factors. This study is attempted with a view to identifying factors influencing the adoption of HRIS by hospitals in Bangladesh by using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. A structured questionnaire was deployed for collecting data from HR managers and general administrations of various public and private hospitals in Bangladesh. Collected data were cleaned, prepared and analyzed through MS Excel, SPSS, and SmartPLS. The study found performance expectancy, effort expectancy, social influence as significant factors in the case of HRIS adoption in the hospitals of Bangladesh. The findings will help managerial authorities of the hospitals in Bangladesh to understand the challenges in adopting HRIS for sound HR management along with the use behavior of the HRIS users.*

Key Words: **HRIS, UTAUT, Information Systems, Hospitals, Bangladesh**

1. INTRODUCTION

The integration of information technology with business and management is now being considered as the key to success in today's highly dynamic business world. On the other hand, Advancement in the development of the internet has facilitated the growth of information, communication, and networking technologies. These two facts have generated a vibe for accepting the significance of IT in business management. This vibe is continuously altering each and every sector of business and management worldwide. Companies are now concerned with emerging technologies and their adoptions in order to possess competitive advantages over their rivals. Keeping tempo with the progression, HRIS has become an indispensable component of management in the different sectors of the business industry [1]. Employee data is crucial for any company's HR management. Traditionally HR departments store such data with papers and spreadsheets. However, paper records have many limitations and create operational inefficiency in most cases. An HRIS is, thus, designed with the aim of centralizing all HR-related data. Using HRIS ensures operational efficiency, reduces data duplication, and human error [2]. HRIS can be defined as a systemic process for retrieving, maintaining, storing, validating, and collecting the data required by different units of the organizations for managerial activities and HR management [3], [4]. HRIS is also addressed as a collection of databases integrating together to form a vast record of all employee issues that exist within a company [2]. Broderick & Boudreau [5] defined HRIS as the combination of the software, database, and hardware that are capable of making employee-related data store and making the organization capable of picking up the required information as per the demand of the HR management.

Advance HRIS includes self-service features aimed at simplifying other functions related to HR functions. Such features ensure accurate workflow, work integration, and work management. Moreover, now HRIS includes full payroll, attendance, recruitment, training and performance module. These all justifications made HRIS initiatives popularly accepted as a means of improvement in any organization especially in the service sector of both developed and developing countries [6]. The health service sector of developed and developing countries has also adopted HRIS for ensuring efficiency in HR management [7], [8], [9]. However, HRIS adoption is a challenging task in the case of developing countries like Bangladesh especially in the service sector like hospitals as there many macro and micro factors influential to the decisions regarding HRIS implementation. This study is an attempt to investigate the factors that are influential to the HRIS implementation in the hospitals of Bangladesh using the UTAUT model.

2. LITERATURE REVIEW

Over the past few decades, there have been a huge number of studies on HRIS and its applications in different contexts and countries. According to these studies, applications of HRIS in HR management vary with the purposes of the organizations and their managerial objectives. Particularly, HRIS serves organizations with advantages like cost reduction, improved client services, improved communication, improved strategic orientation, and innovation [5], [10], [11], [12]. Then again, Hussain, Wallace, & Cornelius [13] focused on the efficient functionality of HRIS. HRIS helps to gain quick response and proper access to information [11]. HRIS ensures quality in the training and

development of the employees and helps to bring expertise in regular operational efforts [14]. Zhang & Wang [15] suggested that running a successful business in the present world must need IT orientation and its interaction with HRM.

Studies have also discussed on the integration, context, and conditions for implementing HRIS. DeSanctis [3] focused on the integration of HRIS as a subfunctional part of MIS for efficient operational management. Martinsons [16] focused on the integration of HRIS with the training and development domain. Haines & Petit [17] revealed that the system condition is the most critical factor in the successful implementation of HRIS. Moreover, the same study found that the availability of internal support shapes the use of HRIS in the organizational context. Another study by Ruël, Bondarouk, & Looise [18] focused on web integration to HRIS and found how competencies of employees improve using HRIS. Altarawneh & Al-Shqairat [19], in their study, found that insufficient financial support, the unwillingness of top management and culture are the significant factors in the case of HRIS implementations. Ngai & Wat [11] found financial support as one of the most significant barriers in the case of HRIS implementation.

However, Krishnan & Singh [20] argued that the proper application of HRIS is significantly influenced by the lack of knowledge from the HR department and lack of importance in the HR department. The same issue was uncovered by previous studies addressing positive support from top management as the prime barrier in adopting HRIS in organizations [21], [22]. Chau & Hui [23] argued that the more expertise an organization has in its HR department the more it is likely to be successful in HRIS implementation. The relative advantage was addressed as the precondition to any type of technology adoption like HRIS [24]. Moreover, the same study also addressed the importance of innovative and strategic extent taken by the management for its operational excellence in case of any emerging technology adoption.

The socio-economic status of the users is pointed as a critical issue in the case of HRIS adoption and its successful operation in the study by Premkumar & Roberts [22]. However, such a finding is conflicting because users' point of view in using emerging technologies is not a prime concern by many studies [25], [26]. Troshani, Jerram, & Gerrard [27] pointed out that internal regulatory compliance can have a greate impact on successful HRIS adoption. Support from the top management and rivalry influence are the significant dependent factors to HRIS implementation [28]. Moreover, the same research revealed the importance of organizations' size in case of the successful operations of HRIS. The facilitating condition was found significant in implementing HRIS by the organizations [25].

There have been so many studies on HRIS and its implementation in different types of organizations using UTAUT model, its modification, Trust model, Technology Fit model and or other technology acceptance related models [29], [12], [30], [31], [32]. Studies have also been done on HRIS implementations in hospitals and health sectors with findings that there are many social, financial and managerial factors significant to HRIS adoption and operations [8], [33]. Some studies focused on the operational excellence achieved through the use of HRIS in HR management of hospitals [7], [9].

However, there are almost no previous studies found in the case of HRIS implementation in the case of hospitals in Bangladesh. This research gap was utilized while conducting this study with a view to understanding the factors influential to the implementation of HRIS in the hospitals of Bangladesh using the UTAUT model.

3. THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Theories such as hype cycle, social cognitive theory, technology acceptance model, the theory of planned behavior, the theory of reasoned action, the theory of life-cycle, diffusion of innovations theory and the Bass diffusion model are common theories used for describing the purpose, acceptance, and utilization of new technologies [12]. Among the theories, unified theory of acceptance and use of technology (UTAUT), an updated version of the technology acceptance model (TAM), is the most widely used one by the information system researchers worldwide. This theory is popular in use for identifying the factors of the adoption of emerging technologies. In our study, we also used the UTAUT model as the base of our investigation.

The UTAUT model was formulated as a technology acceptance model with a view to describing the intentions of the users in using an information system [34]. It is considered as the most powerful model for investigating technology uses and adoption [35]. The UTAUT model has wide acceptability, the good explanatory power of use behavior of technology (as more than 70%) and capability [36].

The four main constructs of the UTAUT model are taken into consideration in this study and they are- Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Condition (FC). And all these constructs are disputed to have affected on the Behavioral Intention (BI) and Use Behavior (UB) of the technology. However, BI construct is a direct determinant of UB [37]. For the simplification of the study, moderating effects by voluntariness of use, experience, age, and gender of the users have not been considered in the study. Following hypotheses have been used in the study-

H1: *Performance Expectancy (PE) has significant influence over the Behavioral Intention (BI) of the users' in implementing HRIS*

H2: *Effort Expectancy (EE) has significant influence over the Behavioral Intention (BI) of the users' in implementing HRIS*
H3: *Social Influence (SI) has significant impact over the Behavioral Intention (BI) of the users' in implementing HRIS*
H4: *Facilitating Conditions (FC) of implementing HRIS significantly influences the Use Behavior (UB) of the users' of HRIS*
H5: *Behavioral Intention (BI) of the users' in implementing HRIS positively affects Use Behavior (UB) of HRIS*

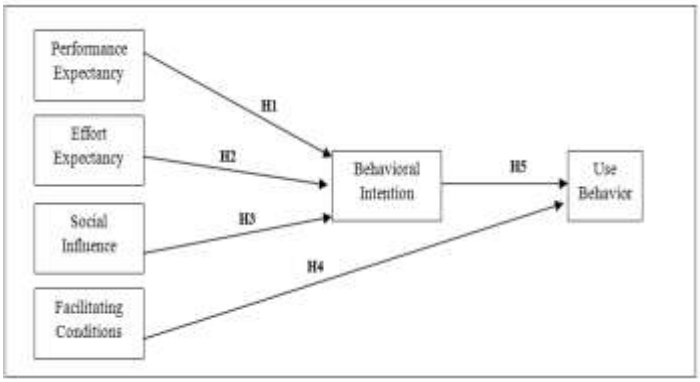

Fig -1: Research Model

4. METHODOLOGY

4.1 Measurement Instrument

All of the measurement items under each of the constructs are adopted from the previous studies with a view to ensuring the measurement instrument's validity. Measurement items used in this study are given below with related sources-

Table -1: Measurement Items

Constructs	Items		Sources
Performance Expectancy (PE)	PE1	HRIS is useful for everyday effective HR Management	[34], [38], [12]
	PE2	HRIS increases operational efficiency	
	PE3	HRIS merges well with my current work manner	
Effort Expectancy (EE)	EE1	Learning how to use HRIS is effortless	[34], [12], [39]
	EE2	HRIS platform is easily understandable	
	EE3	Overall I find HRIS easy to use	
Facilitating Conditions (FC)	FC1	We have required resources (hardware, software, finance) for deploying HRIS	[40], [12], [39]
	FC2	We have required expertise for running HRIS	
	FC3	Inadequate resources are our main constraint in deploying HRIS	
Social Influence (SI)	SI1	We use HRIS because market leaders use it	
	SI2	Use of HRIS by our competitors influence our intention to use it	[12], [39], [26]
	SI3	We use HRIS because top management thinks its strategically important	
Behavioral Intention (BI)	BI1	We plan to deploy HRIS	[34], [12], [39], [26]
	BI2	We plan to utilize HRIS in the future	
	BI3	We will use HRIS regularly	
Use Behavior (UB)	UB1	HRIS is a pleasant experience	[41], [12]
	UB2	We use HRIS currently	
	UB3	We utilize HRIS frequently	

4.2 Questionnaire Design and Data Collection

Data were collected using a structured questionnaire following the survey method. For quantitative data, the survey method is considered as the most appropriate tool [42]. A five-point Likert scale ranging from 1(strongly disagree) to 5(strongly disagree) was used in the questionnaire for collecting responses. A five-point Likert scale was used as it simplified the objective of the data collection and removes biases [43]. The questionnaire had a background information collection section and a section including measurement items. Data were collected between September 2019 to October 2019 from different private and public hospitals of Dhaka, Chittagong, and Noakhali. Roscoe [44] suggested determining sample size based on the total number of items in the questionnaire and recommended that 30-500 as the standard range of sample size. However, a total of 166 HR managers, general administrators, and owners of the hospitals were asked to provide responses with a view to carrying further statistical analysis.

4.3 Data Analysis Methods

Collected data were first given input to a spreadsheet and then the standard deviation method was applied for screening and cleaning unengaged data. A total of 3 responses were removed from the overall 166 responses and the rest of the 163 data was given input to SPSS data sheet for reliability test using Cronbach's Alpha Reliability test and Composite Reliability test. Convergent validity was measured by Average Variance Extracted (AVE) with a view to testing the validity of the constructs. After that, with prepared data, hypotheses of this study were tested using a structural equation model (SEM).

5. RESULTS

5.1 Demographic Characteristics of the Respondents

The summary of the respondents' demographic information is represented in table 02. From the table, it can be interpreted that the majority of the respondents are male

with 65.64% in portion. A majority (39.26%) of the respondents are within the age group of 25-34 years. Respondents are educated enough to understand the purpose of the study. 70.55% of the respondents are bachelor degree holder and 4.91% holds degrees above masters level. 160 private hospitals and 3 public hospitals are covered under the study those are located in Dhaka (127 hospitals), Chittagong (33 hospitals), and Noakhali (3 hospitals). We have reached the top level of the management including owners, CEOs, Managing Directors and other strategic managerial positions in maximum number (69.33%) for collecting data.

5.2 Measurement Model

The reliability of each of the constructs was tested first by using Cronbach's Alpha reliability test. After that Confirmatory Factor Analysis (CFA) was conducted in order to test Composite Reliability (CR) and Convergent Validity (CV). The reliability value between 0.50 to 0.70 represents moderate reliability, value above 0.70 represents high reliability and value below 0.50 represents low reliability [45], [46]. Cronbach's Alpha value of the constructs and CR value of the constructs represented in table 03 indicates that all of the constructs have strong internal consistency and reliability except FC. Because the reliability values of all constructs used in the study are above the acceptable value of 0.70 except the value of FC. However, FC can be considered as moderately reliable as the value is between 0.50 to 0.70 [46]. The value of AVE greater than the acceptable value of 0.50 indicates the convergent validity of the constructs [46].
From table 03, it can be observed that the AVE value of all the constructs is satisfactory except FC.

Table -2: Demographic Data

Variable		Frequency	Percentage
Gender	Male	107	65.64%
	Female	56	34.36%
	Other	0	0%
Age	Below 25 Years	6	3.68%
	25-34 Years	64	39.26%
	35-44 Years	24	14.72%
	45-54 Years	57	34.97%
	55 Years to above	12	7.36%
Level of Education	Below Bachelor	3	1.84%
	Bachelor	115	70.55%
	Masters	37	22.70%
	Above Masters	8	4.91%
Organization's Type	Private	160	98.16%
	Public	3	1.84%
Place	Dhaka	127	77.91%
	Chittagong	33	20.25%
	Noakhali	3	1.84%
Level of Designation	Top (Strategic)	113	69.33%
	Middle (Tactical)	39	23.93%
	Low (Operational)	11	6.75%

Table -3: Measurement Model

Constructs	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
PE	0.839	0.850	0.653
EE	0.908	0.923	0.818
SI	0.723	0.719	0.864
FC	0.603	0.617	0.402
BI	0.714	0.761	0.689
UB	0.723	0.710	0.621

5.3 Hypothesis Testing

The causal relationship of the constructs is evaluated using a structured model and the relationship between the dependent and independent variables is tested with path *co-efficient (beta)*, *t-statistics* and *p*-value. The output of the structural model is represented in table 04.

According to the output of the structural model, it can be observed that the relationship between PE to BI *(t=3.845,p<0.05)*, EE to BI *(t=2.754,p<0.05)*, SI to BI *(t=2.112,p<0.05)*, and BI to UB *(t=2.939,p<0.05)* are significant. Therefore, hypotheses H1, H2, H3, and H5 are supported by the study. On the other hand, hypothesis H4 is not supported as the relationship between FC to UB *(t=1.044,p>0.05)* turned insignificant.

Table -4: Measurement Model

Hypothesis	Path	*β*	*t-statistics*	*p*-value
H1 (supported)	PE → BI	0.286	3.845	0.000
H2 (supported)	EE → BI	0.154	2.754	0.000
H3 (supported)	SI → BI	0.142	2.112	0.000
H4 (not supported)	FC → UB	0.054	1.044	0.113
H5 (supported)	BI → UB	0.181	2.939	0.000

6. DISCUSSION

Being a developing country Bangladesh has to face many problems regarding fundamental human rights, especially in the health sector. Overpopulation, low GDP, low per capita income, moderate level of education play vital roles in case of any technology adoption. Thus, there are huge opportunities available for development with plenty of socio-economic influences. The health sector of Bangladesh basically comprises both government and private investments with a competitive market. Yet, people lack proper health care in Bangladesh due to the high cost of health care. If technology can be integrated with health service in Bangladesh at a satisfactory rate then cost associated with health service will be under the reach of the general people of Bangladesh. HRIS implementation can reduce the cost of operation for hospitals and help reducing

health service costs in the case of Bangladesh. this study is an attempt to highlight the challenges associated with HRIS implementation.

The UTAUT model is applied in this study with a view to determining the influential factors to the adoption of HRIS in the hospitals in Bangladesh and the study found that performance expectancy, effort expectancy, social influence are significant to the use behavior of HRIS. These findings conforms partially and fully the previous findings that technology adoption in any organization and economy is influential by different socio-economic factors [47], [48], [49], [50], [33], [12], [9], [39], [26]. Furthermore, like previous studies, this study matches that use behavior of technology is facilitated by behavioral intention [51], [34], [52], [12], [39], [26].

7. CONCLUSION

The adoption of HRIS by the different organizations in the service industry is producing success stories around the world and making organizations competitively advantageous. HRIS implementation is being considered as one of the prime strategic decisions by the management of the organizations. However, HRIS implementation decision in the hospitals, especially in case of a developing country like Bangladesh, is significantly influenced by different socio-economic dynamics. The study found that factors such as-performance expectancy, effort expectancy, social influence are the factors that have significant influence over the decision regarding HRIS implementation and usage in the hospitals of Bangladesh.

7.1 Implications

Precisely, this study may make contributions theoretically, methodologically and practically. Theoretically, this study may enrich the literature on HRIS and its implementation especially in the case of hospitals in the context of a developing country. In the case of methodological contribution, the use of the UTAUT model in analyzing HRIS adoption may give future researchers some research insights and scopes and help them to utilize the research framework. Practically, the findings may make sense to the authorities of the hospitals in Bangladesh while considering the adoption and the implementation of HRIS for effective and efficient HR management now and in the future. Other stakeholders may get benefitted from the insights of the findings.

7.2 Limitations and Future Research

The study has been completed based on the sample from Dhaka, Chittagong, and Noakhali. Thus, the outcome of the study may not be a complete reflection of the entire situation of Bangladesh because there are some areas in Bangladesh that still lack socio-economic privileges. Future researchers may consider the fact and spread out the area of studies including cross-cultural experiments. Moreover, we have followed UTAUT model for conducting the research that includes five variables only (performance expectancy, effort expectancy, social influence, facilitating condition, and use behavior and intention) and for the simplification of the study moderating effect from voluntariness, experience, age, and gender of users has not been considered. More variables are suggested to be involved in future studies and moderating effect can be considered also.

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