

Examining the Impact of HRIS on Attaining Competitive Advantage in the Higher Education Market: A Literature Review

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This paper aims to present and to discuss a collection of empirical studies related to examining the impact of the Human Resources Information System (HRIS) on attaining competitive advantage in the Higher Education Market (HEM), by means of a content analysis of the findings of previous studies related to HRIS. A review of the relevant literature has shown that a limited number of previous studies have attempted to identify the impact of HRIS on attaining competitive advantage in higher education markets. Thus, the obtained data from the secondary source will be analysed and explained here. Findings of this study examine the impact of HRIS on attaining competitive advantage in HEM thus; the paper is concluded by providing the results of the study and some recommendation for future researches.

Key words: *Human Resources Information System (HRIS), Competitive Advantage, Higher Education Market (HEM).*

Introduction

The final decade of the 20th century has witnessed major world changes in all aspects of life: economic, social, political, scientific, cultural, and technological. So, many companies faced challenges to provide the needs for their customers, suppliers, and stakeholders. Therefore, companies add value by creating distinctive resources and capabilities and establishing a competitive advantage in relevant markets to create value for customers (Ireland, Reutzel & Webb, 2007; Griffiths & Finlay, 2004). Based on this the need for technologies and their acceptance at an accelerating rate emerges; organisations are becoming more flexible using various Information Systems (IS) to support more strategic and complex decisions in order to attain competitive advantage. Many types of Computer-Based Information Systems (CBIS) have been developed to store data and information for each individual employee to aid

planning, decision making, and submitting of returns and reports to the external agencies in order to attain competitive advantage and support HEM, including HRIS (Jahan, 2014; Martin, Brown, Dehayes, Hoffer & Perkins, 2002).

HRIS is an opportunity for organisations to make the HR department administratively and strategically participative in operating the organisation, particularly the service industry, which is one of the most important systems that emerged in the last decade particularly “Higher Education”. The higher education institutes are involved in marketing efforts to build up a good reputation, to improve the level of satisfaction of students and the stakeholders and to gain competitive advantage in HEM. According with intense competition between universities, that should identify and meet the expectations of students to attract more and to retain the existing students (Kolachi, 2013; Sadiq, Khan, Ikhlaq & Mujtaba, 2012).

Therefore, the main aim of this research is to investigate the impact of the HRIS on attaining competitive advantage in HEM. This investigation was done using an archival research method where the researcher analysed the data based on secondary resource. In this context, the study begins by a literature review of the conceptualisation of HRIS and the importance of the system. Subsequently, there are the findings from secondary data, specifically HRIS and competitive advantages.

Literature Review

This section is the theoretical base of the research area. First, it explains the concept of HRIS and presents a brief description of HRIS history. In addition, it reviews competitive advantage origin and its benefits. Second, it will highlight the previous studies concerning the focus of this research, and it demonstrates how to build the model and develop hypotheses. Finally, the researcher presents the conclusions of the research.

The Concept of HRIS

According to Poutanen and Puhakka (2010), it is indicated that the concept of HRIS stretches back to the 1960s, when human resource data were separated from payroll systems. In the 1980s, researchers and practitioners became more interested in HRIS, and in the 1990s several studies, articles, user experiences, opinions and descriptions were published in journals, magazines and on the Internet. In 1982, Walker first articulated the major concept of HRIS, as CBIS for collecting, storing, maintaining, retrieving, and validating certain data needed by an organisation about its employees, applicants, and earlier employees (Walker, 1982). In addition, DeSanctis (1986) perceived HRIS as an IS that helps and supports the planning, administration, decision-making and control activities of HRM, while Kavanagh, Gueutal and Tannenbaum (1990), and Haines and Petit (1997) combined between previous definitions



and defined HRIS is a system used to acquire, store, manipulate, analyse, retrieve, and distribute pertinent information about an organisation's human resources".

Broderick and Boudreau (1992) indicated that HRIS is "the composite of databases, computer applications, and hardware and software that are used to collect, store data in the database from all departments of the organisation and deliver and manipulate data in order to produce the required information on demand to human resource personnel. Kovach and Cathcart (1999) adopted the Walker definition in (1982) for HRIS and they stated that "a HRIS is a systematic procedure for collecting, storing, maintaining, retrieving, and validating data needed by an organisation about its human resources, personnel activities, and organisation unit characteristics".

Other researchers indicated that HRIS is the success base of HRM and effective utilisation of technology in combination with policies and people would give a competitive edge to the organisation, and HRIS has shifted to more strategic applications of an organisation like recruitment, performance and compensation management and other HR activities (Hendrickson, 2004; Bell, Lee, and Yeung, 2006; Lengnick-Hall and Moritz, 2003; Panayotopoulou, Vakola, and Galanaki, 2007). In addition, Kavanagh, Thite and Johnson (2012) identified HRIS components to include hardware, software, people, forms, policies, procedures and data. Beckers and Bsath (2002) defined HRIS' as a set of internally consistent policies and practices designed and implemented to ensure that a firm's human capital contribute to the achievement of its business objectives. Aggarwal and Kapoor, (2012) defined HRIS as a computerised system that assists the process of information related to HRM and has become a key element to all organisations.

Based on the literature review the researcher decided to cover the concept of HRIS through three main aspects; HRIS Benefits, Components and Process, as shown in Table (1) below:

Table 1: The Concept of HRIS

Aspects	Definitions	Sources
HRIS Benefits	HRIS is the success base of HRM and it helps and supports the planning, administration, decision-making and control activities of HRM that would give a competitive edge to the organisation.	(Aggarwal & Kapoor, 2012; DeSanctis, 1986; Hendrickson, 2004; Bell, Lee, & Yeung, 2006; Lengnick-Hall & Moritz, 2003; Panayotopoulou, Vakola, & Galanaki, 2007; Altarawneh, 2010)
HRIS Components	HRIS is an organised collection of people, procedures, software, database, and devices all used interactively to enhance understanding and information base exploring options through the use of models and data processing, and consequently supporting HRM activities.	(Broderick & Boudreau, 1992; Kavanagh, Thite, & Johnson 2012; Beckers & Bsat, 2002)
HRIS Process	HRIS is a system used to acquire, store, manipulate, analyse, retrieve, and distribute pertinent information about an organisation's human resources.	(Kavanagh, Gueutal & Tannenbaum, 1990; Haines & Petit, 1997; Kovach & Cathcart, 1999).

The researcher noticed in the previous definitions, HRIS' are designed to support the HRM activities, and based on an extensive review of HRIS, the researcher provided the following definition: "HRIS is a system that supports the HRM applications by assisting the organisation in attaining competitive advantage".

Brief History of HRIS

The history of HRIS arguably began in the late 1950s; some of the earliest beginnings of HRIS are represented in Table (1). According to DeSanctis (1986) who indicated that HRM utilised computer systems to a very little extent in the late 1950s and continued into the 1960s when the first automated employee data was used. Kavanagh, Gueutal, and Tannenbaum, (1990). and Walker (1993) present how a "true" personnel system was defined in the late 1960s. A "true" personnel system is a system that is not just appended to payroll. In the 1970s, most organisations in the USA having larger number of employees had adopted some of personnel systems. Richards-Carpenter (1982) declared that 40% of U.S. corporations had HRIS by the 1980s.

In 1982, Walker first articulated the major concept of HRIS as CBIS for collecting, storing, maintaining, retrieving, and validating certain data needed by an organisation about its employees, applicants, and earlier employees.” (Walker, 1982). It is considered that the concept of HRIS became an area of research of its own in the middle of the 1980s, before gaining in intensity during the 1990s. In the middle and late 1990s, executive IS and strategic HRM evolved from the model-oriented HRIS to its current position. At the beginning of the 1990s, data warehousing and on-line analytical processing began broadening the realm of HRIS. As the turn of the millennium approached, new Web-based analytical applications were introduced.

Competitive Advantage Origin

The concept of “competitive advantage” was first described by Ansoff (1965) as the “properties of individual products or markets which will give the firm a strong competitive position” (Ansoff, 1965 p.79). Uytendhoeven, Ackerman, and Rosenblum (1973) referred to competitive advantages as the manner in which a firm applies its skills and resources to gain superior return on investment in a product market. Many researchers studied competitive advantage. Accordingly, Cockburn, Henderson and Stern (2000) suggested that competitive advantage was a complex phenomenon, which depended crucially on the active presence of superior leadership. Stinchcombe, (1965), Hofer and Schendel, (1978), and Barney, (2001) studied the isolation of the internal environment from the external environment. In other words, they focussed on isolating a company's opportunities and threats, describing its strengths and weaknesses, and analysing how these are matched to choose strategies.

Klein, (2001) argued that in 1965, Ansoff used the term "Competitive Advantage", but in a way as to describe what a company needed to compete effectively. Barney (2001) added that Ansoff suggested that companies sustain competitive advantage through implementing strategies that exploit their internal strengths and by responding to environmental opportunities, while neutralising external threats and avoiding internal weaknesses.

Porter developed the idea of competitive advantage and innovated in this domain. According to (Ankli, 1992), in 1980 Porter published his book *Competitive Strategy*, which is an in-depth look at strategy. In another study (Cockburn., et al, 2000) notes that Porter added to the managers that five forces influence a company's performance and the forces are: potential entrants, suppliers, buyers, substitutes, and industry competitors.

Barney (2001) argued that in 1989, Barney, McWilliams, & Tusk suggested that a company enjoying a competitive advantage or a sustained competitive advantage is implementing a strategy not simultaneously being implemented by any of its current or potential competitors.



Flamholtz and Hua (2003) recognised that it is competitive advantage that is at the heart of a company's performance in competitive markets. On the other hand, Weerawardena and O'Cass (2004) argued that the creation and maintaining of competitive advantage concerning the company is a critical issue, because this environment is very complex.

This view was reinforced by Li, Ragu-Nathan, Ragu-Nathan, and Rao (2006), where competitive advantage is seen as the extent to which an organisation is able to create a defensible position over its competitors. It comprises capabilities that allow an organisation to differentiate itself from its competitors and is an outcome of critical management decisions.

In others studies, Li and Zhou (2009) argued that competitive advantage is based on two types of positional superiority: cost and differentiation. The first type is cost advantage, or cost leadership, which arises when the company operates at a lower cost than its competitors but offers a comparable product. The primary drivers of cost include economies of scale, capacity utilisation, and process management. The second type of differentiation advantage is achieved when customers consistently perceive a company's offerings as superior to those of its competitors. A company can differentiate itself in various ways, such as providing superior service, offering innovative features, developing a strong brand name, launching effective promotion, and so on. Table (2) presents a brief history of HRIS.

Table 2: A Brief History of HRIS

Sources	Event
(late 1950s-1960s) (Walker, 1982; Kavanagh, Gueutal, & Tannenbaum, 1990; Martinsons, 1997)	Payroll systems and the first automated personnel systems were separated, and the data of employees was made available.
(1960s & 1970s) (Walker, 1993; Kavanagh et al., 1990; Haines & Petit, 1997).	Large companies could afford to invest in the hardware and software required for HRIS. The main task of HRIS was the record-keeping of employee data.
(1980s) (Walker, 1982; DeSanctis, 1986; Kovach, Hughes, Fagan, & Maggitti, 2002)	Many researchers became interested in HRIS' and their role in organisations.
(1990s) (Broderick & Boudreau, 1992; Elliot & Tevavichulada, 1999; Haines & Petit, 1997; Hubbard, Forcht, & Thomas, 1998; Kossek, Young, Gash, & Nichol, 1994; Stroh, Grasshoff, Rude, & Carter, 1998; Kavanagh et al., 1990; Walker, 1993).	Researchers have constructed models and definitions for HRIS that have developed continuously and today they have their own role among other managerial information systems in organisations. However, the research on HRIS is still in its infancy.
(2000) (Ball, 2001; Hussain, Wallace, & Cornelius, 2007; Hendrickson, 2004; Becker, Huselid, & Ulrich, 2001; Mayfield, Mayfield, & Lunce, 2003)	Although the research of HRIS has just recently begun to develop, many researchers have indicated HRIS as a strategic tool to achieve competitive advantage.

Competitive Advantage Benefits

Through competitive advantage the company achieves many benefits. Accordingly, the researcher summarises the important benefits of sustaining competitive advantage. By using cost advantages the company typically increases the adoption of practices that improve the production process, increase its efficiency and reduce input and waste disposal costs. Competitive advantage furthers the company to improve financial performance, gain a strong reputation among customers and increase their competitiveness in international markets (Lopez-Gamero, Molina-Azorin, and Claver-Cortes, 2009; Tien., et al, 2005). Companies will be more concentrated and focussed on customers' needs by developing and implementing the appropriate business strategies that would enable them to improve their competitiveness and performance, and attract loyal customers (Acquaah and Yasai-Ardekani, 2008).

Competitive advantage can lead to high levels of economic performance, customer satisfaction and loyalty, and relationship effectiveness. Brands with higher consumer loyalty face less competitive switching in their target segments thereby increasing sales and profitability (Li et al, 2006). Due to the cost advantage, a company is able to offer products and services at lower prices, thereby attracting more customers and gaining higher returns (Krell and Matook, 2009). Products with greater competitive advantage offer more innovative features with greater quality to customers. These products should provide greater returns to the developing company for a given level of product development investment. Product competitive advantage provides a real measure of a company's ability to meet customer needs (Swink and Song, 2007).

'Competitive Advantage' in Educational & Business Sections

The term 'competitive advantage' has gained popularity, mainly in the private sector because of the work of Michael Porter during the 1980s (Moony, 2007). The essence of Porter's (1980) 'five forces model' is that the structure of an industry determines the state of competition within the industry. The five structural forces are: the threat of new entrants, the bargaining power of suppliers, and buyers, threats of substitute products, and competitive rivalry within an industry.

Haijing (2014) indicated that private Higher Education Institutions (PHEIs) have to face competition with respect to obtaining governmental and or research funds, which implies the possession of specific qualities of teaching and research in the institution; in attracting students, which implies specific marketing capability in gaining recognition of their quality (Knight, 2004; Marginson, 2007); and "in building a reputation which depends on a volatile combination of factors involving everything from Nobel prizes to athletics" (Edwards, 2007, p379). PHEIs do not only compete with each other, they are also confronted with the competition formed by PHEIs and companies for market share in the recruitment of international fee-paying students; offering for-profit education and training programs; or selling education services like language testing or accreditation (Naidoo, 2010; Knight, 2011).

The concept 'competitive advantage' and the related theories have expanded their application from product to service, from profit generation to value creation, from the quality of specific product or service to the overall performance of an organisation. While this concept is expanding, at the same time there is a profit-seeking and profit-making area that PHEIs have been pushed into because of government budget cutting, increasing student mobility, and the growing knowledge economy. As a result of these external factors, competitive advantage theories have gained their popularity in the public education sector; terms like 'competitive advantage', 'competitive position', and 'competitive strategy' have often appeared in the policy paper, promotion materials and university websites (Haijing, 2014). The popularisation of this concept in the education sector might also be attributed to the internal factors. HEM have always had the 'gene' of being competitive in trying to reach high academic standards, to

achieve academic excellence, and to obtain international reputation and status. Also students' engagement in a learning community and the success of their future career increasingly make up a great part of growth strategy at many PHEIs, and this also implies the use of new tools such as internationalisation, marketing and promotion for enhancing competitive advantages (Chan and Dimmock, 2008; Naidoo, 2010).

Based on study conducted by Haijing (2014), the stated competition in the PHEIs' context is not pure market competition, but a mixture of traditional academic competition and the newly introduced market competition, showing that the complexity of HEM competition has not been fully recognised. Therefore the potential effects and costs of intensified competition on the development of higher education has not been sufficiently considered, although many scholars (such as: Kirp, 2004; Luijten-Lub, van and Huisman 2005; Marginson and van der Wende, 2007; Eckel, 2007; Marginson, 2007; Lovegrove and Clarke, 2008; Larsen, Maassen, and Stensaker, 2009) expressed their concern some years ago. As long as HEM rely on modes of economic rationality from the business sector, such as economies of scale to maintain competitive advantage (Pratt and Poole, 1999-2000; Welch, 2002), the relatively low level of theoretical development on the business concepts remains a weakness in the education sector (Huisman, 2007).

HRIS & Attaining Competitive Advantage in HEM

Matthews and Shulman, (2005); Atuahene-Gima, Li, and Luca (2006) argued that the differences of performance across companies result from the variance in their resources and capabilities that are rare, valuable and inimitable. Salonen, Gabrielsson, and Al-Obaidi (2006) supported the idea that the company can sustain competitive advantage through resources. This is supported by the study of (Newbert., Gopalakrishnanm and Kirchhoff, 2008), stating that only when the resources are simultaneously valuable and rare can the company achieve competitiveness through those resources. Griffith., Yalcinkaya, and Calantone (2009) supported the previous studies; they suggested that a company can achieve competitive advantage through the combining of these resources. Werbel and DeMarie, (2005) found that human resources are very important assets providing the company with competitive advantage; since it is difficult for competitors to sustain the same human resource.

Ferris., Perrewe, Ranft., Zinko, Stoner, Brouer, and Laird (2007) suggested that, in order to remain profitable in the long run, organisations must have a sustainable competitive advantage. This is very important to the company in order to sustain its existence in the market. Human resources are more difficult to imitate than other resources. Accordingly, human resources become a very crucial source of competitive advantage.

Stavrou, Charalambous, and Spiliotis (2007) suggested that competitive advantage and superior performance are two connected but different ideas: successful HRM can contribute to superior performance as a source of competitive advantage by making organisations more effective. According to (Royer, Waterhouse, Brown, and Festing, 2008), human resources are very important when it comes to realising the competitive advantage, if the managers can link valuable human resources to company activity. This study is supported by the study of (Wong and Karia, 2009), where they argued that human resources play important roles in the achievement of competitive advantage. Al-Rfou & Trawneh, (2009) suggested that human resources are a key source of competitive advantage, because of causal ambiguity and systematic information that make them inimitable. This idea was supported by (Jassim, 2000), who suggested that a company has a competitive advantage if it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors. Human resources, like financial and technological resources, can be a source of competitive advantage because they meet the criteria for being a source of sustainable competitive advantage. The results of competitive advantage, if human resources add value to the company, are rare, cannot be imitated and are not sustainable. Also, human resources can be characterised by unique historical conditions, causal ambiguity and social complexity. Hendrickson (2004) indicated that HRIS is the success base of HRM and effective utilisation of technology in combination with policies and people would give a competitive edge to the organisation. It is evident that conceptual advancement of Strategic Human Resource Management (SHRM) has initiated linkage of HRM functions with business strategy.

HRIS supported decision-making processes to achieve competitive advantage (Broderick and Boudreau, 1992). Altarawneh (2010) indicated that HRIS in Jordanian universities was mainly adopted to automate HRM activities in order to obtain some general administrative routine purposes for employment information, absence monitoring and payroll services, apart from its quick response and the access it provides to information. Ngai and Wat (2006) found that the greatest benefits to the implementation of HRIS were the quick response and access to information that it brought. According to Hendrickson (2003) who indicated that HRIS benefits an organisation in its HR processes by increasing the efficiency and effectiveness and provides self-service HR (i.e. computer based training, online recruitment).

Lengnick-Hall and Moritz, (2003) mentioned some important facets of HRIS are effective human resource decision making, reducing process and administration cost, speeding up transaction processing, reducing information errors and improving the tracking and control of human resource actions. Moreover, Aggarwal and Kapoor (2012) mentioned that HRIS not only helps the management and HR department but also assists the employees in several ways, based on which it is possible to make quality strategic decisions related to human capital. On the other hand, Sadri & Chatterjee, (2003) suggested that HRIS strengthens an organisation's character.

According to Al-tarawneh and Al-arawneh (2012), considered HRIS is one of the sub-systems within the information systems that concerns itself with providing all the historical, present and future information related to human resources, presenting them to the parties interested in these resources whether they are internal or external ones, to identify the value of human resources which are considered the sources that have the greater value in the economic units particularly in the service and industrial projects. They found that there is a significant relationship between the quality of the output HRIS and institutional performance in the banking sector in the Jordan.

Al-dmour1 and Al-zu'bi2 (2014) found that the most frequent applications of HRIS used in business organisations in Jordan are "Employee Records," followed by "Payroll" and "Recruitment and Selection." They found also that the benefits of HRIS include quicker response time, more accurate HR information, reduction of paperwork and manpower, and more efficient tracking and controlling.

Kabir found that there is a gap between the expected application of HRIS and the present level of use in the selected private universities, in addition to that there is a gap in lack of infrastructure, also a lack of expertise in this field and insufficient training of the employees and high cost. Sadiq, et al. (2012) indicated that HRIS is positively used as a tool to achieve greater administrative efficiency by adding value in the department.

Kumar and Parumasur (2013) concluded that managers have a fairly positive view of the impact of the HRIS on organisational effectiveness with the greatest degree of confidence being placed on the impact of HRIS on time management and on HR functions. To this end, the researcher reveals the impact HRIS has on attaining competitive advantage in two sections: business and educational sections based on the previous studies. A summary of some of the previous studies related to competitive advantage in two sections is listed in the next table (Table.3).

Table 3: HRIS & Attaining Competitive Advantage for both Sections

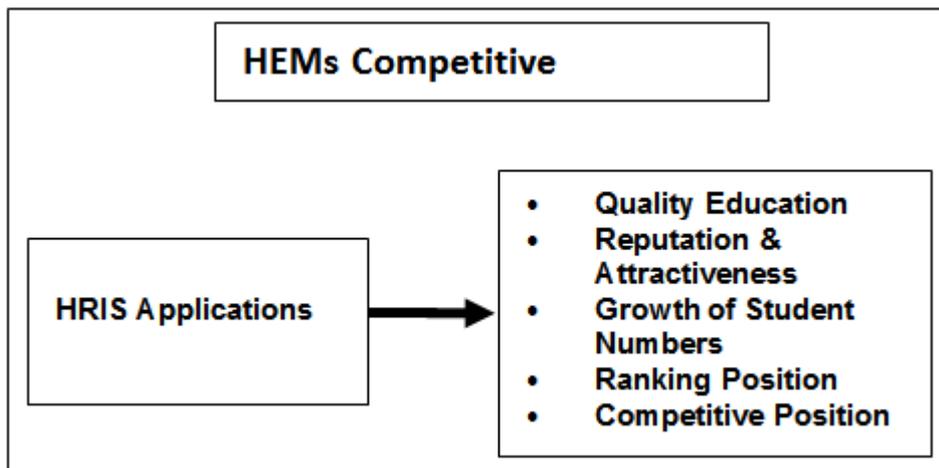
Competitive Advantage	
Business Section	Educational Section
Al-dmour1 and Al-zu'bi (2014); Kumar & Parumasur (2013); Sadiq, Khan, Ikhlq, & Mujtaba, (2012); Al-tarawneh & Al-tarawneh (2012); Pratt and Poole, (1999-2000); Welch, (2002); Huisman, (2007); Krell & Matook, (2009); Li., et al, (2006); Acquaah & Yasai-Ardekani, (2008).	Haijing (2014); Kabir, Bhuiyan, & Masum (2013); Al-tarawneh (2010); Kirp, (2004); Luijten-Lub et al. (2005); Marginson & van, (2007); Eckel, (2007); Marginson, (2007); Lovegrove & Clarke, (2008); Larsen et al. (2009)

In light of the above literature review, the next section provides an outline of the conceptual research model and hypotheses.

The Conceptual Model

To study the impact of the HRIS on attaining competitive advantage in the higher education market, the researcher relies on literature review and mostly his observations in building the proposed model below (Figure 1). The dependent variable in this research is the attaining of competitive advantage in the higher education market, while the independent variables are HRIS Applications.

Figure 1. The Conceptual Model



Research Hypotheses

To examine the strength of the model shown in Figure (1), the researcher will propose the following null hypotheses:

H (1): There is a statistical significant impact for HRIS Applications on the attainment of competitive advantage in HEM.

H (1.1): There is a statistical significant impact of HRIS Applications on the Quality of Education.

H (1.2): There is a statistical significant impact of HRIS Applications on Reputation & Attractiveness.

H (1.3): There is a statistical significant impact of HRIS Applications on the Growth of student numbers.

H (1.4): There is a statistical significant impact of HRIS Applications on the Ranking position.



H (1.5): There is statistical significant impact of HRIS Applications on the Competitive position.

Conclusion

According to the literature reviews, relevant analysis and framework which are covered in this research, it is clear that there is a significant impact of HRIS on attaining competitive advantage in HEM. We have shown that a limited number of previous studies have attempted to identify the impact of HRIS on attaining competitive advantage in HEM thus, the obtained data from the secondary source will be analysed and explained here. Findings of this study examine the impact of HRIS on attaining competitive advantage in HEM. It was noticed that most of the studies done in Europe and outside Asia were concerned with competitive advantage for business sections. Therefore, this study opens a perspective to examine the HRIS on attaining competitive advantage in different geographical areas in the future.

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