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Adoption of Human Resource Information System: A Theoretical Analysis

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Abstract

Human resource Information System (HRIS) has been subject to many studies examining different aspects of it but innovation adoption. Management of human resource in an organization cannot work smoothly if the HRIS is not adopted properly. Thus, following the archival research method this study investigates the factors that influence adoption of HRIS within the framework of innovation adoption. Besides organizational, technological, environmental factors; importance of adopting HRIS and innovation adoption theory and model is accentuated in this paper. The obtained data from the secondary source will be analyzed and explained herein. Findings of this study determine the factors affecting HRIS adoption thus; hope to assist organizations to adopt HRIS accurately and effectively. The paper is concluded by providing the result of the study and some recommendation for future researches.

Keywords: Human Resource Information System, Innovation Adoption, Organizational Factors, Technological Factors, Environmental Factors

1. Introduction

Information technology extremely infuses human resource management in this global networking era. Digital possibilities have been challenging the traditional ways of delivering HRM services within business and public organizations for more than a decade now (Bondarouk & Ruël, 2009). In addition, the performance of human resource (HR) manipulates the organizational success in today's knowledge economy. Thus, to increase the effectiveness of HRM organizations now days are becoming strongly dependent on HRIS (Lippert & Michael Swiercz, 2005; Troshani, Jerram, & Hill, 2011). HRIS is defined as a system which is used to acquire, store, manipulate, retrieve and distribute pertinent information about an organization's human resources (Kavanagh, Thite, & Johnson, 2012). The two important resources in organizations, people and information can significantly affect the overall performance of a business and the business success naturally requires the management of both (Martinsons, 1994; Teo, Lim, & Fedric, 2007). According to Teo *et al*. (2007) given that HRIS combines these two resources, proper adoption of the system can drive the organization to a greater success.

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In the last two decades researchers have started to show interest in the field of HRIS though they focused more on areas such as predominate of HRIS (Martinsons, 1994),conditions for successful usages (Haines & Petit, 1997), use of HRIS (Ball, 2001) and current usages patterns (Hussain, Wallace, & Cornelius, 2007), areas in HRIS implementation (Ngai & Wat, 2006; Razali & Vrontis, 2010; Tansley & Newell, 2007), and achieving competitive advantage (Browning, Edgar, Gray, & Garrett, 2009). Current studies have investigated HRIS adoption determinants in Singapore and Australia (Teo *et al.,* 2007; Troshani *et al.,* 2011). However, these authors agreed upon there is a paucity of research in the area and especially it is needed to investigate to which extent those factors affect adoption of the system. According to Troshani *et al.* (2011) further work is also essential in addressing HRIS adoption in private sector organization as research is currently lacking in those area. Thus, the researchers aim to investigate influencing factors of HRIS adoption, identify to what extent those factors affect the HRIS adoption and finally, examine the relationship between factors influencing the adoption of HRIS and perceived effectiveness of HRIS.

However, this particular paper only focuses on a part of the whole research and aims to identify factors influencing HRIS adoption in organizations. This investigation was done using archival research method (Ventresca & Mohr, 2002) where the researchers analyzed the data based on secondary resource.

In this context, the study begins by a literature review of conceptualization of HRIS and importance of the system. Subsequently, there are the findings from secondary data specifically the factors influencing the adoption of HRIS which are divided into three categories naming organizational factors, technology context factors and environmental factors. Following this, the research framework and conclusion will be drawn at the following section.

2. What is HRIS?

Given that various authors published articles related to HRIS and information technology, it is visible that there are interchangeable terms used to refer to HRIS, for instance e-HRM, HR intranet, web-based HR; computer based human resource management systems, virtual HR and HR portals. Several authors argued about internet or web-based channels as a venture of HRIS (Lengnick-Hall & Moritz, 2003; Ruël, Bondarouk, & Looise, 2004). Originally, DeSanctis (1986) defined the term HRIS is "a specialized information system within the traditional functional areas of the organization, designed to support the planning, administration, decision-making and control activities of HRM". However, several authors argued that the definition of DeSanctis (1986) narrows the scope to the HR position and neglects the adoption and deployment of the information systems in the corporate organization (Bondarouk & Ruël, 2009; Ruël, et al., 2004; Strohmeier, 2007). Kavanagh *et al.* (2012) mentioned although HRIS includes hardware and software, it also includes people, forms, policies and procedures, and data. Recently, the focus of HRIS has shifted to more strategic applications of an organization like recruitment, performance and compensation management, self service technologies and HR planning alignment with the organization's planning (Bell, Lee, & Yeung, 2006; Lengnick-Hall & Moritz, 2003; Panayotopoulou, Vakola, & Galanaki, 2007).

While some authors preferred to use the term e-HRM over HRIS (Ruël, et al., 2004; Strohmeier, 2007), several authors agreed that a line cannot be drawn between IT-based information system for HR and internet based HR applications as these two are basically doing similar jobs (Ruël, Magalhães, & Chiemeke, 2011). Thus, Ruël *et al.* (2011) defined HRIS as "all IT-based information systems and applications either stand alone or networked, for human resource management purpose, be it for facilitating HR practices, policies or strategies".

Consequently, for the purpose of this study the researcher assumes HRIS includes all different kind of information system (i.e. internet, intranet, enterprise resource planning) that are assisting the HRM process and policies (i.e. recruitment, training, compensation).

3. Why HRIS is important?

Almost all HR processes can be done by using HRIS on a daily basis which can benefit the organization in several ways (Ruël *et al.,* 2004). For instance, as an implication of HRIS the automation of tasks and process reduce the use of resources (financial, material and human). Reduction of HR costs; less usage of paper as well as to assist managers in HR process are some of the examples of reduction of resource usages. According to Hendrickson (2003) HRIS benefits an organization in their HR processes by increasing the efficiency and effectiveness and provides self-service HR (i.e. computer based training, online recruitment). In addition, HRIS produces data as a by- product and has front-end web applications which can transfer part of HR data management to employees and line-managers (Ruël *et al.,*

2011). Thus, employees can enter and update data by themselves which create more accuracy of data and saves time and costs. Other authors mentioned some important facts of HRIS are effective human resource decision making and also strengthening an organization's character (Sadri & Chatterjee, 2003), reducing process and administration cost, speeding up transaction processing, reduce information errors and improve the tracking and control of human resource actions (Lengnick-Hall & Moritz, 2003). Furthermore, Aggarwal and Kapoor (2012) mentioned that HRIS not only helps the management and HR department but also assists the employees in several ways. HRIS is able to increase the overall decision making efficiency for the management of an organization. It helps the HR department to possess of single data base of all employees in the company with all necessary information and opportunities of different reports plus, HRIS eliminates the paper forms that are much slower and has a higher likelihood of errors caused by human factor. For the employees, HRIS provides the possibility of independent access to data, which often means working in one software window as well as keeps automatic tracking and reminder to business obligations and events. In some organizations it also lets the employees attend internal training courses via the web in order to develop their personal skills and knowledge. As a result, it encourages employees to make decisions and initiatives on the basis of information obtained in the HRIS system.

In a nutshell, HRIS is a computerized system that assists the process of information related to human resource management and has become a key element to all organizations. Thus, the importance of HRIS can be seen all-around, such as operational assistance in collecting, storing and preparing data for reports, simplifying and accelerating the processes and controlling the available data, reducing labor costs for human resource departments, and providing timely and diverse information to the management of the organization, based on which it is possible to make quality strategic decisions related to human capital (Aggarwal & Kapoor, 2012).

4. What are the factors influencing adoption of HRIS?

Numerous studies have been done on innovation which focuses on both organizational and individual level. Authors of this paper have found that both qualitative and quantitative method are available in innovation adoption research, though qualitative approach were widely visible; see for example, (Carter & Belanger, 2004; Florkowski & Olivas-Luján, 2006; Moore & Benbasat, 1991; Oliveira & Martins, 2010; Parry & Olivas-Luján, 2011; Ruël *et al.,* 2004; Teo *et al.,* 2007; Troshani *et al.,* 2011; Yang, Lee, & Lee, 2007) and these studies were conducted mostly in Europe and outside Asia except those two of Teo *et al.* (2007) and Yang *et al.* (2007). Among innovation adoption studies, a huge number of studies followed diffusion of innovation theory which was mainly provided by Rogers in 1995 (Carter & Belanger, 2004; Florkowski & Olivas-Luján, 2006; Parry & Olivas-Luján, 2011; Ruël *et al.,* 2004; Teo *et al.,* 2007). Using diffusion of innovation (DOI) theory Rogers linked initial adoption decision to five specific attributes : relative advantage, complexity, compatibility, trialability and observability (Rogers, 2003). Moore and Benbasat (1991) identified eight perceived characteristic of innovation (PCI) factors: relative advantage, compatibility, ease of use, result demonstrability, image, visibility, trialability and voluntariness. Later on other researchers (Carter & Belanger, 2004) identified three factors based on PCI model (Moore & Benbasat, 1991) and DOI theory (Rogers, 2003): relative advantage, image, and compatibility influencing e-Government adoption. In another research five contextual factors were identified which influence innovation adoption: innovation characteristics, organizational characteristics, environmental characteristics, task characteristics and individual characteristics (Kwon & Zmud, 1987). Based on previous literature and research models of Teo *et al*. (2007) as well as Troshani *et al*. (2011) we have categorized three sets of factors: organizational, technological and environmental.

4.1. Organizational Factors

Organizational factors are those that represent organizational characteristics which influence adoption of HRIS. Yang *et al*. (2007) stated that adoption can be influenced in organizations that show high level of centralization since top management can make adoption decision irrespective of resistance from lower level managers or employees. Organization size, supporting organization settings including a skilled workforce are important factors in successful innovation adoption (Troshani *et al.,* 2011).

According to Hendrickson (2003) all HRIS types were not created equally and they don't need to be as the HRIS usage depends greatly on firm's size. The reason can be explained with an example; a major HRIS like PeopleSoft can be installed by a company consisting 25 employees but the huge expense would be difficult to justify. Similarly, a large multinational company could create a database program just to access and perform the functions necessary to

operate, but it would be unmanageable and very limited solution. Thus, it is clear that effective HRIS requires a balance between technical and critical information needs of the HR function according to the organization's size, as the size can define the needs of the HR function (Hendrickson, 2003). Though it is found that, so far only large companies have tried to implement HRISs of all three types, naming operational HRIS, relational HRIS and transformational HRIS. On the other hand, smaller and mid-sized company only tried to implement operational and relational HRIS as these two HRISs do not perform HR activities with a strategic character thus are less costly (Ruël *et al.,* 2011).

Besides organization size, another factor which is top management support shows influencing action on adoption of HRIS. Findings from Yang *et al.* (2007) show that, CEO's attitude and interest towards information and communication technology (ICT) are important to promote ICT adoption. However, according to Teo *et al.* (2007) beside top management support to adopt a system in the organizations, employee engagement is also needed which is also greatly influenced by the management commitment. Most studies showed that management commitment has a positive influence on HRIS or IT adoption (Teo *et al.,* 2007; Troshani *et al.,* 2011; Yang *et al.,* 2007).

Furthermore, HRIS expertise or human capability and degree of centralization are also some significant factors influencing the adoption of HRIS. HRIS expertise which refers to employees' knowledge of and technical competence in HRIS was found as an important factor in the adoption of new technologies by Kwon and Zmud (1987). As IT is applied to HR departments in a slow rate it has resulted in lack of HRIS knowledge and skills which also slowed the urgency of HRIS adoption (Teo *et al.,* 2007). Therefore, successful adoption of HRIS requires availability of skilled HRIS professionals in the organization because if the users have lack of understanding of the system's functions and features it can be a major obstacle in HRIS adoption. Troshani *et al*.'s (2011) study indicated that training is needed for all user levels such as operational and strategic levels to increase their knowledge and skills in using the system effectively. In addition, the authors also argued that degree of centralization effects adoption when decision is made at higher levels in organization. This factor however was not much visible in other technology adoption studies.

4.2. Technological Factors

Technological factors focuses on the manner where technology characteristics can influence adoption (Yang *et al.,* 2007). Adopters assess the characteristics of innovations in terms of "possible gains and barriers". Gains refer to the benefits organizations expect to receive upon adoption and include increased levels of service quality, efficiency, and reliability (Oliveira & Martins, 2010). On the other hand, barriers include innovation complexity and its compatibility with organizational technology competency systems(Rogers, 2003).

According to Oliveira & Martins (2010), technology readiness is depended on organization's technology infrastructure and IT human resources. Based on IT expertise's skills and knowledge that they use to build a web application; technology infrastructure makes an easier base on which internet technologies can be created. HRIS can become an integral part only if the organization has infrastructures and technical skills. These factors allow the technological capacity of an organization to adopt HRIS (Oliveira & Martins, 2010). Conversely, since organizations with superior technology readiness are in a better position to adopt HRIS, companies that do not have strong technology infrastructure and wide IT expertise may not take the risk of adopting HRIS. A number of researches have recognized technological readiness as a significant factor that influence IT adoption (Kwon & Zmud, 1987; Oliveira & Martins, 2010).

Studies show that innovation characteristics match with those of technological factors. For example, Carter and Belanger (2004) pointed out three main influencing factors for e-Government adoption naming relative advantage, image and compatibility. These factors influence the decision to adopt a technology innovation. Similarly, Teo *et al*., (2007) in their research in Singapore found only relative advantage and compatibility as influencing factors in HRIS adoption. Rogers (2003) defined complexity as the degree to which an innovation is perceived as relatively difficult to understand and use. Relative advantage is associated with economic profitability, savings in time and effort, cost reduction etc. Relative advantage was explained as perceived benefits in Troshani *et al.*'s (2011) work.

In addition to these factors, organization fit, adoption cost, complexity or user friendliness, efficiency were also found as significant influencing factors in Australian public sector organization (Troshani *et al.*, 2011). Thus, it shows various numbers of technological factors contribute in influencing HRIS adoption as it is a type of innovation adoption.

4.3. Environmental Factors

Environmental factors describes the area where organizations conduct their business, and includes industry characteristics, government regulation, and supporting infrastructure (Oliveira & Martins, 2010; Troshani *et al.,* 2011). According to Rogers (2003) in order to adopt innovation, information about them must be available to prospective adopters. Besides infrastructure and technical support, government also can play a vital role for encouraging technology adoption by raising awareness, training, and support, and funding (Troshani *et al.,* 2011).

As competitive pressure grows to reduce cost and serve more strategic role as well as to better manage the employees in the organizations, firms have realized that they cannot be competitive if they do not manage their human resources effectively (Teo *et al.,* 2007). Thus, this need has driven the organizations to use HRIS as it can help make more informed decision, more efficient HR processes and better allocate human resources. Therefore, competition is counted as an influencing environmental factor in adopting HRIS. However, Teo *et al*. (2007) found that competition only influence the extent of HRIS adoption, further research in different firms or geographical area may show different result.

Moreover, Ruël *et al.* (2004) in their paper identified six environmental characteristics that influence e-HRM implementation; these are competition, technological development, HRM state of art, labor market, societal developments and governmental regulation. Other than these factors, it is stated that in a transnational organization the HRIS is influenced by factors such as institutional and cultural host-country environment (Dowling, Festing, & Engle, 2008; Festing & Eidems, 2011). As when the organization goes global it becomes necessary to keep a fair balance between global and local elements of the organization; for instance, to be competitive and successful organizations have to be globally efficient, sensitive to needs of local business units and able to leverage innovation and worldwide learning across the enterprise. This could be an interesting topic to research about as currently research in these area is still lacking (Festing & Eidems, 2011).

5. Conclusion

HRIS assists the HR department in making the HRM process easier, faster, cheaper, and more effective as well as it benefits the organization to greater success. All these benefits of HRIS can be achieved perfectly only if the system is adopted or adapted in an organization accurately and more effectively. However, several challenges are faced by almost every organization while implementing and adopting the HRIS. The aim of this study was to investigate factors influencing HRIS adoption in organizations. According to the review and analysis it is clear that several factors influence the HRIS adoption. Among those some of the organizational factors such as organizational size, management commitment showed more influencing impact in adopting the system. It was noticed that mostly studies were done in Europe and outside Asia thus, this opens a perspective to examine the HRIS adoption in different geographical area in the future. Besides, future studies also needed in identifying the degree of the influence of these factors identified. Furthermore, as in this globalization era many organizations are working in a global network, culture of both the country and the organization play an important role as influencing factor in adopting HRIS. As a result, the researchers strongly recommend investigating the aspect of culture in HRIS adoption.

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