



The Role of Human Resource Information System on Operational Efficiency: Evidence from MNCs Operating in Bangladesh

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Authors' contributions

This work was carried out in collaboration among all the authors. Author MSH designed the study, wrote the first draft and conducted literature searches. Author AHMMA collected the primary data. Authors MSH and AHMMA together conducted the statistical analysis. All the authors read and approved the final manuscript.

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ABSTRACT

The study made an attempt to reveal the role of human resource information system (HRIS) on the operational efficiency (OE) of selected multi-national corporations (MNCs) in Bangladesh. For due purpose, five components of HRIS (Job analysis, e-recruitment & selection, e-compensation & benefit, e-performance appraisal and e-communication) have been selected based on literature as the independent variables while OE has been considered as the dependent one. The study was conducted based on a sample size of 256 top & 308 mid level managers of 11 MNCs operating in Bangladesh. The respondents were selected through convenience sampling technique and the data

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was collected using a detailed structured survey instrument. The authors utilized Pearson's correlation coefficient for testing the relationship between the variables; and, linear and multiple regression analysis for testing the validity of assumed hypotheses. After utilizing the specified statistical tools, the results indicated that all the five components of HRIS had positive relationships with operational efficiency while the relationship is strongest for e-recruitment & selection followed by e-communication. The findings of this study are expected to be valuable for HR managers in adopting and understanding the conductive results of HRIS applications at organizations as well as for academicians to study the contribution of HRIS to a further extent.

Keywords: HRIS; operational efficiency; MNCs; HR managers.

1. INTRODUCTION

The optimum effectiveness and efficiency of an organization do not merely depend on its financial resources or adopting the most recent technology, rather it is ascertained by the extent to which and how it is using its dedicated, motivated and skilled human capital [1]. To survive in this competitive age, organizations need to adapt and evolve its human resource to the highest possible extent and that is the reason why a firm first should try to know how its people are currently performing and if there is any necessity to change. However, over the last two decades, there are noteworthy changes in business and organizations due to rapid technological advancement, globalization, newer political influences on trade, introduction of knowledge based economy and fierce competition resulting in rapid changes in human resources management (HRM) functions [2, 3]. HRM activities are no more suitable in a conventional manner that has been used so far. Information technology (IT) has already occupied the position of manual functions of HR similar to most of the other departments. A number of organizations are investing and learning to utilize IT as one of the strategic tools that is changing the face of HRM in new management era [4, 5]. Human resources, in particular, have been commonly accepted as the key magnitude in creating sustainable competitive advantage for the firms [6-9]. In this regard, IT has a sustainable impact on policies and practices on these human resources [10]. As a result, there is a growing discussion as to how this inevitable technique and practice can be integrated in all the areas of an organization which has emerged as Human Resource Information System (HRIS). HRIS can be defined as a method that is used to attain, store, control, recover and distribute relevant information regarding human resources [11]. The inevitability and application of HRIS are so huge and popular that most of the firms irrespective of size, nature of business, age,

ownership and geographical location are trying to adopt and utilize the benefits out of it. It is well recognized that proper HR reports and related information are purely indispensable in order to take the right decisions whether it is routine or strategic. Therefore, preparing, storing and maintaining the HR related data are now successfully being executed with the help of HRIS.

A major benefit offered by HRIS is its contribution to the efficiency of control functions that brings efficiency in operation. It brings operational and strategic benefits through proper and timely information sharing, creation of an organizational database, speed up decision-making process and establishment of a culture of commonality [12]. Moreover, some other contributions received by the use of HRIS by businesses in their HRM operations can be counted as saving stationary expenses and reducing the costs of searching a job applicants, risk management, financial planning, position control (personnel requirement), attendance reports and their analysis, personnel planning, promotion planning, accident reporting and prevention; and hazardous material disclosure reports [13]. With amplified use of HRIS, the jobs of HRM professionals have become easier, providing them opportunity to spare more time on other core activities. With a further approach, it is argued that HRM professionals add value to the organizations while at the same time strengthening their influence and status [14]. Sergio et al. [15] believe that when HRM functions are loaded into computers or sharing networks within a HRIS, more rapid decision-making is achieved in development, planning and management due to much easier storing, updating, classifying and analyzing of the data. Therefore, it can be argued that HRIS can bring or increase operational efficiency (OE) for firms.

This paper has made an attempt to identify the role of five HRIS components (job analysis, e-

recruitment & selection, e-compensation & benefit, e-performance appraisal and e-communication) on operational efficiency (OE) for the MNCs operating inside Bangladesh. An investigation focusing on such relationships based on MNCs in Bangladesh is one of the initial attempts in academia. Consistently, regarding OE, the authors identified 10 indicators based on literature survey that have been highlighted in Table 1.

The discussions have put forward the following research question:

RQ: What is the role of HRIS on operational efficiency for MNCs operating in Bangladesh?

2. LITERATURE REVIEW

2.1 Operational Efficiency: The Point of Interest

The concept of operational efficiency (OE) in organizations can be defined in a number of ways such as effectiveness that may range from enforcement of the rules and procedures with which they have been governed by to enduring that all possible stakeholders have the opportunity to participate in the policy process. The size of the organization and operational technology employed by the organization has also been considered as an important factor of operational efficiency. OE can also be referred as the efficient utilization of human and material resources such as the efficient use of human capital, machines, tools and equipment, materials funds. Better utilization of any or a combination of such resources can increase output of goods and services and reduce costs. OE is the tactical planning of an organization to keep a healthy balance between cost and productivity. It

identifies the wasteful processes that contribute to drainage of resources and organizational profits. It deals with minimizing waste and maximizing the benefits of resource to provide better services to the customers. To face tough competition, lowering costs is a best option as internal wastage contributes to enhanced cost. Any input that is not processed through system into useful output is called waste. Therefore, OE conclusively can be indicated as the production of more goods and services utilizing same amount of resources or maintaining the same level of production using fewer resources. There are numerous indicators for operational efficiency in literature. However, for this particular study, the authors have selected 10 indicators based on previous findings for OE as highlighted in Table 1.

2.2 Human Resource Information System

Based on the idea that human resources offer an exclusive source of firm-specific competitive advantage that is difficult or impossible for competitors to imitate [24-26], academicians on strategy have paid attention on the issue of developing and utilizing human resources through distinctive HRM practices [27-30]. The basic idea of HRIS was developed in 1960s which is now expanded its influence not only in administrative but also significantly in business and strategic arena [31-33]. Managers, especially at larger geographically spread organizations are facing difficulties to deal with the workforces across various region even countries, cultures, and also political systems. In these circumstances, manual/traditional HR management practices are entirely insufficient [34]. Over the past few decades, organizations have been using HRIS more to manage their talented workforces [35].

Table 1. Selected indicators for OE

Serial Number	Indicator	Author(s)
1	Information processing management	Fugate, Stank, & Mentzer (2009)[16]
2	Organizational learning and innovativeness	Yeung, Lai, & Yee (2007) [17]
3	Technological knowledge	McEvily & Chakravarthy (2002) [18]
4	Integration of knowledge	McEvily & Chakravarthy (2002) [18]
5	Information and communication infrastructure	Argote & Ingram (2000) [19]
6	Skill of managing information	Gold, Malhotra, & Segars (2001) [20]
7	Creating value	Bulbul (2007) [21]
8	Sustainable competitive advantage	Bulbul (2007) [21]
9	Prevent costly errors	Johnson & Guental (2012) [22]
10	Decrease organizational costs through automation	Wiblen, Grant, & Dery (2010) [23]

Source: Literature survey

Organizations have started to electronically mechanize many of processes by introducing specific HRIS to cut the usual operation and conventional HR actions and to deal with the complicated transformational ones. HRIS refers to the systems and processes at the crossroads between human resource management and information technology, an incorporated database shared by HRM functions that provides a common language and the integration of HRM services [36]. Therefore, to amplify the effectiveness of HRM, organizations are becoming more and more dependent on HRIS [37-39]. At the operational level, HRIS can keep trail of on the employees, applicants and contingent workers, demographics, performance appraisal, professional development, payroll, recruitment; and retention [40]. One of the fundamental changes in this regard can be noted as the modern use of Information System in support of HRM process [41]. Hence, organizations now-a-days are becoming profoundly reliant on HRIS to hoist the value of human resource management [38, 42].

All organizations these days consider HRIS as a core element of operational and strategic functions. It should be noted that more and more organizations are investing in IT which can help to achieve the goals in a timely manner, which in turn, results in making more effective strategic decisions by benefiting from Information System [43]. A few studies have been conducted exploring factors influencing the adoption of the human resource information system (HRIS) in a growing economy, particularly in sectors such as banking [44] and education [45, 46].

2.3 HRIS in Bangladesh: Literature Evidence

However, HRIS is a comparatively new idea for an underdeveloped country like Bangladesh. At present, the performance of Human Resource Management (HRM) has a significant link with organizational performance [47, 48]. Organizations are shifting from the traditional HRM tools and techniques to strategic HRM through a significant contribution of IT and HRIS to achieve competitive goals [49]. Bondarouk et al. [50] claimed that E-HRM has been interchangeably connected with HRIS, virtual HRM and web & internet based HRM.

In Bangladesh, a few large companies have started to implement electronic HRM in the last few years [51]. The majority of the firms are still failing to realize the benefits of paperless HRM

and have taken no or a very little initiative to implement such environment. The initiation and implementation of HRIS in Bangladesh can be considered as innovative since it is still in its infancy. However, in this age of competition, businesses are relentlessly trying to reduce costs and gain competitiveness over the rivals. HRIS can be an effective tool in this regard for achieving such objectives. It is also environmentally friendly which, in turn, helps the management to meet some social and environmental obligations.

A handful studies have been conducted regarding the role of HRIS in Bangladesh. As an example, Alam et al. [52] performed a survey to identify critical factors influencing the decision of hospitals' management in Bangladesh to adopt HRIS using the Human Organization-Technology fit (HOT-fit) model and the Technology-Organization Environment (TOE) framework and found that IT infrastructure, top management support, IT capabilities of staff, perceived cost, and competitive pressure are the main critical factors which have a significant effect on the decision to adopt HRIS [52]. In addition to that, they revealed that the technological dimension stood as the major noteworthy aspect. On the other hand, Mamum & Islam [53] exposed that management opinion toward HRIS performance is fully depended on the experience, gender and education of managers, but was at the same time associated with the organizational origin [52]. Bal et al. [54] somewhat emphasized that performance with the HRIS is influenced by system quality, information quality and alleged ease of use. The fact that HRM department staffs require knowledge about HRIS does not undervalue the significance of this technology. Haines & Petit [55] earlier found that the presence of a dedicated HRIS unit would increase system usage [56].

In a recent study conducted on the selective service oriented firms in Bangladesh, Hosain & Arefin [39] identified positive associations between the components of HRIS and operational efficiency. In another study conducted by Arefin & Hosain [57] focusing on the Bangladeshi pharmaceutical industry, reported strong positive impact of HRIS on the organizational efficiency.

2.4 The role of HRIS on OE: Literature Survey

The current literature on HRIS shows that these systems have varying impacts on HRM across

organizations but offers little explanation about the variety. It proposes that HRIS is prevalingly used to automatize the routine tasks and “replace file cabinets” [58]. Khera & Karishma [41] argued that several authors stated in their studies that HRIS is increasingly used in strategic decision-making process of HRM. The level of strategic HRIS use across organizations varies, and most of the organizations simply continue to use HRIS to remove manually-managed processes and to cut down on costs [59]. In practice, as long as the institutions are not convinced about the benefits offered by HRIS, they hesitate to practically use this system [60]. Advanced accuracy, timely and rapid access to information and cost-saving are some of the most common benefits of HRIS [43].

In a similar study, Teotia [61] proposed five reasons justifying why organizations should use HRIS. These reasons relate to HRIS’ contribution to organizations in following matters [61]. HRIS has become a basic instrument in enhancing organizational performance and effectiveness and its purpose has become more holistic and complicated with the recent developments in information and technology [15]. Efficiency is described as an organization’s degree to achieve its goals and is a determining criterion used to identify how much an organization comes closer to the specified goal by using at a certain extent and efficiency of the inputs such as workmanship, raw materials, materials, information and employees in the course of the goals. In other words, it is the measurement of the rate of achievement of the performance criteria set forth in the strategic plan [62].

With the use of “system approach” in scientific practices, different dimensions of management came to be subject matters of implementation. One of such different dimensions is efficiency. Gibson et al. [63] argues that there is a relationship between management, organization and efficiency, and such a relationship should be defined in three different perspectives, and an effective personal, group and organizational performance is an outcome of efficient planning, organization, leader and control. This is not such an easy procedure for the institutions and organizations. Managing people with different cultural structures, and achieving individual and group goals and organizational efficiency is a challenging, annoying but rewarding task for organizations in a rapidly-changing and complicated environment [63]. Ekinici & Yilmaz [64] put forward that individual and group

efficiency jointly creates the organizational efficiency, and thus the efficiency can be discussed as follows in two significant managerial fields as organizational and managerial efficiency [64]:

Managerial efficiency: supports planning and implementation of basic managerial processes in an organization such as decision-making, technology selection and organizational reporting [65].

Operational efficiency: is a flexible structure which allows easy interaction and helps employees to establish relations with the institution and among themselves more easily and thus yield more productivity and work performance.

The emergence of new technologies and communication tools which facilitate establishment of networks beyond cultural and geographical boundaries has necessitated changes in organizational models and working methods that would bring about organizational success, efficiency, performance and strategic competitive advantage. It is noted that the studies in the field of organizational efficiency have focused on numerous criteria for different organizations that would help in measuring the organizational transformation and success on the grounds of operational efficiency under the influence of new technologies, communications tools and market conditions.

In this age when globalization is perceived as deregulation and becoming unrestricted, an organizational structure including a human resources information system has become an active tool in establishing an easier relation between employees and the organization and among themselves, and information sharing, cooperation (team spirit) and hence more productivity and more work performance. Sergio et al. [15] believe that an effective HRIS is a must in today’s organizations in order to tackle the issues such as increasing organizational demands, more comprehensive use of information, more extensive need for information, the constant pressure for reducing the costs making HRM a more strategic business partner, and they argue that HRIS has become an essential tool in enhancing organizational performance and effectiveness [15].

HRIS is a solution to the problems of the organizations in order to provide cost efficiency,

and reduce managerial workload, and standardize HRM processes or simply add strategic value to the decision-making action of the organization. There is consensus that among various practices HRIS is a very strong tool in boosting the effectiveness of an organization and hence its HR adequacy and organizational performance [66]. Hosain [1] studied thirteen E-HRM practices including HRIS & e-communication, e-compensation & benefit, e-recruitment & selection and e-performance management on the organizational performance of 46 private and public sector service firms in Bangladesh and reported that those noted factors has positive relationship with organizational performance. Arefin & Hosain [57], in a recent study, investigated five HRIS components on organizational performance and all the five components have been reported to have positive associations with performance. Brown [67] attributed the efficiency of HRIS to its ability to give more effective and rapid results than the ones on paper. He warned that HRIS can be perceived as a necessary action for an organization but it may not result in more efficiency if it is not an effective tool for HR functions, and might on the contrary hinder efficiency [67].

A successful HRIS supports the planning and implementation of different managerial functions in an organization such as managerial decision-making, technology selection and organizational reporting structures. Therefore, HRIS has become an active tool in helping employees to establish relations with their organization and among themselves more easily and thereby yield more productivity and work performance [68].

2.4.1 Job analysis

Internet based job analysis is one HRIS function that cooperates HRM departments to conduct job analysis activities. This is, in general, collecting information from stakeholders using an online questionnaire. There are different HRIS softwares that generate an analytical result called job description for each job that was surveyed through online questionnaire. Later, these job descriptions are used as the basis of job evaluation [69-71].

H₁: There is a positive relationship between job analysis and operational efficiency.

2.4.2 E-recruitment and selection

Mondy & Mondy [72] defined recruitment as the process of identifying and attracting potential

candidates and selection is the process of making final decisions to select from those candidates through some selection tests [46]. The future competency of workforces largely depends upon the best recruitment practices. In addition, with the use of suggested codes of practices to ensure justice and fair dealing for all the applicants, it is expected that the firms comply with legal requirements regarding fair employment practices and equal employment opportunities [57].

Recruitment application records the details of recruitment & selection such as cost, procedure or method and time to fill each position thus providing the important information timely to the users [58]. Selection is the process of choosing qualified individuals to fill each position [71]. According to Gatewood et al. [73], selection is the process of collecting and evaluating information regarding an individual in order to expand an offer of employment. For any organization, selection process should be properly designed to identify best competent candidate who best fit the job position. Therefore, whether a person best fit the job to fill in is largely depend upon the proper predesigned selection procedure.

On the other hand, all managers responsible for selection try to avoid negligent hiring. According to Mina et al. [59] when best people are hired, productivity increases. HR managers should understand the objectives, policies and practices used in selection to be involved in this important HRM function. In this area, HRIS can help managers by providing the necessary information from the previous record and they can make the right decision as much as possible with help of those information.

H₂: There is a positive relationship between e-recruitment & selection and operational efficiency.

2.4.3 E-compensation & benefit

Compensation and benefit package is the total reward an employee receives in exchange of his/her services performed for the organization. Such package can include both direct pay (salary & bonus) and indirect pay (benefits). E-compensation & benefit system is a software package that is bought and developed by an organization and is accessible by organization intranet or external Internet which the individual employee be able to reach in his/her respective account through company browsers.

This is a formal management tool by which the individuals can see his/her compensation & benefit records according to respective performance conducted. In addition, the managers can control the cost of compensation providing a win-win situation for both employers and employees.

H₃: There is a positive relationship between e-compensation & benefit and operational efficiency.

2.4.4 E-performance appraisal

Performance appraisal is the process of evaluating the performance of individuals or departments on regular basis in order to improve future performance and to increase potential future career advancement. Performance appraisal concerned with benchmark is a set of specific task to define and evaluate the current performance against pre-established standard. This process requires input and output such as remuneration, pay rise, level of expectation, promotional policy, managerial planning and so on [74,75]. According to Rosemond & Ernesticia [76], employees should be informed exactly what is expected from them, how their performance will be measured and the results will be utilized. Performance need to be assessed on a regular basis highlighting potential identification of training and development needs with the help of formalized and organized format. An effective performance appraisal scheme can form the

base for an effective review of financial rewards and career advancement. A well organized, effective and efficient performance appraisal system can provide individual performance data such as due appraisal date, scores, scale of measurement etc.

H₄: There is a positive relationship between e-performance appraisal and operational efficiency.

2.4.5 E-communication

Communication can be defined as the regulatory intra-organizational contacts to coordinate various aspects of organizational functions and changes [77]. In this significant function, HRIS involves a vital role to deliver all the necessary information from the stakeholders and vice versa [78].

H₅: There is a positive relationship between e-communication and operational efficiency.

2.5 Theoretical Framework

The aim of this study is to identify the role of HRIS on OE for selected MNCs operating in Bangladesh. HRIS has been further divided into five components: job analysis, e-recruitment & selection, e-compensation & benefit, e-performance appraisal and e-communication. The theoretical framework for the study has been highlighted as Fig. 1.

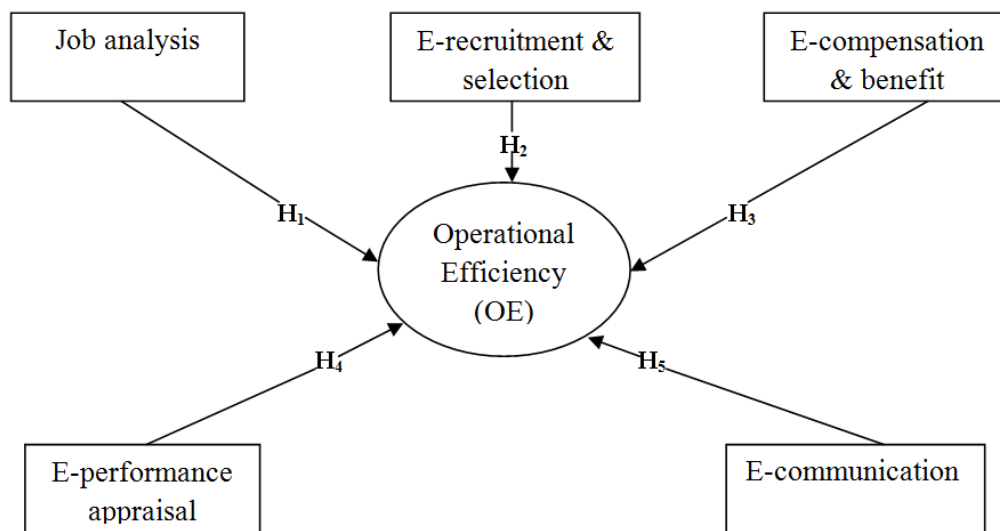


Fig. 1. Theoretical framework for the study
 Source: Authors' own elaboration

3. MATERIALS AND METHODS

The purpose of this study is to study the role of certain HRIS components on operational efficiency. The study is quantitative and deductive in nature. A descriptive analysis has been utilized to describe the characteristics of the respondents. To study the relationship between the variables, Pearson’s correlation coefficient and to test the hypothesized relationships, linear and multiple regression techniques have been utilized. The research hypotheses were presented and tested through multiple regression analysis.

3.1 Collection of Data

Primary data has been collected for the study as the secondary information is not suitable to measurement in this case such as, regarding the extent of use of HRIS. A detailed survey questionnaire has been used to take the interview of each participant. The respondents have been chosen using convenience sampling method from two big cities of Bangladesh: Dhaka (the capital) and Chittagong where the head offices of most of the MNCs are located.

3.2 Sample Size

The study population includes selected multinational firms located in the city of Dhaka and Chittagong. The questionnaires were distributed to 600 top and mid HR executives working at 11 MNCs involved in various businesses. Among the questionnaires, 36 were found incomplete and faulty. Those questionnaires were discarded from consideration. Therefore, the final sample size stood to 564.

3.3 Survey Instrument

The survey method is the popular and commonly used strategy for business and management

research which includes questionnaire and interviews that are created for specific investigation related to the research objectives [79]. A questionnaire is a list of items used to collect factual information regarding beliefs, or attitudes about an issue, a product or service [79] and the items that are included in the questionnaire can be open or closed or a combination of both [80]. For this study, there were two different parts on the questionnaire. The first part included demographic information of the employers such as gender, educational level, working area of HR department, length of service etc. The other part included the survey items related to the variables of HRIS and operational efficiency.

Table 2 indicates that the survey questionnaire included 35 factors (25 for independent variables and 10 for dependent variable). A five point Likert Scale will be used to rank the responses from “Extremely disagree” (1) to “Extremely agree” (5).

3.4 Validity and Reliability of the Survey Instrument

When multiple items are used to measure an individual construct, the item (indicator) convergent validity should be one of the main concerns to the researcher which is the extent to which multiple items to measure the same concept are in agreement [81]. According to Hair et al. [82] convergent validity could be accessed through composite reliability. The results of the measurement model (Table 3) show that the loadings for all items exceeded the recommended value of 0.70 [83]. Composite reliability (CR) values ranged from 0.81 to 0.93 which exceeded the recommended value of 0.70 [83].

On the other hand, in order to analyze the reliability (internal consistency) of the variables, this study has used the Cronbach’s alpha coefficient and composite reliability (CR) value.

Table 2. Number of elements of under each variable in the survey questionnaire

Variables	Number of elements
Operational efficiency	10
Job analysis	5
E-recruitment & selection	5
E-compensation & benefit	5
E-performance appraisal	5
E-communication	5
Total	35

Source: Survey questionnaire of the study

Table 3. Reliability and validity of the questionnaire

Variables	Composite reliability	Cronbach alpha
Operational efficiency	0.914	0.896
Job analysis	0.816	0.904
E-recruitment & selection	0.931	0.890
E-compensation & benefit	0.811	0.881
E-performance appraisal	0.887	0.821
E-communication	0.916	0.923

Note: Composite Reliability > 0.70 (Hair et al. 1998), Cronbach's alpha > 0.60 (Nunnally and Berstein, 1994)

Source: Descriptive statistics

Table 4. Sector wise distribution of the participants

Industry type	No. of organization	No. of respondents (Top level managers)	No. of respondents (Mid level managers)
Pharmaceuticals and cosmetics	5	130	150
Bank	3	90	103
Insurance	2	29	40
IT	1	7	15
Total	11	256	308

Source: Demographic components of the questionnaire

Table 5. Demographic characteristics of the respondents

Demographic variables	Category	Arithmetic number	Percentage
Gender	Male	411	72.87
	Female	145	27.13
	Total (N)	564	100
Age range (Year)	20-19	59	10.46
	30-39	187	33.16
	40+	318	56.38
	Total (N)	564	100
Educational level	Undergraduate	72	12.77
	Graduate	472	83.69
	PhD	20	3.55
	Total (N)	564	100
Length of service (Years)	5 or less	2	0.35
	6-10	152	26.95
	11-15	112	19.86
	16 or more	298	52.84
	Total (N)	564	100

Source: Demographic components of the questionnaire

Table 3 shows all Cronbach's alpha values are above 0.60 cutoff values as suggested by Nunnally & Berstein [84]. Therefore, the results of reliability and validity indicates that each individual item is internally consistent and a fairly high degree of reliability.

4. RESULTS AND DISCUSSION

The study used descriptive analysis to describe the respondents' characteristics. To test the relationship between the independent variables

and dependent variable, Pearson's correlation coefficient has been utilized. Finally, multiple regression analysis has been used to confirm whether the assumed hypotheses are valid or not. The next sections of the paper have been used to highlight the study results step by step.

4.1 Demographic Characteristics of the Respondents

Table 4 represents the sector-wise distribution while Table 5 highlights the demographic

features of the respondents who participated in this study, according to the first part of the questionnaire.

Table 5 indicates that more almost three fourths of the participants are male while majority of them are aged 40 years or more. Most of the respondents are graduate degree holders while there are a handful of PhD degree holders. Regarding the length of service, more than half of them (52.84%) have the experience of more than 16 years while less than 1% respondents have job experience of 5 years or less.

4.2 Pearson’s Correlation Coefficient

The results of association between the independent components and the dependent variable have been highlighted in Table 6. According to the table, Pearson’s correlation coefficient indicates that all of the five selected components of HRIS are positively correlated with the dependent variable. But the relationship is strongest in case of e-recruitment & selection (0.86) followed by e-communication (0.79). The results are consistent with the results reported by

Tesi [71]; Mina et al. [59]; Casico [78] and Mayfield et al. [74].

4.3 Results of Multiple Regression Analysis

Based on the objective and hypotheses of the study, the authors applied multiple regression analysis to assess the aggregate impact of HRIS practices on operational efficiency. The results of multiple regression analysis of five selected independent variables against the dependent variable are depicted in Table 7.

According to Table 7, the R² value from multiple regression analysis is 0.681 indicating that 68% of the variance in the operational efficiency can be explained together by five independent variables. The F value is 6.8234 indicates that it is significant at the significance of 0.00005 suggesting five independent variables have significantly explained the 68% of the variance in operational efficiency.

The strengths of influence that each independent item had on the dependent one have been

Table 6. Pearson’s correlation coefficient for selected independent variables and OE

Independent variables	Organizational performance (Constant)
Job analysis	0.61
E-recruitment & selection	0.86
E-compensation & benefit	0.71
E-performance appraisal	0.69
E-communication	0.79

Source: Pearson’s correlation coefficient

Table 7. Aggregate impact of five HRIS components on OE

R	R ²	Adjusted R ²	Error of estimate	Change R ²	F	Df1	Df2	Significance of F change
a0, 816	0.681	0.625	0.6011	0.696	6.8234	6	233	0.00005

a. Predictors (constant), job analysis, e-recruitment & selection, e-compensation & benefit, e-performance appraisal and e-communication.

Source: Multiple regression analysis

Table 8. The strength of influence of the independent variables on the dependent variable

Model	Unstandardized coefficients		Standardized coefficients	T	Significance level
	B	Std. error	Beta		
Constant	4.319	0.295	-----	25.341	0.000
Job analysis	0.590	0.651	-0.113	8.601	0.000
E-recruitment & selection	0.861	0.823	-0.654	4.387	0.001
E-compensation & benefit	0.721	0.813	-0.342	1.113	0.001
E-performance appraisal	0.690	0.772	-0.171	10.118	0.001
E-communication	0.798	0.823	-0.547	2.813	0.000

Source: Multiple regression coefficients

Table 9. Test of validity of hypotheses

Hypothesis	Content	Verified/Not verified
H ₁	There is a positive relationship between job analysis and OE	Accepted & verified
H ₂	There is a positive relationship between e-rec. & sel. and OE	Accepted & verified
H ₃	There is positive relationship between e-com. & ben. And OE	Accepted & verified
H ₄	There is a positive relationship between e-per. app. and OE	Accepted & verified
H ₅	There is a positive relationship between e-comm. and OE	Accepted & verified

Source: Multiple regression analysis

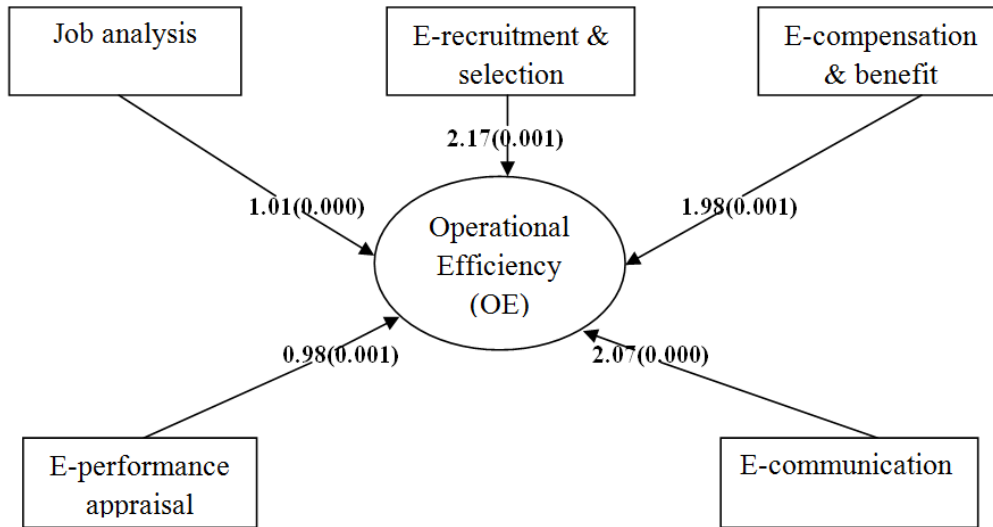


Fig. 2. Theoretical framework for the study

Source: Multiple regression coefficients

determined by the multiple regression coefficients of the independent variables. The influence of each independent variable on OE has been highlighted in Table 8.

Table 8 indicates that e-recruitment & selection has the strongest significant influence on operational performance with a standardized Beta value of -0.654 followed by e-communication having the Beta -0.547 and e-compensation & benefit (-0.342). According to the data, the T value for all the variables are positive indicating that there is no negative relationship between the independent variables and the dependent one.

4.4 Test of Hypotheses

From the previous tables, it can be summarized that all the five independent variables has got positive F values indicating that all of those variables has positive relationships with the dependent variable: operational efficiency. The summarized validity of the hypotheses has been presented in Table 9 and Fig. 2.

4.5 Discussion of Results

The results discovered in this study are consistent with the previous findings of Hosain & Arefin [39]; Arefin & Hosain [57]; Hosain [1]; Kaygusuz et al. [65]; and Kumar & Parumasur [70]. The positive attitudes towards HRIS have been reflected by the beliefs of the sample respondents. To encourage improvement in the operations of firms, proper HRIS should be adopted and implemented as it provides a clear image of operational efficiency and can be simultaneously used with other computerized applications to increase the performance.

5. THEORETICAL AND PRACTICAL IMPLICATIONS

This research is expected to contribute to the understanding of the HRIS applications and operational efficiency in the literature. It describes an integration of HRIS applications and operational efficiency. There is still not adequate research in existence regarding the role of HRIS on operational efficiency of large firms such as

MNCs. This study is expected to fill that gap at least to some extent.

On the other hand, these empirical findings will drop some guided results for the top executives allowing them to amplify concentration to the HRIS applications because of its significance in improving operational efficiency in different organizations.

6. LIMITATIONS AND FURTHER SCOPE

The study was limited to, the impact of several HRIS components on the operational efficiency for only MNCs in Bangladesh thus limiting the scope to one particular culture and particular industry. A cross cultural study or comparative analysis taking more variables between two or more cultural bases and considering several industries might have provided different and wider conclusions. Therefore, there is a gap that could be bridged and opportunity to conduct further analysis on this important area of management.

7. CONCLUSION

HRIS is becoming an integral part of electronic HRM in various organizations. As we know, this is the age of information and a good piece of HR information is vital for an organization as the source of competitive advantage. As the information has a considerable authority on organizations, there is superior need from the organizational counterpart to take benefits from it. Even though, the researchers are still investigating in this area, most of them are agreed to the point that information cannot be ignored as the part of modern science and technology. Indeed, HRIS has become an unavoidable organ for many organizations. Even though having some limitations, the benefits of utilizing HRIS are enormous.

In order to attain better quality of work life, faster and efficient exchange of information and most importantly, to embrace the future organizational needs, managers must find out ways on how to integrate with these gifts of science and technology; and make the most of them so that they can achieve strategic competitive advantage through the maximum utilization of resources. This paper is an effort to construct a further complete framework of the factors which manipulate the operational efficiency.

The highlighted roles of HRIS in this study can influence significantly on achieving operational efficiency of the organizations. But it should be remembered that HRIS is merely a system and can provide only information. It is the users or managers who decide which information is important and whether to use such information efficiently or not.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, participant's written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

Survey Questionnaire

Study title: The role of human resource information system on operational efficiency: Evidence from selected MNCs operating in Bangladesh

Sampling location: Dhaka & Chittagong (Bangladesh)

Institution: Sichuan University, Chengdu, China

Segment-1 (Demographic information)

Please tick (√) at the appropriate box

- **Name of the participant:**
- **Gender (Please choose a category):** Male Female Other
- **Age (Please choose a category):** 20-29 30-39 40+
- **Education level (Please choose a category):** Undergraduate Graduate PhD
- **Length of service (Years):** 5 or less 6-10 11-15 16 or more
- **Level of management:** Top Mid
- **Industry:** Education Bank Utility Insurance Travel & tourism IT
 Postal service

Segment-2 (Elements of variables with scaling)

This questionnaire has been prepared using 5 point Likert Scale for investigating the relationship between five selected elements of HRIS and organizational efficiency. Score 1 represents strongly disagree, 2 represents disagree, 3 represents neutral, 4 represents agree and 5 represents strongly agree. Please tick (√) at the appropriate box.

Job analysis

S. No.	Statements	Scale				
		1(SD)	2(D)	3(N)	4(A)	5(SA)
1	HRIS can reduce cost and time required in job analysis process					
2	HRIS, as an system can deliver information for proper job analysis					
3	Job analysis process can be integrated to information management					
4	Information is an vital element preparing job description and job specification					
5	I believe that HRIS can make job analysis process more effective and efficient					

E-recruitment & selection

S. No.	Statements	Scale				
		1(SD)	2(D)	3(N)	4(A)	5(SA)
1	HRIS is required for effective e-recruitment					
2	HRIS can result effective selection of job candidates					
3	HRIS can reduce cost and time required for proper e-recruitment & selection					

S. No.	Statements	Scale				
		1(SD)	2(D)	3(N)	4(A)	5(SA)
4	Proper information can aid in effective recruitment & selection process					
5	E-recruitment & selection if integrated with HRIS, can be more effective and efficient than traditional recruitment & selection process					

E-compensation & benefit

S. No.	Statements	Scale				
		1(SD)	2(D)	3(N)	4(A)	5(SA)
1	It is essential to the compensation & benefit record for each employee updated					
2	HRIS can be good platform to keep compensation & benefit records					
3	Maintaining proper records through HRIS can reduce unnecessary time consumption in calculation compensation & benefits					
4	Up to date compensation & benefit records can satisfy employees and increase productivity					
5	Employees should be let access to their compensation & benefit records through HRIS database					

E-performance appraisal

S. No.	Statements	Scale				
		1(SD)	2(D)	3(N)	4(A)	5(SA)
1	Organizational efficiency is a common contribution from all employees individual performances					
2	HRIS can contribute a lot in achieving organizational efficiency					
3	There is a positive relationship between HRIS implementation and organizational efficiency					
4	HRIS is vital part of HR department in achieving individual performance					
5	HRIS records are needed to updated and integrated systematically in order to ascertain employee performance					

E-communication

S. No.	Statements	Scale				
		1(SD)	2(D)	3(N)	4(A)	5(SA)
1	Sharing proper information among the employees is the main pre-condition of HRIS					
2	HRIS can contribute a lot in achieving organizational internal communication effectiveness and efficiency					
3	Proper communication supported by HRIS can increase teamwork and motivation					
4	Information collection and dissemination through HRIS can increase organizational efficiency					
5	Without proper communication, an organization can lose opportunity to develop creativity and innovation					

Organizational efficiency (OE)

S. No.	Statements	Scale				
		1(SD)	2(D)	3(N)	4(A)	5(SA)
1	Organizational efficiency is depends on the proper information presented by HRIS					
2	As a manager, I recommend to invest resources on implementing proper HRIS database					
3	There is a positive relationship between HRIS implementation and organizational efficiency					
4	Information should be updated time to time when needed					
5	HRIS can decrease service delivery time and complain from customers					
6	HRIS is required to get real time information to realize the business opportunities					
7	The HR functions should be modernized with information technology					
8	Employees should be trained on HRIS in order get proper service from them					
9	HRIS and OE are complementary to each other					
10	I believe that as a manager, a proper implementing and maintaining a proper HRIS can bring efficiency and organizational reputation					

Note: The information will be solely used for the purpose of above mentioned study and will be kept confidential

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