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HRIS and IHRM strategy: A survey of international firms

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Abstract

The purpose of this research was to examine the role of information systems (IS) adoption in international human resources management (IHRM) strategy performance in international firms. A survey of the world's largest firms (n = 391 firms) was conducted using a combination of online platforms. The updated Delone and Mclean (2003) success model was used for the research. The survey showed that firms do make extensive use of IS for IHRM, with most firms using an HRIS system rather than more limited systems. The analysis showed that specific factors (especially system quality and information quality) affected perceived IHRM process success, but did not direct IHRM strategy. The implication of this research is that firms use and recognize the usefulness of IS, but did not consider it a competitive advantage. Thus, IS is an organizational tool rather than a standalone strategy.

Introduction

International human resource management (IHRM) is a complex legal, institutional, and cultural challenge for organizations. Firms working in international environments have to manage cultural differences, differences in labor markets and economies, and different legal and institutional environments for a large workforce (Harzing & Pinnington, 2014). This complex working environment must be managed in a way that balances internal factors (such as organizational justice perceptions) and external factors (such as different legal requirements in areas like required leave and pay rates), along with cultural differences in expectations surrounding the workplace (Harzing & Pinnington, 2014). At the same time, IHRM offers a potentially significant strategic advantage for talent management, which is especially important for firms operating in industries that require high human capital and where there are persistent global labor shortages (Schuler, Jackson, & Tarique, 2011). For example, IHRM offers an opportunity for multinational firms to locate and secure required talent to meet its current and future requirements for knowledge and skills.

The complexity of IHRM creates a significant coordination and administration challenge. Information systems (IS) offers a potential solution to these coordination and administration challenges. The human resource information system (HRIS) is a technology platform and set of associated tools and processes that are designed to support specific human resources (HR) activities, for example recruitment and selection, compensation and rewards, benefits, and other core HR activities (Kavanagh & Johnson, 2017). These systems offer a potential benefit for coordinating and aligning HR activities across the organization (Kavanagh & Johnson, 2017). However, IS tools, like other HRM tools, may not be fully implemented throughout the organization due to resistance or lack of coordination within the organization (Bos-Nehles, Bondarouk, & Labrenz, 2017). To date, however, there has been little research into the effect of IS tools and technologies on the effective implementation of IHRM strategies. Instead, while the use of IS is assumed, the extent of its use, degree of standardization, and effect on HRM strategy has not been investigated in detail. Thus, the purpose of this research is to investigate the role of IS as a strategic tool for IHRM in international firms, addressing its role as a factor in the success of HRIS strategy.

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Literature Review

The IS Success Model

The updated Delone and McLean (2003) (Figure 1) is the basis for investigating the effect of IS systems in this study. This model proposes that individual system usage intentions, use, and satisfaction is predicted by system characteristics that include information quality, system quality, and service quality (Delone & McLean, 2003). All model relationships are perceived as positive. In this model, the ultimate outcome is that of net benefits, which includes individual and organizational benefits that accrue from use of the system, such as financial or operational benefits (Delone & McLean, 2003). Here, the net benefit is successful IHRM strategy implementation. Meta-analysis has shown that at least at the individual level, the IS success model is successful at predicting variance in IS usage and its outcomes (Petter & McLean, 2009). However, the model has not been well-tested from the organizational perspective (Urbach & Müller, 2012). Despite this lack of testing, other authors have had success in validating the DeLone and McLean (2003) success model in some organizations. For example, Ojo (2017) tested the model in the context of hospital information systems, finding that many (though not all) of the internal relationships of the model did apply to the context. The main variation from the proposed model is that use did not predict user satisfaction (although it did predict perceived benefits) (Ojo, 2017). Al-Shibly (2011) used the DeLone and McLean (2003) success model as the basis for their development of a success assessment approach for human resources as well, demonstrating that it was an effective foundation for such research. This model showed that the system quality and other factors could be used to measure system success directly. Al-Shibly (2011), rather than measuring intention to use and actual use, focused directly on user satisaction and proposed that HRIS systems success was the outcome of this factor. Davarpanah and Mohamed (2013), who investigated HRIS in public higher education, also found that IS quality factors had a direct impact on system success. Other studies have taken a similar reductive approach in measuring organisational systems success. For example, Wei et al. (2009) used essentially the same model, measuring only user satisfaction and system success for enterprise resource planning (ERP) systems. Another study of ERP systems confirmed that intention to use, use and user satisfaction could be removed from the model entirely, supporting a direct relationship between the IS quality factors and net benefits (Bernroider, 2008). Similar findings have been shown for knowledge management systems (Al-busaidi, Olfman, Ryan, & Leroy, 2010). If anything, these modified DeLone and McLean (2003) success models which eliminate the intervening variables are more common for HRIS and organisational systems than those that adapt the full model. Thus, although this is not the most commonly used model, it has been demonstrated to be successful in organizational contexts generally, and could be effective at modeling HRIS specifically. There is also evidence that the intervening variables, including intention to use and use and possibly even user satisfaction, can be replaced with direct relationships between information quality, system quality, and service quality and the projected net benefits, which is the approach chosen here.

This research simplifies and extends the IS success model by considering only the effects of the system characteristics on the organization's net benefits in relation to IRHM strategy success (Figure 2) in a novel application of the model to organizational performance.

IS for Human Resources

Information systems have been commonly used for HR applications since at least the early 1990s, but over the past few decades have evolved to incorporate not just administration and recordkeeping components, but also long-term planning and analysis components to facilitate strategic activities like talent management and implementation of high-performance work systems (HPWS) (Kavanagh & Johnson, 2017). HRIS systems may be developed in-house using existing IT resources including programming and system design, especially in larger organizations or IT-oriented organizations (such as software development firms) that have the required development knowledge (Dery, Hall, Wailes, & Wiblen, 2013). In these house-developed systems, HR professionals typically work with programmers to establish the required technical needs, but these needs can be poorly implemented or may not be fully understood (Dery, et al., 2013). Additionally, not every organization has the resources to develop its own HRIS, which is why many organizations (possibly most organizations) choose to outsource HRIS to a standard software and service provider (Rao & Dhillon, 2017). HRIS are used in both small and large firms, but small and medium enterprises (SMEs) are very likely to use an outsourced HRIS system or service rather than developing an in-house system (Wallo & Kock, 2018).

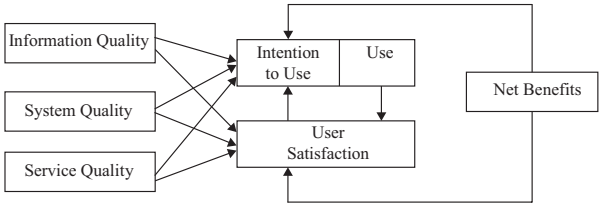

Figure 1 The D&M (2003) IS success model
Source: Delone & McLean, 2003, p. 24

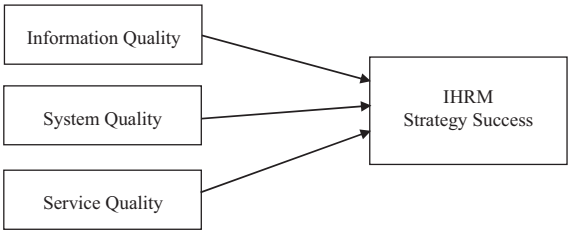

Figure 2 Conceptual framework of the study

One author identifies three different types or levels of HRIS software, including HRIS, human capital management (HCM), and HR management systems (HRMS) (Maiorino, 2018). HRIS systems include components for recruitment and selection, core HR practices and benefits administration, absence management, compensation, training, workflow, reporting, and HR self-service. HCM systems are extensions of HRIS that incorporate support additional strategic tasks, including onboarding, performance, position control and succession planning, salary planning, global HR, and analytics. Finally, HRMS incorporate all aspects of HRIS and HCM and additional administration tools for time and labor and payroll (Maiorino, 2018).

HRIS and Its Role in HRM Strategy

One of the important aspects of understanding the role of HRIS in HRM strategy is that the use of HRIS is not, in itself, a strategy or a competitive advantage (Stavrou, Brewster, & Charalambous, 2010). Instead, the use of HRIS is widespread and common, meaning that most (possibly all) firms have access to the tools (Stavrou, et al., 2010). Instead, HRIS systems represent tools that can be used within the organization to achieve competitive advantage, rather than a competitive advantage on their own (Strohmeier, 2013). However, there does still need to be a driving strategic goal for implementation of an HRIS system, and it must be connected to the organization's overall goals and strategies (Schalk, Timmerman, & van de Heuvel, 2013). Otherwise, it is likely that the HRIS system will be an operational tool but will not be used to achieve the strategic objectives of the firm (Schalk et al., 2013).

This is an important distinction because it means that it is not the system itself that leads to achievement. However, HRIS can be used to develop the organization's dynamic capabilities and resources, which does contribute to competitive advantage. For example, one author pointed out that HRIS can be used to codify and standardize organizational processes like recruitment and talent management (Markova, 2012). Thus, using HRIS can help ensure that the organization is using its resources effectively by repeating processes that have worked previously and maintaining records, processes, and workflows (Markova, 2012). HRIS can also be used for long-term planning and development and implementation of HRM strategies (Nagendra & Deshpande, 2014). For example, HRIS can be used to monitor and improve performance in areas like talent management and performance monitoring, which can improve the contribution of HRIS to the organization's overall strategic goals. For example, Nagendra and Deshpande (2014) found that HRIS tools including skills inventories, training needs analysis, succession planning and labor and cost analysis contributed to the HR function's efficiency and effectiveness in these areas. However, these authors also noted that the alignment of HRIS systems to organizational strategies and existing work processes was critical to achieve this outcome (Nagendra & Deshpande, 2014). Thus, while using HRIS can help organizations achieve their strategic goals, simple implementation of HRIS without integration into the existing strategic framework and processes of the organization cannot deliver this benefit.

Effect of HRIS on IHRM Strategy

The main question of this research is how HRIS influences HRM strategy outcomes specifically in the context of international HRM (IHRM) strategy. As noted above, IHRM shares many characteristics with the HRM processes of the organization, but is also unique in that it is required to cross borders between countries, organizations and cultures (Harzing & Pinnington, 2014). Thus, the implementation of HRIS for IHRM strategic performance situations may be particularly challenging.

Perhaps surprisingly, the role of HRIS in IHRM has not been studied in great detail in the literature. Kavanagh and Johnson (2017) identify several challenges that exist in IHRM that HRIS may be applied to; for example, although standard training is handled through the local HRM departments of subsidiaries, expatriate training and management is often managed through headquarters or centralized IHRM (Kavanagh & Johnson, 2017). Thus, even though the centralized IHRM may usually focus on long-term strategic planning goals, in some cases even seemingly local activities may be implemented at the international level. Another area where HRIS may be used at the IHRM strategy level is that of talent management (Cerdin & Brewster, 2014). For example, organizations that use geocentric staffing strategies for management and high-skill positions may need to coordinate recruitment and selection processes and other talent management activities such as providing incentives at the global level, rather than regionally or locally (Cerdin & Brewster, 2014). To date, however, there has been little research into how HRIS can affect the outcome of IHRM strategies, which is the research gap this study fills.

The conceptual framework (Figure 2) integrates the three system characteristics of the IS system on IHRM strategy success. This leads to the following hypotheses:

Hypothesis 1: Information quality of the IS system will positively affect IHRM strategy success.

Hypothesis 2: System quality of the IS system will positively affect IHRM strategy success.

Hypothesis 3: Service quality of the IS system will positively affect IHRM strategy success.

Methodology

Participants

The research was conducted at the firm level. The population of interest was large international firms. The sample was selected based on the Forbes Global 2000, which identifies the largest publicly listed international firms in the world (Touryalai & Stoller, 2018). All 2,000 companies on this list were solicited for participation. The respondents included HR managers and supervisors in the central or regional departments of the firms that were selected. A total of 391 company representatives responded, for a response rate of 19.6%.

Data Collection

Data was collected using an online survey. Google Docs was used to construct the survey that was distributed to most firms. This was unsuitable for Chinese firms because Google is blocked by the Chinese government, so an alternative site (SoJump) was used instead (Mei & Brown, 2018). The survey was constructed using a combination of categorical items (measuring firm characteristics and IS system use) and five-point Likert items (measuring information quality, system quality, service quality, and IHRM strategy success).

The items for information quality, system quality, and service quality were adapted from the items operationalized by Ojo (2017) for the HRIS context. IHRM strategy success items, which measured effectiveness of HRIS for IHRM goals including talent management (recruitment, selection and retention) and personnel management (cost controls and performance management), were developed by the author. Cronbach's alpha was used to measure the inter-rater reliability of the scales, with a lower bound of $\alpha = .700$ (Warner, 2013). The questionnaire is summarized in Table 1.

Data Analysis

Data analysis was conducted in SPSS. Analysis began with descriptive statistics, including frequency distributions for firm characteristics and system characteristics and mean and standard deviation for Likert items. Multiple regression was used to evaluate the conceptual framework.

Results

A total of 391 firms participated in the study. Table 2 summarizes the industry, HR level of the participant, and type of HRIS system used in the organization**.** As this shows, Technology and Finance firms were most common, representing about 41.4% of the sample altogether**.** Most of the respondents were using an HCM (67%), which is the extended type of system designed for strategic planning activities (Maiorino, 2018). Finally, most of the participants had responsibilities at the global level (45.3%) or a mixture of global and local responsibilities (30.4%).

Hypotheses were tested using multiple regression (Table 3). The ANOVA test confirms that the model is significant ($F = 128.592$, $p < .001$). The regression statistics show that the model is moderately strongly predictive (adj. r-square = .495), indicating that 49.5% or about half of variance in IHRM strategy success was predicted by the system characteristics**.** All three of the regression predictors were significant based on the t-tests ($p < .001$). The strongest effect came from System Quality, followed by Information Quality and Service Quality. As expected, all three of these relationships were positive. Therefore, H1, H2, and H3 were all accepted based on the regression outcomes. However, the effect of System Quality was much stronger than that of Service Quality.

Discussion

This study showed that there is a moderate but direct effect of HRIS system characteristics including information quality, system quality and service quality on the IHRM strategies of the firm. This is a useful finding since it demonstrates that a collapsed IS systems success model can be used at the organizational level to measure the effect of the HRIS system on organizational performance. Previously, this was one of the areas that required more research when using the IS success model, as most previous studies have focused on individual-level outcomes (Petter & McLean, 2009; Urbach & Müller, 2012). Thus, from a theoretical perspective, this study was useful as it addresses the organizational perspective in a specific context (HRIS).

The findings also contribute to the literature on HRIS because they are not just descriptive or qualitative, but instead draw a direct line from the perceived utility of HRIS to the desired organizational outcomes (IHRM strategy success). The role of HRIS in IHRM administrative and planning tasks has been noted by several previous authors, who have observed that HRIS does pose a potential competitive advantage in this area (Cerdin & Brewster, 2014; Kavanagh & Johnson, 2017). This is because HRIS offers opportunities to manage IHRM resources effectively to meet the unique challenges of the international organization (Harzing & Pinnington, 2014; Kavanagh & Johnson, 2017). Previous studies have also demonstrated that organizations can use HRIS as a tool to

Table 1 Survey instrument summary

Scale	Operational Definition	Sample Item	Measurement	Alpha
Information quality (4 items)	The extent to which information sourced from the system is accurate, complete and useful.	The IS system's reports are usually accurate.	Likert	.823
System quality (4 item**s**)	The extent to which the system is useful, usable and consistent.	The IS system provides the tools I need.	Likert	.894
Service quality (4 items)	The extent to which the service is reliable and available.	The IS system is almost always available.	Likert	.794
IHRM Strategy Success (4 items)	The extent to which the company achieves its IHRM strategy goals in areas including talent management, cost management, and personnel management (performance evaluation and compensation).	Our IHRM strategy delivers the talent we need.	Likert	.705
Firm characteristics (2 items)	Firm size and firm industry.	Select the industry your firm operates in.	Nominal categorical	NA
System characteristics (1 item)	HRIS system in use.	What type of IS systems are used in HR?	Nominal categorical	NA

Table 2 Firm and respondent characteristics

	Frequency	%	Cum. %
Industry			
Technology	82	20.97	20.97
Finance	80	20.46	41.43
Manufacturing	49	12.53	53.96
Retail	62	15.86	69.82
Resources	65	16.62	86.45
Other	53	13.55	100.00
Type of HR System			
HRIS	129	32.99	32.99
HCM	262	67.01	100.00
Respondent Responsibility Level			
Local	95	24.30	24.30
Mixed	119	30.43	54.73
Global	177	45.27	100.00

Table 3 Summary of regression for hypothesis tests

	Regression Coefficients				
	Coefficients	SE	*t* stat	*p*	
Intercept	-0.196	0.200	-0.977	.329	
Information Quality	0.317	0.036	8.721	.000	
System Quality	0.627	0.037	17.142	.000	
Service Quality	0.133	0.036	3.664	.000	
	ANOVA Test				
	df	SS	MS	F-test	Significance F
Regression	3	403.358	134.453	128.592	0.000
Residual	387	404.637	1.046		
Total	390	807.995			
	Regression Statistics				
Multiple R	0.707			Adjusted R^2	0.495
R^2	0.499			Standard Error	1.023

implement strategies, achieve competitive advantage and develop dynamic capabilities, although simply implementation of HRIS does not deliver these benefits (Markova, 2012; Nagendra & Deshpande, 2014; Schalk, Timmerman, & van de Heuvel, 2013; Stavrou, Brewster, & Charalambous, 2010; Strohmeier, 2013). Thus, this research demonstrates that HRIS can have an effect on the organization's IHRM strategic outcomes.

This study supported the general position of HRIS as a tool to achieve competitive advantage, not a competitive advantage on its own terms. In fact, as Schalk et al. (2013) pointed out, it is likely that an organization that implementing an HRIS system without careful alignment to the organization's HRM strategies and broader strategies would limit its usefulness to an operational recordkeeping and administration tool. Thus, while these findings are useful, they should not be taken to mean that simple implementation of an HRIS system or program will help the organization meet its strategic IHRM goals or ensure positive outcomes.

Conclusion and Recommendation

This study has investigated the role of HRIS in the strategic IHRM outcomes of international firms. The study showed that characteristics of the HRIS, especially its system quality and information quality, did have an effect on the organization's strategic IHRM outcomes. This finding demonstrates the principle that even though HRIS do not constitute a competitive advantage on their own, such systems can be used to develop organizational capabilities, coordinate activities, and otherwise make IHRM activities more effective and efficient. Thus, the research clearly supports a practice recommendation to employ HRIS in a way that is aligned to the organization's overall strategic goals and needs.

There are some limitations to the study, of which the most important is that it drew on large multinational corporations and that the sample was not representative (a limitation of the sampling technique). There were also limitations to the scope of the survey, including the role of HRIS in specific IHRM strategic activities like talent management, but excluding others. This was required because, as each firm has its own individual IHRM strategy and goals, it would not be feasible to have a comprehensive measure of all possible strategy areas. Thus, these findings do not necessarily represent all possible IHRM strategy goals, but only some of the most common such goals. These scope limitations have generally not been addressed in literature either, as there is limited empirical evidence for the role of HRIS in IHRM strategy outcomes either generally or specifically. Thus, there are many opportunities for further research in this area.

Conflict of Interest

There is no conflict of interest.

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