Human Resource Professionals' Intention to Use and Actual Use of Human Resource Information Systems

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ABSTRACT

Human resource information systems (HRISs) are widely used and have a strategic impact on organizations. The fundamental objective of this paper is to reveal the predominant antecedents affecting their adoption and implementation by replicating the unified theory of acceptance and use of technology (UTAUT) model from a South Asian emergent country perspective. The study collected data from human resource professionals employed in manufacturing and service companies located in Bangladesh, which were analyzed by employing partial least squares-based structural equation modeling software. It was revealed that performance expectancy, social pressure, and facilitation conditions significantly influence the intention to use and the actual use of HRIS, but that user's effort expectancy had no significant impact. The study contributes by enriching the previous findings and validating the results based on relevant literature. Furthermore, managerial implications, the limitations of the study, and suggested future study directions are presented.

KEYWORDS

Actual Use, Adoption, Bangladesh, HRIS, Human Resource Professionals, Intention to Use, Manufacturing and Service Industry, UTAUT

INTRODUCTION

Business organizations are currently facing a significant number of challenges owing to the advances in information and communication technologies, and the emergence of knowledge-based economies around the globe (Park, Gardner, & Wright, 2004; Ramírez & Tejada, 2020). Consequently, the adoption of new collaborative technologies in the business process plays a distinctive role in helping firms survive in the global competitive market (Arefin & Hosain, 2019). In the human resource management domain, information technology (IT) based human resource (HR) practices, known as human resource information systems (HRISs) have already replaced conventional HR practices (Alam, Masum, Beh, & Hong, 2016). Organizations in advanced countries have long been aware of HRIS and intensified their adoption of it by recognizing its short- and long-term benefits, whereas developing countries have acute limitations to their adoption of HRIS due to diverse socio-economic

factors (Heikkilä, Brewster, & Mattila, 2014; Noutsa, Kamdjoug, & Wamba, 2017). However, academics, researchers, and entrepreneurs in developing nations are now showing great interest in identifying the dominant behavioral antecedents to the adoption and implementation of HRIS by understanding the extent of its state-of-the-art application in organizations (Al-Dmour, 2020). HRIS is a technology-driven information system that assists in collecting, accumulating, maintaining, retrieving and disseminating an organization's HR information, allowing it to perform its HR functions in an integrated way (Kavanagh & Johnson, 2017). It can be applied to execute several HR functions such as job analysis, human resource planning, recruitment, selection, training and development, performance appraisal, succession planning, and payroll management in a precise way (Scupola & Pollich, 2019). In addition, HR professionals can apply HRIS to generate periodical compliance and regulatory reports, manage the profit-share process, conduct analysis of skills inventories and development, and administer pension plans, compensation and benefits (Al-Dmour, 2020). Several empirical studies have reported that the application of HRIS reduces firms' overall administrative costs, increases productivity and strengthens the decision-making process (Noutsa et al., 2017). Therefore, it is argued that the extensive adoption of HRIS makes HR professionals' jobs simpler, which allows them to put more effort into transformational HR activities. These types of IT-based paperless HRIS activities have replaced the traditional personnel management, resulting in a synergetic impact on firms' operational excellence and encouraging the agility of sustainable performance goal achievement (Hosain, Manzurul Arefin, & Hossin, 2020; Maletic, Maletic, Dahlgaard, Dahlgaard-Park, & Gomišcek, 2015).

In industrially advanced countries, HRIS is considered a strategic tool that contributes to the achievement of competitive advantages, but Bangladesh has experienced several complications in its adoption in the industrial and service sector (Rahman, Qi, & Jinnah, 2016). A recent empirical study reported that there had been steady progress regarding the adoption of HRIS in a few Bangladeshi companies, but that process was still in its infancy (Samat, Awang, Hussin, & Nawi, 2020). Jahan (2014) argues that as an emerging economy, the level of HRIS adoption in Bangladesh is not adequate, as manufacturers and service providers are not aware of the synergic benefits from the use of advanced information systems. The studies of Rahman, Islam, and Qi (2017) and Ferdous, Chowdhury, and Bhuiyan (2015) investigated the different obstacles to HRIS adoption in Bangladesh, but their paper failed to show the essential behavioral factors that trigger HR professionals to adopt and implement HRIS. However, by acknowledging the overwhelming impact of HRIS, researchers in different countries have revealed many influential factors that are essential proxies for the adoption of HRIS in organizations. Nevertheless, most of these studies were conducted from advanced countries' perspectives, and previous research has also reported that the results of innovation research are inconsistent and may differ from country to country (Alam et al., 2016). There has been little research in the developing country's context in terms of HRIS adoption in which the overall industry scenario is highlighted (Roztocki & Weistroffer, 2011). There is now an urgent need to identify the dominant facets that lie behind the adoption and implementation of HRIS in Bangladesh.

The literature review has evidenced that few studies have been conducted in terms of HRIS adoption and that these mostly focus on the service sector. Surprisingly, no empirical research study has been identified in which where a country's overall industry scenario is highlighted by integrating both the manufacturing and service sectors. For instance, there have been studies of HRIS adoption in hospitals (Alam et al., 2016; Dey & Saha, 2020), the banking and financial sector (Rahman et al., 2016), higher education (Davarpanah & Mohamed, 2020), and small and medium enterprises (Fobang, Wamba, & Kamdjoug, 2019; Noutsa et al., 2017). Therefore, the following two research questions were developed based on the previous literature to address the prevailing research gap:

RQ1: What is the current status of HRIS adoption in the manufacturing and service industries of Bangladesh?

RQ2: What are the dominant predictors affecting HRIS adoption in the manufacturing and service industries of Bangladesh?

By aligning these two research questions, the main purpose of this paper is to identify the main antecedents that affect HRIS adoption from the viewpoint of an emerging South Asian country such as Bangladesh. The study contributes to the current literature in diverse ways. First, to the best of the researcher's knowledge, this paper is one of the few experimental studies that has identified the dominant predictors of HRIS adoption by employing the unified theory of acceptance and use of technology (UTAUT) model in the context of the manufacturing and service industries of Bangladesh. Second, it allows entrepreneurs, manufacturers, and HR leaders to identify the present industrial scenario in terms of HRIS adoption in developing nations, which may encourage them to design their investment plans strategically for HR training and development programs to reshape the behavioral aspects of HR professionals in adopting and implementing HRIS widely. In the following sections of the paper, the theoretical background and literature review is presented, in which relevant research works are analyzed critically to develop the hypotheses and conceptual research model. The research methodology section includes the research design, data collection process together with bias concern, measurement tools, and demographic information. The model evaluation then encompasses the measurement and structural model evaluation. Finally, the independent results, discussion and conclusion are presented, together with the managerial implications, limitations of the study and future study directions.

THEORETICAL BACKGROUND OF THE STUDY

The adoption and implementation of different types of advanced technologies such as ones related to education, enterprise resource planning, artificial intelligence, and commercial apps, depending on the extent to which potential users perceive and forecast the net benefits from the actual use of the technologies in the dynamic global environment, such as competitive advantage (Al-Dmour, 2020). The rapid advances in new technologies have attracted more academics and researchers in the area of management science and engineering. As a result, the level of research on technology adoption has increased dramatically in recent times (Uddin, Alam, Mamun, Khan, & Akter, 2020). Earlier technology adoption studies were conducted employing various technology acceptance models, evidencing that among them the most accepted model was the unified theory of acceptance and technology use (UTAUT) developed by Venkatesh, Morris, Davis, and Davis (2003). Surprisingly, researchers have claimed that the widespread application of the UTAUT model in diverse research areas has forced it to outperform many of the previous theories of technology acceptance (Venkatesh et al., 2003). The UTAUT model consists of eight old technology acceptance models, namely the technology acceptance model (TAM), the theory of reasoned action, the theory of planned behavior (TPB), the motivation model, combined TAM and TPB, the innovation diffusion theory, the model of PC utilization, and social cognitive theory (Alghazi, Kamsin, Almaiah, Wong, & Shuib, 2021). Alghazi, Wong, Kamsin, Yadegaridehkordi, and Shuib (2020) conducted a literature review paper by collecting data on technology acceptance models from 2010 to 2020, remarking that UTAUT was the most widely used technology acceptance model, able to explain up to 70% of the variance, whereas other technology acceptance theories could only explain up to 53% concerning to behavioral intention (Alam, Dhar, & Munira, 2020; Wei, Luh, Huang, & Chang, 2021). In addition, the model can explain both the human and social factors that influence the intention to use and the actual use of technologies by giving a holistic view of understanding and replacing the eight fragmented theories. The UTAUT model includes five multi-level variables, namely performance expectancy (PE) and effort expectancy (EE), which are individual-level variables; social influence (SI), relating to the group level variable; facilitating conditions (FC), referring to the organizational-level variable; and

intention to use (IU), which represents the individual-level variable used to predict the actual use (AU) of technology (Uddin et al., 2020; Venkatesh et al., 2003).

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Performance Expectancy (PE) and Intention to Use (IU) HRIS

PE refers to the degree of end-users' belief in the use of a given application or system which will help them find a specific solution to the problem (Alalwan, 2020). It comprises relative advantages, technology trust, person job-fit, and performance ability in the adoption of new technologies (Soliman, Karia, Moeinzadeh, Islam, & Mahmud, 2019). Several empirical studies have found that PE significantly influences IU when adopting technologies (Al-Saedi, Al-Emran, Ramayah, & Abusham, 2020). For instance, a study conducted by Alam and Uddin (2019) reported that in the adoption of enterprise resource planning, PE had a significant influence on IU in the context of Bangladesh. Similar research findings were also made in the studies of Alam, Hoque, Hu, and Barua (2020) and Alam et al. (2020) regarding the adoption of m-Health and artificial intelligence respectively, whereas Rahman et al. (2016) obtained contrary findings and claimed that PE made no significant contribution to IU in HRIS adoption in the context of the banking and finance industry of Bangladesh. Therefore, the above conflicting research findings motivated the researcher to develop the following hypothesis:

H1: Performance expectancy influences HR professionals' intention to use HRIS.

Effort Expectancy (EE) and Intention to Use (IU) HRIS

EE signifies the degree of ease of access to technology (Wei et al., 2021). It indicates the user-friendly features of a system and has a significant effect on users' interest to adopt new technologies (Dwivedi, Shareef, Simintiras, Lal, & Weerakkody, 2016). Similar to the findings on PE, EE is considered to be a significant predictor of IU in technology adoption (Samat et al., 2020). Various research studies in different fields have demonstrated that there is a close relationship between EE and IU in the adoption of technologies (Alam et al., 2020). The research findings of Onaolapo and Oyewole (2018) show that EE significantly influenced the IU of smartphones in distance learning, demonstrating users' perceived ease of use, level of complexity, and ease of use, which widely affect the adoption of information systems. In addition, Ghalandari (2012) and Isaac, Abdullah, Aldholay, and Ameen (2019) reported similar findings in relation to the adoption of mobile banking and internet use respectively. On the contrary, Shiferaw and Mehari (2019) in their study of Ethiopian electronic medical record systems, showed that EE had no prediction effect on IU. In addition, there is also evidence that EE does not affect users' intention to adopt HRIS in the context of the banking and financial sector of Bangladesh (Rahman et al., 2016). Consequently, based on the above arguments, the following hypothesis is proposed:

H2: Effort expectancy predicts HR professionals' intention to use HRIS.

Social Influence (SI) and Intention to Use (IU) HRIS

SI refers to the measurement of social expectations that individuals feel when they intend to use new technologies (Shah, Khan, Khan, Khan, & Xuehe, 2021). Therefore, social influence can be treated as the level of belief and perception of individuals regarding the necessity to adopt and embrace new technologies or not (Venkatesh et al., 2003). It has been observed that the intention of use is influenced by different social groups, such as friends, peers, relatives, and neighbors (Wei et al., 2021). In addition, the literature also acknowledges that the adoption of new technologies depends on normative judgments and perceived expectations from the user's social groups (Uddin et al., 2020).

In research studies of students' mobile learning system adoption in higher education in Jordan and e-government adoption in Abu Dhabi, social influence surprisingly plays an insignificant role (Al Mansoori, Sarabdeen, & Tchantchane, 2018; Almaiah, Alamri, & Al-Rahmi, 2019). However, the study of Al-Saedi et al. (2020) endorses the positive aspect and reports that social influence plays a pivotal role in predicting the IU of M-payment in the context of Oman. Therefore, the following hypothesis is proposed based on the above discussion.

H3: Social influence affects HR professionals' intention to use HRIS.

Facilitating Conditions (FC) and Intention to Use (IU) HRIS

FC includes the perceived compatibility, and technical and infrastructural support relating to the adoption of new technologies (Alam et al., 2016). Researchers have argued that without technical and infrastructural support, together with knowledge and physical resources from organizational strategic positions, ambiguity may be created in the adoption of new technologies (Uddin et al., 2020). Dwivedi et al. (2017) conducted a study in the context of e-government adoption in India and acknowledged the positive association of FC with IU. Furthermore, the empirical study by Suki and Suki (2017) argues that FC predicts students' IU in the area of animation and storytelling in e-learning in Malaysia. However, Yadegaridehkordi, Nilashi, Shuib, and Samad (2020) and Altalhi (2021) found that FC had no anticipatory effect on IU in the adoption of cloud computing and online learning respectively. Therefore, based on these mixed findings, the following hypothesis is proposed.

H4: Facilitating conditions affect HR professionals' intention to use HRIS.

Intention to Use (IU) and Actual Use (AU) of HRIS

IU measures the degree of subjective probability and willingness of system users' to use new technologies and is treated as a consequential forecaster of the AU of technology (Suki & Suki, 2017). The association between IU and AU is defended in many empirical papers in diverse research areas of technology adoption, such as healthcare (Alam et al., 2020); artificial intelligence (AI) in higher education (Chatterjee & Bhattacharjee, 2020); and AI in recruiting talent (Alam et al., 2020). Similarly, in the adoption of HRIS in the banking and financial sector of Bangladesh, Rahman et al. (2016) argue that users' IU eventually becomes AU. Therefore, the following hypothesis is proposed:

**H5:** Intention to use predicts the actual use of HRIS.

Therefore, based on the in-depth literature review, the researcher developed the following research model by applying the UTAUT model to identify the factors involved in users' adoption and implementation of HRIS from multi-level constructs, comprising individual, group, and organizational levels and which have a significant impact on the behavioral intention of technology adoption.

RESEARCH METHODOLOGY

Research Design

According to the research onion model of Saunders, Lewis, and Thornhill (2009), this research study applies the deductive reasoning approach, with the mono method quantitative choice of methodology, as only a questionnaire was employed to collect the data. The study also follows the survey strategy which is widely used in business and management research to collect standardized data by using a questionnaire economically and allowing researchers to make an effortless comparison. In addition, in order to recognize the purpose of the research design, an exploratory research design was applied

Figure 1. Proposed research model
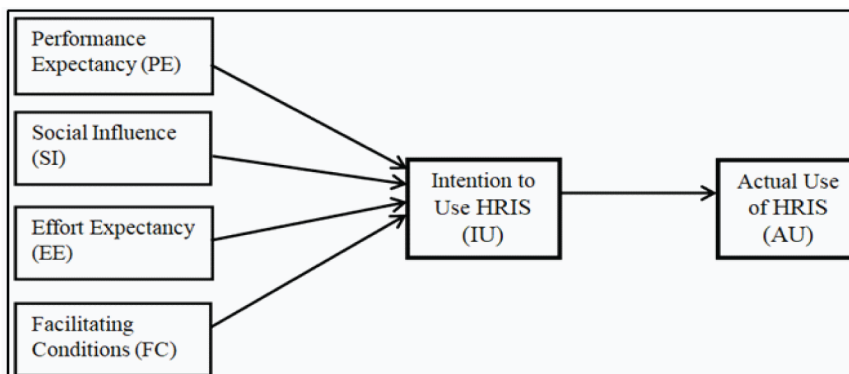
by taking into consideration the inadequate amount of research on HRIS adoption in the context of developing countries such as Bangladesh (Rahman et al., 2016; Zikmund, Babin, Carr, & Griffin, 2013). The convenience sampling technique was applied because it is widely used in information system research throughout the world, and most importantly is cost-effective to implement (Eze, Manyeki, Yaw, & Har, 2011). Data were collected from HR professionals employed in the manufacturing and services industry at different levels such as executives, managers and senior managers of HR during the period February 2021 to April 2021. To select the particular respondents, their level of education, experience in using technologies and their having numerous opportunities to use technologies supported by employers were considered. Partial least squares under structural equation modeling (SEM-PLS) statistical tool was applied to perform the required statistical analysis (Hair, Hollingsworth, Randolph, & Chong, 2017).To estimate the reliability and validity, SEM-PLS 3.0 version was employed, as an advanced second-generation partial least squares technique that ensures the robustness and authenticity of the findings, rather than simple regression analysis (Howladar, Rahman, & Uddin, 2018; Khan & Guoxin, 2020).

Data Collection Procedure

The researcher distributed 200 self-administered questionnaires among HR professionals' employed in different manufacturing and service organizations in Chattogram and Dhaka which are considered the commercial and capital cities of Bangladesh respectively. A large number of Bangladeshi manufacturing and service firms are located in and around these two commercially important cities. The survey questionnaires were sent to HRIS users in selected companies in different sectors, such as ready-made garments, pharmaceuticals, footwear, shipbuilding, hospitals, and national and international NGOs. In addition, the researcher followed certain criteria to select the companies and their respondents for the study. Companies that are well known as the prospectors and adopters in terms of technology adoption among researchers, academics and business partners with reputed corporate citizenship, corporate investment plans on IT-enabled technologies; who use different modern technologies in business, such as enterprise resource planning, artificial intelligence, cloud computing etc.; and who have favorable tech-based initiatives for developing their human resources, were prioritized to distribute the questionnaires. To disseminate and collect the questionnaires, the researcher visited the selected establishments with the research assistants on several occasions and collected the data after giving the necessary explanation of the particulars to the respondents. In addition, the researcher used official email, Google form, and local postal services in the data collection process. 148 responses were received, a response rate of 74%, which is adequate to apply PLS-SEM according to the recommendations in the literature (Fan, Mahmood, & Uddin, 2019). The

response rate was in fact much higher than in similar other studies (Alam et al., 2016; Das & Das, 2019). One of the main reasons to adopt a self-administered questionnaire was that it saves time and costs and secures the highest response rate in any context (Alam & Uddin, 2019). Finally, out of the 148 responses, 138 were considered for further statistical analysis, with the remaining 10 discarded because of missing answers. In terms of the adequacy of the sample size, Fan et al. (2019) and, Hair, Hult, Ringle, and Sarstedt (2014) state that the minimum required responses are 110 to 150 in order to apply SEM if the data are normally distributed, if it is a simple research model, and if there is homogeneity in the respondents. Therefore, the number of responses was adequate to apply SEM and there was no abnormality in the data distribution and no missing values; the research model was quite simple, and there were no mediation or moderation effects. The respondents were homogeneous as there is little diversity among professionals in Bangladesh in terms of race, sex, culture, or education (Fan et al., 2019).

Measurement Tools

In the study, measurement tools were used from previous studies conducted in different parts of the world. Constructs such as PE, EE, SI, FC, and IU were adopted from Venkatesh et al. (2003), and the AU construct from Rajan and Baral (2015), with necessary modifications in the items related to face validity and with consideration of the context. A pre-test was conducted through a focus group discussion to ensure the validity of the content. One item from AU (AU3) was dropped after it received comments from the subject matter experts, who comprised eight IS researchers and HRIS professionals (Altalhi, 2021).

Bias Concern

To minimize response bias, numerous methods were employed. First, the researcher assured the professionals' that their identities would be kept secret and also assured that the research findings would be reported as an overall industry phenomenon rather from individual firms' perspectives, which encouraged them to respond accurately and confidently without any fear of identity leakage. As a result, the respondents were able to reflect their perceived thoughts about their ongoing IT-based HR practices in the questionnaire without any pressure (MacKenzie & Podsakoff, 2012; Uddin et al., 2020). Second, Harman's single factor test was conducted to identify any common method bias. If an individual factor reflected more than 50% of the total variance, the existence of common method bias was assumed. The estimated variance was 38.47%, which lies under the cut-off value of 50%. Therefore, there was no problem of common method bias in the research (Uddin, Mahmood, & Fan, 2019). Third, it is also suggested in the literature that co-linearity in the assessment of structural relations be tested, which ensures that the results of multiple linear regressions are free from bias. Therefore, it is suggested that the variance inflation factor (VIF) is calculated. The maximum threshold VIF value should be below 3 in the co-linearity test (Hair, Risher, Sarstedt, & Ringle, 2019); in this case, it was 2.310 for EE. As a result, there was no issue of co-linearity. Fourth, by analyzing the matrix of correlation is shown in Table 2, the researcher found that the highest correlation was 0.658, which is lower than the threshold value of 0.80 for any two variables (Pavlou, Liang, & Xue, 2007; Spector & Brannick, 2010). Therefore, there was no issue of response and method bias in the study (Leguina, 2015; Yi, Uddin, Das, Mahmood, & Sohel, 2019).

Sample Characteristics

Table 1 shows the demographic information of the respondents in terms of age, tenure, education, firm size, gender, and firm type. In terms of age, the table indicates that a major proportion of the respondents belonged to the 30 to 40 age group, 44.2% of the total. With regard to tenure, the greatest number of respondents fell the group with 1 to 4 years' job experience and 61.6% of the total. The educational qualifications of respondents were categorized as bachelor's, master's, and others, with a significant number of the respondents, 86.2% holding master's degrees. Regarding firm size, it

Table 1. Demographic information of the respondents (n=138)

Variable	Detail	Frequency	Percentage
Age	Less than 30 years	56	40.6
	30 to 40 years	61	44.2
	41 to 50 years	19	13.8
	More than 50 years	2	1.4
Tenure	Less than 5 years	85	61.6
	5 to 10 years	36	26.1
	11 to 15 years	12	8.7
	More than 15 years	5	3.6
Education	Bachelor	13	9.4
	Master's	119	86.2
	Other	6	4.3
Firm Size	Small	1	0.7
	Medium	34	24.6
	Large	103	74.6
Gender	Male	112	81.2
	Female	26	18.8
Firm Type	Services	14	10.1
	Manufacturing	124	89.9

was observed that 74.6% and 24.6% of the respondents worked in large and medium-sized firms respectively. It was also indicated that male professionals (81.2%) dominated the HR positions in the workplace, compared with females at 18.8%. Finally, the majority of respondents (89.9%) worked in the manufacturing sector, compared to 10.1% in the service sector.

MODEL EVALUATION

PLS-SEM software was used with 5000 bootstrapping sample cases to analyze the data. This statistical tool is capable of analyzing data regardless of the sample size and can estimate both measurement and structure models to ensure the robustness of findings (Hair et al., 2017). It measures the reliability, validity, loadings, coefficients of beta and determination, and path significance (Hair, Hult, Ringle, & Sarstedt, 2016).

Measurement Model Evaluation

To evaluate the measurement model, the researcher calculated the reliability and validity of the data. In terms of reliability, Cronbach's alpha and composite reliabilities (CR) were estimated to test the construct's overall reliability. It is recommended by researchers that the minimum threshold value for both tests are above 0.70 (Hair et al., 2019; Ramayah, Yeap, Ahmad, Halim, & Rahman, 2017). Table 3 shows that the minimum Cronbach's alpha and CR values were 0.709 and 0.822 respectively for the construct of social influence in both cases. Therefore, no detrimental effect of reliability was found.

The measurement of validity was tested by calculating the convergent and discriminant validities. Convergent validity measures the level to which items converge to explain the item variance; validity

is considered significant if the value of average variance extracted (AVE) exceeds 0.50 (Fan, Chen, Wu, & Fang, 2015; Hair et al., 2019). Therefore, Table 3 shows that the lowest AVE score was 0.538, which exceeds the threshold limit of 0.50. Consequently, one item (FC3) from FC was deleted because of the inadequate loadings. Therefore, no adverse effect of convergent validity was found in the study.

On the other side, discriminant validities measure the extent to which a construct is distinctive compared to others in the structural model. To test discriminant validity, Henseler, Ringle, and Sarstedt (2015) suggest calculating the heterotrait monotrait (HTMT) ratio and prescribing a minimum threshold limit of less than 0.90 (Gold, Malhotra, & Segars, 2001; Ramayah et al., 2017). In this study, Table 4 shows that the maximum HTMT ratio was 0.861, which is lower than the threshold limit of 0.90.

In addition, Fornell and Larcker (1981) recommend that to test discriminant validity, the product of the square root of AVE of any construct of the study must be greater than the correlations of its corresponding construct. In Table 2, the diagonal bold scores represent the value of the square root of AVE of that construct; it can be seen that all the values are higher than the corresponding construct's correlation with other latent variables. Therefore, the HTMT ratio analysis and Fornell and Larcker criterion assure that the study is discriminantly valid.

Structural Model Evaluation

To evaluate the structural model, standard beta (β), the P-value, and the coefficient of determination (R^2) are recommended (Ramayah et al., 2017). In Figure 2, the structural model with path estimates and the relationship of standard beta with the integrated uniformity of the model is shown. It is observed that all the path coefficients are significant ($p<0.05$), apart from EE ($p=0.098$). However, previous studies provide evidence that R^2 has the overall exploratory power of endogenous variables; scores above 0.10, 0.25, and 0.30 indicate that it can estimate small, medium, and a significant amount of effect of the exogenous variable on the endogenous variable (Cohen, 2013; Uddin et al., 2020). In the field of behavioural science, a score above 0.20 is considered significant in measuring endogenous constructs (Alam et al., 2020; Hair et al., 2016). Figure 2 shows that the R^2 for endogenous constructs

Table 2. Reliability and validity estimation

Control Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	1											
2. Tenure	.699**	1										
3. Education	.276**	.217*	1									
4. Firm Size	.052	.031	.224**	1								
5. Gender	-.195*	-.165	-.085	-.090	1							
6. Firm Type	-.044	-.072	.0189	-.140	-.022	1						
Latent Variables												
7. PE	-.141*	-.298**	.073	.252**	-.216**	.185*	**0.748**					
8. EE	-.163*	-.241**	.008	.077	-.245**	.044	.658**	**0.799**				
9. SI	-.015	-.074	.044	.120	-.321**	-.042	.542**	.614**	**0.733**			
10. FC	-.201**	-.271**	.015	.190*	-.338**	.074	.574**	.583**	.530**	**0.820**		
11. IU	-.156*	-.155*	.041	.149*	-.298**	.061	.541**	.436**	.558**	.627**	**0.813**	
12. AU	-.210**	-.272**	-.081	.031	-.290**	.127	.577**	.630**	.606**	.622**	.504**	**0.890**
Mean	33.0145	5.7391	-	-	-	-	4.042	3.830	3.839	3.901	3.867	3.884
SD	-	-	-	-	-	-	.760	.746	.727	.848	.845	.929

Table 3. Convergent validity estimation

Construct	Items	Loading	Cronbach's Alpha	rho_A	CR	AVE
Performance Expectancy	PE1	0.711	0.733	0.742	0.834	0.560
	PE2	0.795				
	PE3	0.835				
	PE4	0.636				
Effort Expectancy	EE1	0.802	0.810	0.818	0.876	0.639
	EE2	0.877				
	EE3	0.749				
	EE4	0.763				
Social Influence	SI1	0.729	0.709	0.721	0.822	0.538
	SI2	0.643				
	SI3	0.844				
	SI4	0.704				
Facilitating Conditions	FC1	0.910	0.758	0.849	0.857	0.672
	FC2	0.892				
	FC4	0.625				
Intention to use	IU1	0.839	0.746	0.757	0.854	0.661
	IU2	0.809				
	IU3	0.791				
Actual Use	AU1	0.940	0.750	0.868	0.884	0.792
	AU2	0.837				

Table 4. Calculation of discriminant validity by applying the HTMT ratio

	1	2	3	4	5	6
AU						
IU	0.677					
EE	0.806	0.559				
FC	0.828	0.831	0.743			
PE	0.790	0.733	0.861	0.776		
SI	0.838	0.768	0.818	0.725	0.762	

is 0.531 (IU) and 0.287 (AU), which are greater than the threshold limit of 0.20. Therefore, the overall predictability of the model and path estimations is satisfactory.

RESULTS

The study results demonstrate that four out of the five hypotheses, PE, SI, FC directed to IU (H1, H3, H4), and IU following to AU (H5) are supported. Table 5 shows that all the hypotheses (H1:β=0.228, p-value =0.016; H3:β=0.288, p-value=0.008; H4:β=0.478, p-value=0.000; and, H5:β =0.535,

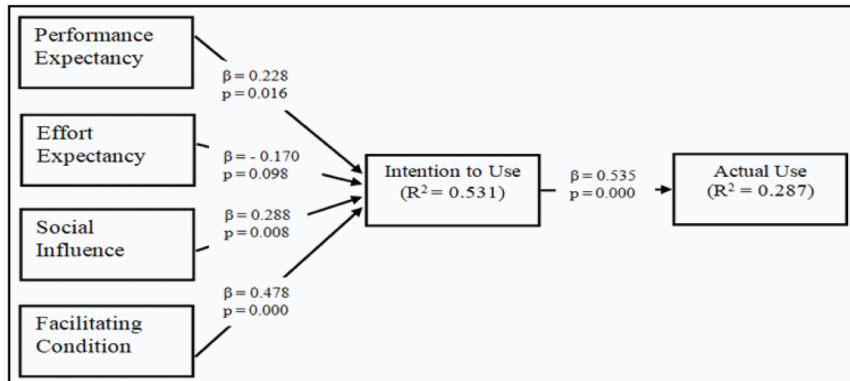**Figure 2. Structural model with the path estimates**

Table 5. Results of the hypothesis testing

Hypothesis	Relationship	Std. Beta (β)	Std. Error	T Value	P Value	Decision
H1	PE -> IU	0.228	0.094	2.413	0.016	Supported
H2	EE -> IU	- 0.170	0.102	1.657	0.098	Not Supported
H3	SI -> IU	0.288	0.109	2.651	0.008	Supported
H4	FC -> IU	0.478	0.133	3.589	0.000	Supported
H5	IU -> AU	0.535	0.070	7.629	0.000	Supported

p-value=0.000) were found to be significant apart from H2 (β = - 0.170; p-value=0.098), which was not supported. Therefore, it is revealed that EE has no significant relationship with IU in HRIS adoption in the context of the manufacturing and service sectors of Bangladesh. On the contrary, it was demonstrated that the other predicting variables of the UTAUT model, PE, SI, and FC could predict the user's IU and that subsequently, IU anticipates the AU of HRIS adoption.

DISCUSSION

Noutsa et al. (2017) report that the advancement and implementation of information systems (IS) in developing countries have fallen behind compared with technologically advanced economies. On the contrary, Dey and Saha (2020) argue in-depth understanding of socio-economic factors might be an indispensable remedy to deal with the implementation of IS in developing nations. This paper contributes to the field of IS, especially in the context of HRIS adoption and implementation in Bangladesh. The prime objective of the study was to underpin the dominant factors in the adoption and implementation of HRIS based software in the manufacturing and service industries of the country by applying the UTAUT model. This conceptual model is widely employed in research on IS adoption to identify the multi-level dominant factors, with PE and EE considered at the individual level, and SI and FC at the group and organizational levels respectively (Uddin et al., 2020).

Out of the four independent variables of the original UTAUT model, Table 5 demonstrates that FC is the strongest predictor (β = 0.478), proposed in H4, being able to predict around 48% of the change of IU in terms of HRIS adoption. Therefore, the findings of this study reveal that the adoption of HRIS requires the highest level of organizational and IT infrastructural support, along with knowledge, physical resources, and a favorable environment in manufacturing and service-

based industries in Bangladesh. The same research outcomes were observed in the studies of Alam et al. (2016), Dwivedi et al. (2017) and Suki and Suki (2017). On the contrary, Rahman et al. (2016) argue that SI is the most significant influential predictor among the four independent variables of the UTAUT model in terms of the IU of HRIS in the context of the banking and financial sector of Bangladesh. As shown in Table 5, the aforementioned study demonstrates that the value of the beta coefficient of SI ($\beta = 0.288$) in H3 is lower than the FC ($\beta = 0.478$) which indicates that in the service industry the most dominant predictor of HRIS adoption is SI. On the other hand, users' intent behavior in the manufacturing and service industry is highly influenced by FC in the adoption of HRIS in Bangladesh. Therefore, consistent research findings can be seen, but different attributes among the constructs of the UTAUT model in the wider research context integrating both manufacturing and service industries. Therefore, other relevant research findings made by Al-Saedi et al. (2020), and Uddin et al. (2020) acknowledge that there is a positive correlation between SI and IU in the adoption of technologies. In brief, perceived organizational and infrastructural support at the firm strategic level is the most commanding aspect for both the manufacturing and service industries, whereas the service sector independently depends on the interactions between the social entities in HRIS adoption in Bangladesh. The significant contribution of the study enriches the IS literature by revealing a comprehensive industry scenario as a result of identifying the essence of the antecedents in the area of HRIS adoption in Bangladesh, which could be considered as evidence of the robustness of the findings.

In addition, Rahman et al. (2016) report that PE makes no significant contribution to the IU of HRIS in the banking and financial sector of Bangladesh, but their findings fail to demonstrate users' task accomplishment attribute in the adoption of HRIS, whereas the present research model acknowledges the positive relationship between PE and IU, as proposed in H1. Hence, this study reveals that PE is not a fundamental element in predicting user intention, but it can be considered as one of the dominant predictors of behavioural intention to use HRIS in the manufacturing and service industry of Bangladesh, considering the value of the beta coefficient of 0.228 shown in Table 5. In percentage terms, this denotes that it can predict up to 23% of the change in IU. H1 also proves that professionals' perceived usefulness and relative advantages from the use of technologies is vital in the adoption and implementation of HRIS, which also contributes to raising users' extrinsic motivation to adopt technologies, balancing the approach of the person-job fit, and fulfilling users' expectations after implementing the technologies (Wei et al., 2021). Similar research findings were also made by Alam and Uddin (2019), Alam et al. (2020), and Alam et al. (2020).

Surprisingly, Table 5 shows that EE has no significant impact on the intention to use HRIS in the manufacturing and service sectors of Bangladesh, as proposed in H2. This indicates that users' perceived ease of use and complexity are not essential in predicting the IU of HRIS. Hence, this particular research outcome is consistent with the findings of Rahman et al. (2016), Shiferaw and Mehari (2019), and Alam et al. (2020). The rationale behind this finding might relate to the age and level of education of the respondents. Table 1 shows that 44.2% of respondents belonged to the 30 to 40 age group and 86.2% had a Master's degree, which indicates that a large proportion of the participants were young and highly educated. Previous research has found that young IT users are more technology-friendly, fast adapters and depend mostly on IT to accomplish their tasks compared to older system users (Wei et al., 2021). As a result, younger professionals' behavioral intention to use HRIS is not influenced by the attribute of EE in the context of Bangladesh (Yu, 2012). However, these particular research outcomes are inconsistent with the findings of Onaolapo and Oyewole (2018), Ghalandari (2012) and Isaac et al. (2019) in the context of distance learning, mobile banking and internet use respectively. Finally, the hypothetical relationship between IU and AU of HRIS adoption is supported, and indicating that if PE, SI, and FC predict the IU of HRIS simultaneously, HR professionals' IU eventually transforms into AU. Similar research findings are observed in the studies of Rahman et al. (2016), Chatterjee and Bhattacharjee (2020), and Alam et al. (2020).

Overall, the multi-level UTAUT model analysis indicates that organization-based predicting variable (FC) is a more dominant anticipator compared with group (SI) and individual (PE) level variables in HRIS adoption, all three significant predicting variables, PE, SI and FC together, can estimate up to 53% ($R^2 = 0.531$) of variance relevant to the intention to use HRIS in manufacturing and service-based industries in Bangladesh which is quite higher than the estimation presented by Rahman et al. (2016).

CONCLUSION

Firms' successful adoption and implementation of IT-based technologies depend on the end users' adequate level of technology utilization in the workplace. In this regard, a comprehensive understanding of dominant factors and a positive attitude towards new technologies are prerequisite conditions for embracing tech-based system adoption (Hasan, Hoque, Chowdhury, Mohib, & Ahad, 2020). In developing countries, manufacturers and service providers are now showing immense interest in the adoption and implementation of HRIS due to its overwhelming effect on firms' overall operational excellence and obtaining strategic advantages from the use of HRIS over their competitors (Al-Dmour, 2020; Hosain et al., 2020). This paper paves the way for today's business organizations in terms of understanding the leading influential antecedents and current status of HRIS adoption in the manufacturing and service industry from the perspective of an emerging economy in South Asia. In addition, the inclusive policy guidelines for tech entrepreneurs, importers, suppliers, and vendors of HRIS will assist them in understanding the leading factors that direct end users' intention to use and actual use of HRIS. They can subsequently develop customized service plans according to end-user expectations, an initiative that will eventually satisfy system users widely and accelerate the process of adopting HRIS at the firm operational level.

Managerial Implications of the Study

In the line with the findings of the study, there are three essential areas of managerial implications. First, business entrepreneurs and HR managers can understand the commanding factors in the adoption and implementation of HRIS, which might encourage them to design their investment plans to reshape the HR professionals' behavioral aspects through proper training and development programs. Second, vendors, policymakers, importers, and IT professionals will find impactful insights from the study, helping them to create unique needs-based HRIS application programs for their clients and end-users. The findings of the study will provide important evidence for HRIS software importers, suppliers, and vendors to develop systems that can fulfill their customers' expectations in terms of the systems' problem-solving ability, which will contribute to PE, fulfillment of social expectations related to SI, and IT infrastructural support related to the facet of FC, which may help them to generate more sales revenue and achieve greater customer loyalty. Third, the literature shreds evidence that corporate digital strategy implementation is influenced by the entrepreneurial behavior of employees, which in turn affects the firms' overall strategic digital performance goals. Hence, the proper understanding of the factors influencing HRIS adoption could help HR partners to nurture a positive impression to encourage entrepreneurial behavior among HR professionals, which might accelerate the adoption and implementation process of HRIS, especially in developing countries (Ritala, Baiyere, Hughes, & Kraus, 2021). In addition, the findings of the study will enhance the knowledge of academics, researchers, and students of social science in the arena of technology acceptance.

Limitations of the Study and Future Study Directions

The study enhances the literature in numerous ways, as well as provides insightful knowledge concerning the adoption and implementation of HRIS. However, some constraints are observed in terms

of the generalizability of the findings. First, the researcher collected data only from HR professionals working in the manufacturing and service sectors of Bangladesh, which indicates a clear country bias. The future researcher could therefore conduct studies from a cross-cultural perspective in the same or different contexts to ensure the generalizability of findings. Second, the current sample size is only adequate to analyze the data in the SEM-PLS software (Fan et al., 2019). To ensure the robustness of the findings, future researchers could increase the sample size to gain a better understanding of behavioral aspects in the adoption and implementation of HRIS. Third, the study does not consider the moderation effects of gender, age, voluntariness, and experience proposed by Venkatesh et al. (2003) in the original UTAUT model, which hinders the generalizability of the findings. Therefore, future researchers could explore such moderation effects to reveal new insights into HRIS adoption.

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