

Explore the Adoption of HRIS in Telecom Sector in Pakistan

Muhammad Imran Hanif^{1*}, Shao Yunfei¹, Muhammad Shahzad Hanif², Zia ullah Muhammad¹, Khawaja Tehseen Ahmed³ and Bai Xiu-Yin⁴

¹School of Management and Economics, University of Electronic Science and Technology, Chengdu, P.R. China

²Manager Network Operations-PTCL-Etisalat, Pakistan

³Bahauddin Zakariya University, Multan, Pakistan

⁴College of Humanities and Law, Chengdu University of Technology, Chengdu, P.R. China

*Corresponding author: Muhammad Imran Hanif, PhD, School of Management and Economics, University of Electronic Science and Technology, Chengdu, P.R. China, Tel: +86-15928714565; E-mail: mimranhanif1@gmail.com

Received Date: November 28, 2013; Accepted Date: February 18, 2014; Published Date: February 26, 2014

Copyright: © 2014 Muhammad Imran Hanif, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

The purpose of this study is to identify the factors that influence the decision making regarding HRIS adoption in the telecom sector of Pakistan particularly PTCL. The study has great significance as it contributes to the existing body of knowledge by providing improved understanding of the various technological, organizational and environmental factors which facilitate or prohibit the HRIS adoption decision in the telecom sector of Pakistan.

Keywords: Human resource management; Innovation; Information systems; Public sector; Pakistan; Pakistan telecommunication company limited

Introduction

In the modern era of globalization and cutting edge competition, technology has been regarded as a significant tool for organizational survival. Organizations are focusing towards finding innovative techniques through computer based information technology in different functions and departments. As a result, a need has been aroused to implement Human Resource Information System (HRIS) [1], which is an auxiliary of effective and efficient functioning of HRM. There has been a drastic shift from a labor-intensive HRM to innovation-intensive HRM [2].

More and more organizations are, therefore, using HRIS not for their efficient HR and business management [3], but also for achieving both administrative and strategic benefits [4]. An HRIS may be defined as “the system used to acquire, store, manipulate, analyze, retrieve and distribute pertinent information regarding an organization’s human resources” [5]. HRIS consist of systematic procedures and functions for acquiring, storing, manipulating, retrieving, analyzing, and disseminating pertinent information concerning organizational HR [6]. Generally, HRIS encompasses corporate communication, recruitment, selection, training, employee opinion survey, compensation, payroll services and employee verification as well as general information [7]. While such a system perceives to be global, minor local adaptations and in some cases additions of some specific functionalities are required to improve the match between the firm’s global policy and some local needs. Technology-based recruitment systems are becoming one of the most crucial applications in HRIS. The system not only reduces cost but also improve the hiring methods by prescreening, sorting, and storing resumes more rapidly [8]. Thus, enabling managers to find right candidates for a variety of job postings more efficiently and quickly [9].

Nowadays, there is an increased trend of amalgamating various HR functions and technology. This is the reason that HRIS is now perceived as an internal e-commerce [10]. Literature reveals that HRIS has transformed administrative databases into sound communication systems which resembles a lot to the one used in e-commerce programs. E-commerce technology provides the placement, pricing and promotion initiatives of a product to the external users by merging extranet platforms with intranets. As far as HRIS technology is concerned, the same initiatives are provided by using intranets having merged with external platforms. So, HRIS is considered to be a representative of e-commerce which is highly significant for the alignment of HR functions within strategic initiatives in order to sustain the competitive advantage [10].

This conversion offers great benefits but at the same time also brings about some challenges and constraints regarding its adoption and implementation. These constraints does not allow HRIS to be utilized at its full potential, therefore, these issues are required to be addressed at the managerial level [10]. HRIS adoption could both be challenging, costly and it success adoption, therefore, its benefits are required to be fully demonstrated (Miranda, 2002). The pre-requisite for the successful adoption of HRIS is that its potential benefits should be clearly demonstrated. With standardization trends adopted by HRIS vendors, complete organizational fit between adopted HRIS and business processes, various organizational factors, including management commitment and human capability as well as broader environmental factors including regulatory compliance can have a deep impact on the success of HRIS adoption by creating urgency in adoption intentions [11].

Literature Review

An HRIS may be defined as “the system used to acquire, store, manipulate, analyze, retrieve and distribute pertinent information regarding an organization’s human resources” [12]. In today’s knowledge economy, organizational success is heavily dependent on the performance of its human assets [6]. For the effective Human Resource Management, HRIS is becoming more and more popular in

modern organizations. Innovation adoption decision varies across variety of domains and also from organization to organization depending upon various organizational, environmental, technological and cultural features [13].

Recruitment & selection and HRIS adoption

The use of HRIS in recruitment and selection process is currently attracting more attention. Recruitment, selection, interview and employment are traditional HR functions that are changing at a faster rate [14]. Therefore an effective recruitment strategy is important for an organization to achieve a competitive advantage over its competitors. An organization may use a mixture of online and traditional methods of recruitment depending on their resources and strategic recruitment needs. Cedar [15] reported that the use of IT in recruitment helps to save cost, save time, improves decision making and efficiency of HR departments. According to a survey conducted by the

Chartered Institute of Personnel Development (CIPD) in 2005, 77% of organization responded that they use some form of IT to manage their human resource and 51% reported that they use IT for recruitment and selection purposes [16]. Furthermore, the main reasons for adopting e-recruitment by organizations are to reduce recruitment cost, advertise vacancies, enhanced employer brand, broaden the selection pool, and increase the speed of recruitment time and to develop a personal relationship with the talent candidates [16]. Moreover, many organizations have identified e-recruitment as cost effective method of attracting new talents to their organization, however there are some factors that limit the use of e-recruitment [16]. These may include:

Limits the number of applicants as the internet is not the first point of call for all job applicants;

Is a disadvantage to those who are unable to use IT in their job hunt;

Prospective applicants can be turn off when websites are not professionally designed.

The effect of IT in HRM was considered to be too costly to adopt and implement, but this perception is changing, as the use of computers becomes popular [16]. On the other hand, Maurer (2002) stated that the reason why most employees may be resistant to change might be due to not understanding why HR processes are being changed, as they prefer face-to-face interaction with human resource department to the automated responses or they lack the necessary technical skills to learn and use new technology. Brockbank [17] identify six major barriers to adopting IT in HRM; over the expected benefits; morale problems caused by fear of change, underestimation of the complexities involved, political resistance, lack of support from top management and and technical know how.

Human resource development and HRIS adoption

Dramatic advances in technology which necessitate the redesign of jobs and constant modifications in recruiting, selection, training and appraisal techniques, the globalization of businesses and the need to educate and train managers on dealing with the complexities of a global economy and the move towards a knowledge based economy, where value of the company depends on its employees' skills and knowledge, are just some of the challenges facing the HR departments in many organizations. With many functions to track and huge

amounts of information to process frequently and accurately, HR executives have turned to information technology (IT) to help them meet their organization's information needs. This has led to the development and use of computer-based HRIS in organizations. An HRIS is used to acquire, store, manipulate, analyze, retrieve and distribute pertinent information regarding an organization's human resources [12]. Development of HR is especially important in a knowledge-based economy, where ideas and expertise are greatly valued and a creative and innovative workforce is necessary to meet the challenges of this new economy. It is thus necessary for firms to have highly skilled human capital to provide them with a competitive edge. This is especially so in countries such as Singapore which faces a shortage of manpower.

Various models have been presented in past that could be adopted for the structured analysis of innovation adoption decision by the organizations. One such model is TOE model i.e., Technological, Organizational and Environmental model [18]. The model refers that innovation adoption decisions are strongly influenced by the TOE factors. The model clearly differentiates between organizational capabilities, various environmental dimensions and intrinsic organizational characteristics [19].

Technological capabilities and HRIS adoption

First, the technological context refers to the manner in which the technological characteristics of the respective organization influence the innovation adoption decision. The technological context of TOE model gives an insight on the operationalisation and potential recognition of the benefits as well as the existing adoption capabilities of the organization [5,20]. Innovational characteristics are appraised by the adopters in terms of the possible barriers and gains related to a particular technology being adopted [21]. Gains are related to the expected benefits that an organization can receive upon the innovation adoption. Gains of innovation adoption include better quality of services, reliability and efficiency [22]. The possible barriers include technological compatibility with organizational technological capability, legacy systems and technological complexity [23]. Generally, the way organizations exploit these innovative opportunities depends upon the extent of match between two factors: existing practices and technological infrastructure and innovation characteristics of the organization [24]. The transformation of HRM from an administrative to a more strategic one is greatly facilitated by e-HR [25]. There are ample reasons which are found to be the driving forces of e-HR adoption and implementation such as quality in recruitment, selection and communication, time and cost savings and minimization of errors. Likewise, there are some factors which are identified as the critical success factors in e-HR adoption. These factors include organizational culture, employees' IT skills and the successful collaboration of HRM and IT. There is a common perception that e-HR upgrade the role of HR functions and practices to a great extent as it transforms the role of HRM from administrative to a strategic one. It positively benefits the organization by impacting its strategic goals such as time management, operating cost minimization, goals alignment and company's image enhancement. Integration of IT and HRM functions; organization culture and employees' technological awareness are the successful factors critical to the adoption of e-HR in an organization and improved quality of its services. Keeping in view these potential benefits, HR experts are required to invest in this area in order to inculcate necessary skills and attitudes required for the utilization of the innovative services [25].

Organizational context and HRIS adoption

Second, the organizational context refers to the manner in which the organizational characteristics of the respective organization influence the innovation adoption decision. These comprises of the resources, processes and structures [18]. Adoption is highly facilitated in the organizations where there is high degree of centralization as top management is authorized to take innovation adoption decision least bothering about the confrontation from employees or low level managers [26,27]. Innovation adoption would be facilitated in the organization where there is a bigger support from higher management as it would be easy to overcome the difficulties associated with innovation adoption [28]. Likewise, larger organizations are more adaptive to innovation adoption as compared to smaller organizations. But the research also reveals that smaller organizations are found to be more agile as compared to larger organizations due to adaptability factors and flexibility [29].

Third, the environmental context refers to the manner in which the environmental characteristics of the organization influence the innovation adoption decision. Environmental context focuses on the ground where the business operations are being conducted such as government regulations, supporting infrastructure and industry characteristics [19,22]. These are the critical factors that play an important role in driving organizations to take decisions whether a particular technology is to be adopted or else. For adoption, it is required that relevant information must be available to the potential adopters [23,30]. Above all, success stories of technology adoption also exert a pressure on other organizations to follow the same pattern and consider it [31]. Particularly, technical support and existing organizational infrastructure are also considered to be the key drivers of innovation adoption [32]. Likewise, strong government support through creating innovation awareness, facilitating training and providing financial assistance can also leads towards the successful adoption of innovation [20].

Various researches have been conducted which studies the impacts of HRIS such as, global HRIS integration [33] and the role of HRIS in achieving competitive advantage [34-37], improving performance [38], delivering organization-wide benefits [39], gathering information cost-effectively [40], and assessing HRIS support for developing organizational HR [41]. Recent studies have examined HRIS adoption determinants in Singapore [42] and the degree to which HRIS can enable strategic focus of HR [43,44]. But little attention has been paid by the management practitioners on the organizational adoption. In fact, HRIS is considered to be a one of the most under research area of management sciences [45-49].

The purpose of this study is to identify the factors that influence the decision making regarding HRIS adoption in the telecom sector of Pakistan particularly PTCL. The study has great significance as it contributes to the existing body of knowledge by providing improved understanding of the various technological, organizational and environmental factors, which facilitate or prohibit the HRIS adoption decision in the telecom sector of Pakistan. The constructs for independent variables used in this study are as follows: the constructs for recruitment and selection are advertisements for ads, applications received, tests conducted, and selection of employees; the constructs for Human Resource Development are number of transfers, promotions, lay-off, job rotation and job enrichment; the constructs for technological capabilities include records entered, records stored, IT trainings, reports generated, quality control standards and procedures; the constructs with respect to

organizational context are size of organization, scope of organization, number of projects, organization departments, culture and degree of centralization.

Methodology

There is a paucity of research concerning HRIS adoption in the telecom sector in Pakistan. Given the intricate nature of HRIS, their adoption can be better understood by examining the interpretations of relevant organizational actors. This paper's qualitative and quantitative exploratory study has focused on the dynamic, intricate, and multifaceted processes and the exploration of emerging themes.

Qualitative empirical data was collected from HR experts based on the reports and records entered in during nine years in PTCL. Secondly In-depth interviews were conducted that have provided rich insights for exploring, identifying, and understanding viewpoints and attitudes. Moreover, they allowed greater control over the interview situation while providing opportunities for making clarifications and collecting supplementary information. A total of six sessions were held with key HRIS informant representatives of Pakistan Telecommunication Company Limited. The main criterion for selecting organizations was that they had adopted or in the process of adopting major HRIS.

Conceptual Model

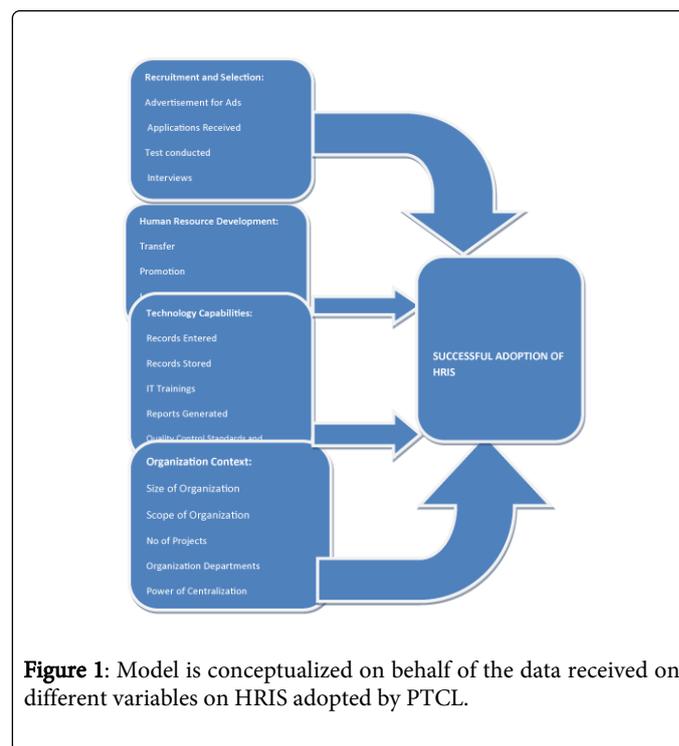


Figure 1: Model is conceptualized on behalf of the data received on different variables on HRIS adopted by PTCL.

Analysis

The record of PTCL employees entered in database shows in initial three years, orientation of HRIS was in development phase.

In year 2004 and 2005, the HRIS entries of records is not remarkable that show decreasing trend in first three years.

HRIS has been completely adopted from 2006 upward.

Maximum utilization in last nine years is seen in 2007.

Maximum number of records generated of employees in 2006 and 2007.

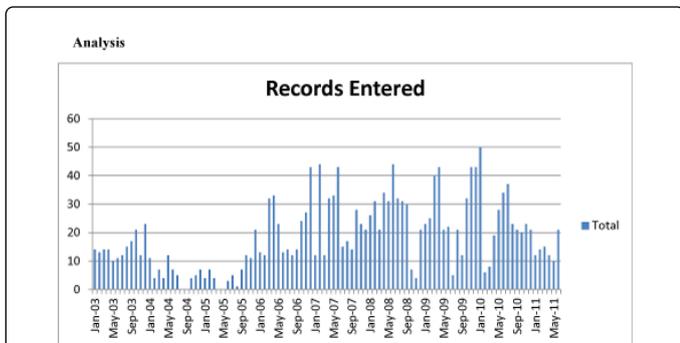


Figure 2: Analyses the record of PTCL employees entered in database shows in initial three years, orientation of HRIS was in development phase. In year 2004 and 2005, the HRIS entries of records is not remarkable that show decreasing trend in first three years. HRIS has been completely adopted from 2006 upward. Maximum utilization in last nine years is seen in 2007. Maximum number of records generated of employees in 2006 and 2007.

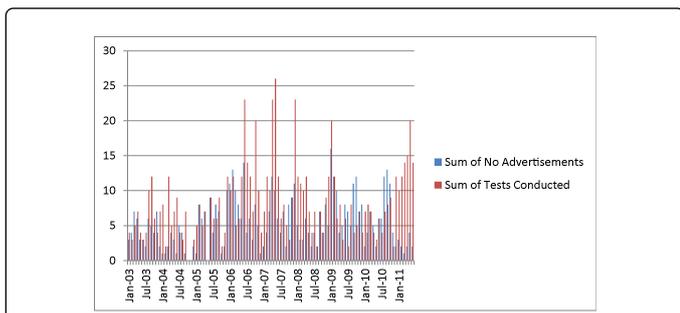


Figure 3: Analyses when we compare number of advertisements with number test conducted, we infer from HRIS applications is showing an increasing trend in number of advertisements. Maximum advertisements were placed in 2006 and 2007. Maximum numbers of test were conducted in April and July 2007. Minimum test were conducted in year 2004. Average advertisement per year is 13 and average test per year in last 09 years in 12.

Analysis

When we compare number of advertisements with number test conducted, we infer from HRIS applications is showing an increasing trend in number of advertisements.

Maximum advertisements were placed in 2006 and 2007.

Maximum numbers of test were conducted in April and July 2007.

Minimum test were conducted in year 2004.

Average advertisement per year is 13 and average test per year in last 09 years in 12.

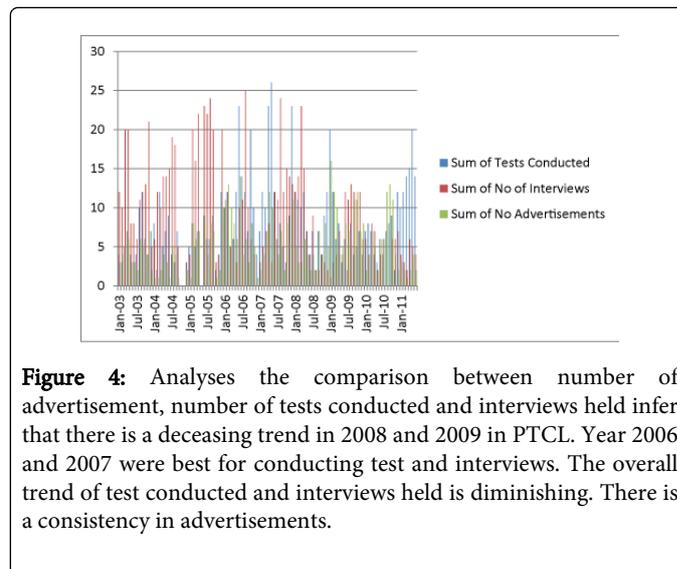


Figure 4: Analyses the comparison between number of advertisement, number of tests conducted and interviews held infer that there is a decreasing trend in 2008 and 2009 in PTCL. Year 2006 and 2007 were best for conducting test and interviews. The overall trend of test conducted and interviews held is diminishing. There is a consistency in advertisements.

Analysis

The comparison between number of advertisement, number of tests conducted and interviews held infer that there is a decreasing trend in 2008 and 2009 in PTCL.

Year 2006 and 2007 were best for conducting test and interviews.

The overall trend of test conducted and interviews held is diminishing.

There is a consistency in advertisements.

Analysis

Beautiful summary of complete recruitment process is presented here.

We observe a consistency in first three years;

These were among golden days of PTCL when there was no idea for privatization.

HR was working smoothly and no remarkable change during their HR practices.

As we see in late 2005 and 1st quarter of 2006, there is a sudden change in smoothness and we can observe inconsistency in the chart after that.

A lot of jobs were advertised that attracted bulk of applications and little recruitments were made as a result of this recruitment process.

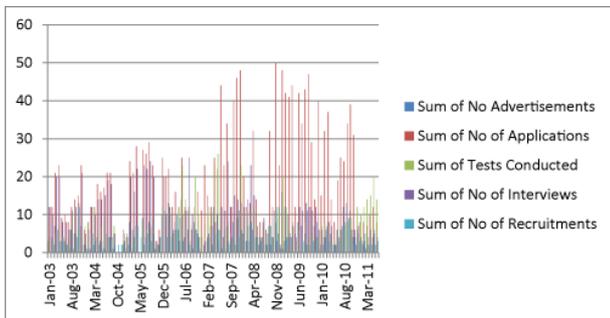


Figure 5: Analyses beautiful summary of complete recruitment process is presented here. We observe a consistency in first three years; these were among golden days of PTCL when there was no idea for privatization. HR was working smoothly and no remarkable change during their HR practices. As we see in late 2005 and 1st quarter of 2006, there is a sudden change in smoothness and we can observe inconsistency in the chart after that. A lot of jobs were advertised that attracted bulk of applications and little recruitments were made as a result of this recruitment process.

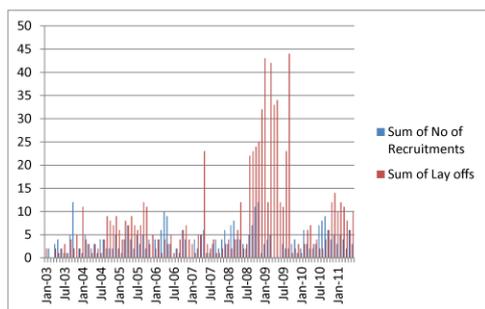


Figure 6: Analyses this Pivot chart is drawn between two variables number of recruitment conducted and number of employees lay off on behalf of HRIS records of last nine years. It is inferred from the chart the number of employees leaving the organization is more with respect to the employees joining PTCL. It has a lot of reasons due to boom in telecom sector in Pakistani market in the first decade of twenty first century. Very strong players entered in Pakistani market with sound footings, offering good salary packages, fringe benefits and motivational plans. Another reason was of privatization of PTCL. From the Table 1 it is clear that in year 2009, majority of people left PTCL.

Analysis

This Pivot chart is drawn between two variables number of recruitment conducted and number of employees lay off on behalf of HRIS records of last nine years.

It is inferred from the chart the number of employees leaving the organization is more with respect to the employees joining PTCL.

It has a lot of reasons due to boom in telecom sector in Pakistani market in the first decade of twenty first century.

Very strong players entered in Pakistani market with sound footings, offering good salary packages, fringe benefits and motivational plans.

Another reason was of privatization of PTCL.

From the table it is clear that in year 2009, majority of people left PTCL

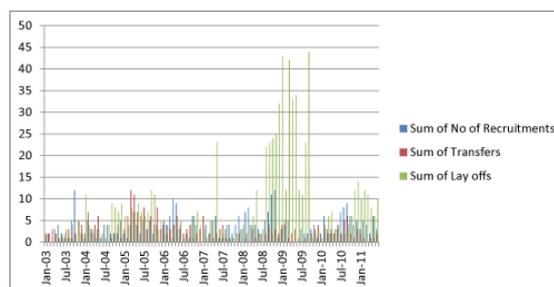


Figure 7: Analyses the pivot chart presents a comparison between numbers of recruitments, transfers and layoff of employees in PTCL. The records of last nine years again show consistency in 1st three years. In year 2009, maximum number of employees left PTCL due to no clear policy of HR. Promotions traffic is stagnant. Employees are deprived of the acts of HR. Maximum transfers were in 2006 and 2006 after there is a consistency in transfers as a regular practice to transfer employees.

Analysis

The pivot chart presents a comparison between numbers of recruitments, transfers and layoff of employees in PTCL.

The records of last nine years again show consistency in 1st three years.

In year 2009, maximum number of employees left PTCL due to no clear policy of HR.

Promotions traffic is stagnant.

Employees are deprived of the acts of HR.

Maximum transfers were in 2006 and 2006.

After there is a consistency in transfers as a regular practice to transfer employees.

Analysis

The pivot chart is presenting a comparison between international projects and number of trainings offered to the employees in PTCL.

We can infer that PTCL training department is very efficient in conducting trainings on regular basis.

International projects trend is increasing after privatization of PTCL in 2005-06.

Lot of collaborations was established with ZTE, HUWAEI, V-TEL, ERICSON and other leading vendors.

Employees were sent to international projects and trainings as exchange of employees' project and sharing of knowledge.

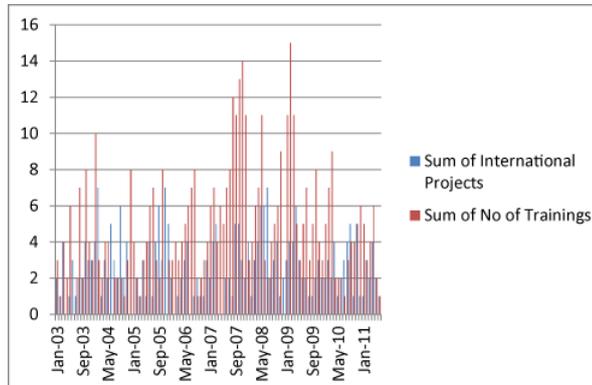


Figure 8: Analyses the pivot chart is presenting a comparison between international projects and number of trainings offered to the employees in PTCL. We can infer that PTCL training department is very efficient in conducting trainings on regular basis. International projects trend is increasing after privatization of PTCL in 2005-06. Lot of collaborations was established with ZTE, HUWAEI, V-TEL, ERICSON and other leading venders. Employees were sent to international projects and trainings as exchange of employees' project and sharing of knowledge.

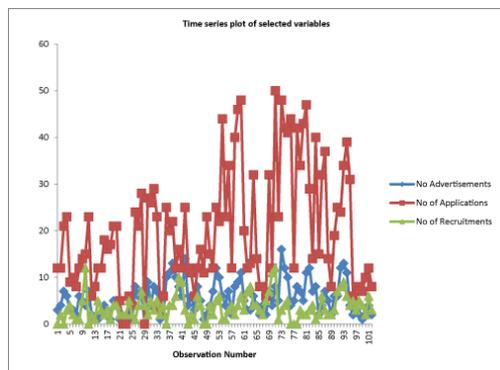


Figure 9: Analyses Time Series Chart compare one hundred observations between number of advertisements made, number of applications received and finally employees recruited. It is comparison of last nine years that shows that every time PTCL receives applications in bulk for recruitment with respect to jobs advertised. There is a diminishing trend in number of recruitments made. In last four observations related to year 2010, we see maximum recruitments and then in 2006, after privatization of PTCL, there is not a remarkable tendency for recruitment, but advertisement are more consistent that show that organization is failing to retain the brain and losing confidence in market. Why organizations gave too many ads for recruitment? reasons might be: to build the image, to pick a large number of talented people or the trend in that organization is towards leaving the organization and employees' are not satisfied.

Analysis

Time Series Chart compare one hundred observations between number of advertisements made, number of applications received and finally employees recruited.

It is comparison of last nine years that shows that every time PTCL receives applications in bulk for recruitment with respect to jobs advertised.

There is a diminishing trend in number of recruitments made.

In last four observations related to year 2010, we see maximum recruitments and then in 2006, after privatization of PTCL, there is not a remarkable tendency for recruitment, but advertisement are more consistent that show that organization is failing to retain the brain and losing confidence in market.

Why organizations gave too many ads for recruitment? reasons might be:

To build the image,

To pick a large number of talented people or

The trend in that organization is towards leaving the organization and

Employees' are not satisfied.

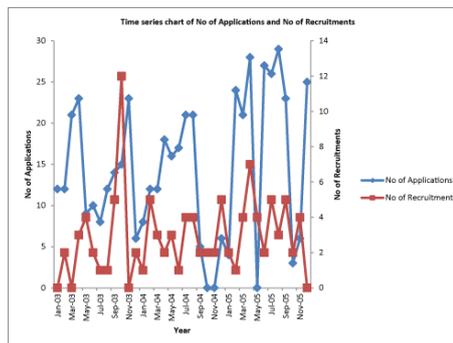


Figure 10: Analyses Time Series Chart comparison of three years between number of applications and number of recruitments shows that: every time PTCL receives applications in bulk for recruitment with respect to jobs advertised. There is a diminishing trend in number of recruitments made. In this time zone number of people leaving the PTCL is increasing because of negotiations of privatization has started. A number of talent left PTCL in next few years. Revision of fringe benefits and awarding of contracts instead of their permanent jobs were the ultimate reasons for leaving the PTCL.

Analysis

Time Series Chart comparison of three years between number of applications and number of recruitments shows that:

Every time PTCL receives applications in bulk for recruitment with respect to jobs advertised.

There is a diminishing trend in number of recruitments made.

In this time zone number of people leaving the PTCL is increasing because of negotiations of privatization has started.

A number of talent left PTCL in next few years.

Revision of fringe benefits and awarding of contracts instead of their permanent jobs were the ultimate reasons for leaving the PTCL.

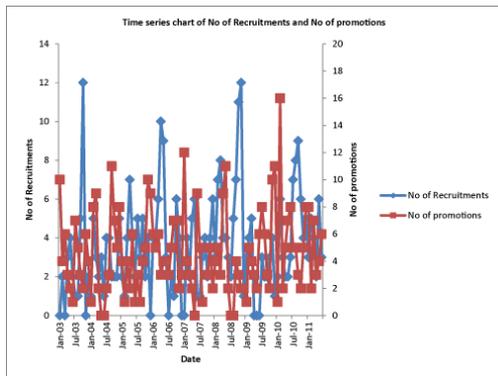


Figure 11: Analyses When we compare number of recruitments with number of promotions in time series data of last nine years it infers that: The trend in promotions although it is consistent but the consistency is not too good with respect to employees. Even there are some quarters where we observe that there is no promotion made. This is the reason that most of quality brain wither leaving PTCL or not loyal to do the work with commitment. Time Series chart between number of promotions made and number of recruitments infers that: There is a increasing trend towards number of hiring in consistency. There are four time zones during last 9 years i.e. third and four quarter of 2003, first and second quarter of 2006, second and third quarter of 2008 and last two quarters of 2010 that show a loop of people is hired by PTCL. In year 2010, this year was best with respect to promotions in PTCL.

Analysis

When we compare number of recruitments with number of promotions in time series data of last nine years it infers that:

The trend in promotions although it is consistent but the consistency is not too good with respect to employees.

Even there are some quarters where we observe that there is no promotion made. This is the reason that most of quality brain wither leaving PTCL or not loyal to do the work with commitment.

Time Series chart between number of promotions made and number of recruitments infers that:

There is an increasing trend towards number of hiring in consistency.

There are four time zones during last 9 years i.e. third and four quarter of 2003, first and second quarter of 2006, second and third quarter of 2008 and last two quarters of 2010 that show a loop of people is hired by PTCL.

In year 2010, this year was best with respect to promotions in PTCL.

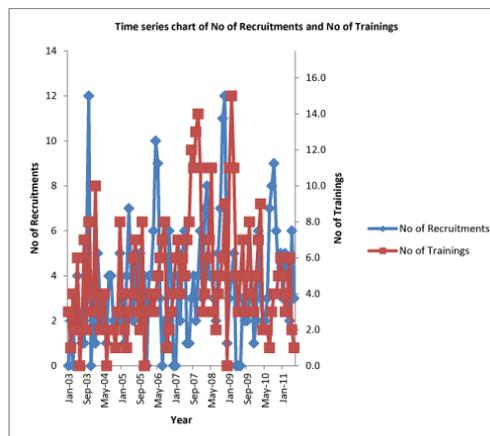


Figure 12: Analyses Time Series chart between number of trainings conducted and number of recruitments made infers that: There is an increasing trend towards number of hiring in consistency. There are four time zones during last 9 years i.e. third and four quarter of 2003, first and second quarter of 2006, second and third quarter of 2008 and last two quarters of 2010 that show a loop of people is hired by PTCL. In year 2007, this year was best with respect to trainings in PTCL.

Analysis

Time Series chart between number of trainings conducted and number of recruitments made infers that:

There is an increasing trend towards number of hiring in consistency.

There are four time zones during last 9 years i.e. third and four quarter of 2003, first and second quarter of 2006, second and third quarter of 2008 and last two quarters of 2010 that show a loop of people is hired by PTCL.

In year 2007, this year was best with respect to trainings in PTCL.

Discussion

In this section, we have discussed technology, organization, and environment context factors and the manner in which they affect HRIS adoption in the Australian public sector. Perceived benefits-costs trade-off. Interviewees consistently argued that perceived HRIS benefits and the manner in which these impact HR functions can drive their adoption. Specifically, the benefits that were expected to result from HRIS adoption include integration and accessibility. Achieving these in delivering HR functions, including workforce planning, recruitment, performance management, career and development planning, learning management, and remuneration, was unanimously regarded to be beneficial for strategic decision making, and hence, to drive adoption. HRIS were widely perceived to be highly complex which, at least partially, reflects HR domain complexity. Consequently, HRIS user friendliness was generally considered to be a major adoption driver. However, the HRIS in the interviewees' organizations were characterized by lack of user friendliness which had become an adoption barrier We are going to a situation where managers can manage their staff using sophisticated tools [HRIS] that make their life

very easy The big thing is the information that they can integrate and produce will actually start to add some real value to the top level decision making and I think then the world will open up for HR metrics to be able to feed into the strategic decision making about our workforce. HRIS were widely perceived to be highly complex which, at least partially, reflects HR domain complexity. Consequently, HRIS user friendliness was generally considered to be a major adoption driver. However, the HRIS in the interviewees' organizations were proportion of overall adoption costs: characterized by lack of user friendliness which had become an adoption barrier: HRIS adoption was expected to impact the operational aspects of HR functions positively by delivering significant efficiency improvements. Operational efficiencies represent an adoption driver as that is "where the big, big savings are" (Organization 1) in adopting organizations.

HRIS adoption costs were perceived to be significant, including licensing, implementation, maintenance, training, and transition costs. Transition costs are defined as costs incurred to replace existing older HRIS with the new ones. In the same manner as other types of costs, these featured strongly as adoption inhibitors. While licensing costs

were considerable, these were perceived to represent the lesser. Nevertheless, there was uniform agreement that cost-benefit trade-off assessments were necessary for justifying investments in and adoption of HRIS: Organizational fit. Generally, software vendors provide standardized HRIS. However, public sector organizations, in addition to common HR functions, are also characterized by domain-specific idiosyncrasies. As a result, there was general agreement amongst interviewees that HRIS were "too stock standard" which explains why interviewees uniformly believed that HRIS adoptions tend to exhibit lack of organizational fit. We found that lack of fit between adopted HRIS and organizational requirements were addressed in three different methods. First was to change business processes to suit standard HRIS functionality. Second was for customizing adopted HRIS and third is to combine the both.

Correlation

Some interviewees with telecom HR experts indicated that their organizations undertook HRIS modifications with vendor support which was unanimously considered to be a key adoption driver.

	Records Entered	Records Stored	No of Ad	No of App	Tests Cond-	No Interviews	No of Recruits	Transfers	Lay offs	No promotions	No of Trainings	Int. Projects
Records Entered	1											
Records Stored	0.201	1										
No Advertisements	0.189	0.229	1									
No of Applications	0.19	0.153	0.688	1								
Tests Conducted	0.163	0.045	0.415	0.195	1							
No of Interviews	-0.272	-0.106	0.174	0.237	0.008	1						
No of Recruitments	0.024	0.29	0.209	0.083	0.152	-0.144	1					
Transfers	-0.272	0.066	0.104	0.001	-0.128	0.086	0.094	1				
Lay offs	0.074	0.11	0.189	0.34	0.084	-0.283	0.049	-0.071	1			
No of promotions	-0.002	-0.085	-0.177	-0.088	-0.126	-0.159	-0.133	0.109	-0.172	1		
No of Trainings	0.139	0.171	0.29	0.447	0.167	0.058	0.125	-0.142	0.149	-0.053	1	
International Projects	0.086	-0.033	-0.071	0.004	-0.179	0.01	-0.021	0.067	0.009	0.036	0.036	1

Table 1: Correlation analysis.

While some vendors were willing to support HRIS modifications in telecom sector to support organizational processes by issuing software patches as part of service agreements, others were willing to do so for a fee which was considered to be an adoption inhibitor. While talking about Organizational context Human capability of PTCL and Telenor. Interviewees agreed that an organization's human capability is comprised of three components, namely. Those were HR domain knowledge, Technical IT/IS skills, and Communication skills.

Organization size was also found to impact HRIS adoption. Interviewees agreed that government departments with large numbers of employees can use size to support their business case for adopting HRIS because potential benefits can be spread across large user bases

Organization no. 6). However, organizational size can also increase complexity. That is, "the bigger the organization, the more complexity" which can, in turn, adversely affect the flexibility with which HRIS can be adopted which is consistent with extant literature.

Taken together, these can be a key driver for HRIS adoption. However, this combination of skills was considered to be "a huge area of skills shortage" (Organization 8), and it was particularly pronounced in public sector HR. In fact, public sector HR was widely seen to be highly complex which was attributed to the "enormous flexibility" of employment practices and "unlimited work patterns" that are afforded to public sector employees, including flexible and complex leave rules, flexible employment commitments, high

variability of superannuation/pension and salary sacrifice schemes. Taken together, these domain complexities have contributed to making HRIS “quite messy” and the required skills set and knowledge unique.

Consequently, training was considered to be critical for sustainable human capability to be achieved. Interviewees consistently indicated that training was necessary for all user levels including operational and strategic levels. The combination of these skills was labeled as “systems thinking”. Management commitment was considered to be a key driver for HRIS adoption in the public sector as it represents a source of support and funding which are both critical for adopting HRIS and adapting them to suit organizational requirements as “it always comes down to the dollars and cents”. There was agreement that lack of management support and funding constitutes an inhibitor for successful adoption of HRIS and for achieving organizational fit.

We derived the factors discussed in the previous section from our analysis of the adoption of HRIS in telecom public sector organizations. In addition to their enabling and inhibiting impacts, we also observed that these factors interact with one another, thereby creating a complex web of interactions and influences as HRIS adoption unfolds. We found that technology-context factors including integration, user friendliness, accessibility, efficiency, and vendor support can positively impact organizational adoption of HRIS. These technology-context factors can strengthen the business case for management to become committed to support HRIS adoption. While complexity and adoption costs were acknowledged to negatively impact management commitment, the extent to which HRIS fit within adopting organizations can affect management commitment as it can impact the extent to which adoption costs increase in order to adapt business processes to suit the adopted HRIS or to customize them. The extent to which HRIS fit within adopting organizations was also seen to depend on organization size which can impact both adoption costs and complexity. Interviewees consistently indicated that human capability, an organizational context factor, could be enhanced by training. Human capability was also found to be susceptible to be adversely affected by HRIS complexity which interviewees consistently argued could be addressed by vendor support and user-friendly HRIS functionality. Degree of centralization was found to impact both the extent to which management can commit to support HRIS adoption and organizational fit, whereas environmental context factors, namely, regulatory compliance and successful adoptions, were both found to positively affect management commitment for supporting HRIS adoption. To summarize these interactions, we used a concept map (Novak, 1998). To develop the concept map, we selected and ranked key concepts before clustering them at similar levels of abstraction. We subsequently arranged them into a diagrammatic representation and connected them with linking propositions showing underlying interactions and influences as represented in the data.

Conclusion

Technology can be a boon to the HR practitioner. As discussed by telecom industry HR practitioners, technology aided resume scanning and recruiting can be advantageous as it allows applicants from various locations to submit consistent information. It helps that information get into the HR practitioners hands much quicker and allows for easy storage of the information. The electronic resume scanning also allows for screening for key words prior to submission to the HR personnel that would then proceed with interviews if needed. Adoption champions in public sector organizations need to

demonstrate the benefits that HRIS can introduce to their organizations including integration, accessibility, and operational efficiency and the extent to which these benefits can justify adoption costs and inherent HRIS complexity. For adoption to encounter minimal resistance, HRIS need to deliver these benefits via user-friendly functionality. With standardization trends undertaken by HRIS vendors, complete organizational fit between adopted HRIS and organizational business processes seemed elusive for adopters. This suggests that negotiating post-adoption vendor support is essential if organizations are to minimize costly customizations and the emergence of feral systems that might be necessary for bridging gaps resulting due to inadequate organizational fit.

Management commitment is crucial for both supporting adoption initiatives and ensuring that resources are made available for sustaining adoption efforts including the development of human capability that is characterized by the combination of specific HR domain knowledge, technical IT/IS and communications skills. Given the degree of centralization that characterizes public sector organizations, extensive input needs to be harvested by organization-wide HRIS user involvement to inform HRIS selection criteria before adoption decisions can be made.

The paper concludes with general discussion, and suggests that the idea of HR information-system efficiency is a make comprising such integral, among numerous other research papers it was given due importance towards the productivity, efficiency, flexibility, control, internal communication and information management for the success and improvement of employee retention and facilitation and time saving ultimately leading to effective and efficient decision making system.

Study Limitations

The scope of research is restricted to only PTCL. Sample size was not properly worked out, only data was collected for HRIS experts based on HRIS reports from PTCL head office, Islamabad. It seems that the study is lacking detailed discussions seeking importance and realization of the HRIS cost effective implementation and efficiency. The research is conducted in short time period. It has missing the feed-back from a large number of sample sizes.

Future Research

Future research may be conducted keeping in view the limitations of the study. Research will produce sound results if, the sample size will be further increased by increasing the scope of the research and organizations of telecom sector. Methodology should be changed and a structured questionnaire can be adopted to carry on the current study.

References

1. Nusair K, Parsa HG (2007) Critical factors in implementing HRIS (human resource information systems) in restaurant chains: a case study analysis. *Advances in Hospitality and Tourism* 1.
2. Florkowski G, Olivas-Luja'n MR (2006) Diffusion of information technology innovations in human resource service delivery: a cross-country comparison. *Personnel Review*.
3. Shrivastava S, Shaw J (2004) Liberating HR through technology. *Human Resource Management* 42: 201-222.
4. Kovach K, Hughes A, Fagan P, Maggitti P (2002) Administrative and strategic advantages of HRIS. *Employment Relations Today* 29: 43-48.

5. Tannenbaum S (1990) Human resource information systems: user group implications. *Journal of Systems Management* 41: 27-32.
6. Lippert SK, Swiercz PM (2005) Human resource information systems (HRIS) and technology trust. *Journal of Information Science* 31: 340-53.
7. Ngai E, Wat F (2006) Human resource information systems: a review and empirical analysis. *Personnel Review* 35: 297-314.
8. Santosus M (2005) The human-capital factor. *CFO* 21: 26-27.
9. Lin B, Stansinskaya VS (2002) Data warehousing management issues in online recruiting. *Human Systems Management* 21: 1-8.
10. Shani A, Tesone DV (2010) Have human resource information e-commerce? *Worldwide Hospitality and Tourism Themes* 2: 30-48.
11. Troshani I, Jerram C, Hill SR (2011) Exploring the public sector adoption of HRIS. *Industrial Management & Data Systems* 111: 470-488.
12. Kavanagh MJ, Gueutal HG, Tannenbaum SI (1990) *Human Resource Information Systems: Development and Application*. PWS-KENT Publishing Company, Boston, Massachusetts.
13. Fichman RG (2004) Going beyond the dominant paradigm for information technology innovation research. *Journal of the Association for Information Systems* 5: 314-55.
14. Jenkins ML, Lloyd G (1985) How corporate philosophy and strategy shape the use of HR information systems. *Personnel*, May 62: 28-38.
15. Cedar (2001) *Human Resources Self-service/portal survey*. Baltimore.
16. Martin G (2005) *Technology and people management: the opportunity and the challenge*. Research report. London: CIPD.
17. Brockbank W (1999) If HR were really strategically proactive: Present and future directions in HR's contribution to competitive advantage. *Human Resource Management* 38: 337-352.
18. DePietro R, Wiarda E, Fleischer M (1990) The context for change: organization, technology and environment in Tornatzky, L.G. and Fleischer, M. (Eds), *The Process of Technological Innovation*, Lexington Books, Lexington, MA 151-75.
19. Dedrick J, West J (2004) An exploratory study into open source platform adoption. *Proceedings of the 37th Hawaii International Conference on System Sciences*, IEEE, Big Island, HI, USA.
20. Chong AYL, Ooi KB (2008) Adoption of interorganizational system standards in supply chains: an empirical analysis of RosettaNet standards. *Industrial Management & Data Systems* 108: 529-547.
21. Chau PYK, Tam KY (1997) Factors affecting the adoption of open systems: an exploratory study. *MIS Quarterly* 21: 1-24.
22. Oliveira T, Martins MF (2010) Understanding e-business adoption across industries in European countries. *Industrial Management & Data Systems* 110: 1337-1354.
23. Rogers EM (2003) *Diffusion of Innovations*, 4th ed., The Free Press, New York, NY.
24. Moon KL, Ngai EWT (2008) The adoption of RFID in fashion retailing: a business value-added framework. *Industrial Management & Data Systems* 108: 596-612.
25. Panayotopoulou L, Vakola M, Galanaki E (2007) E-HR adoption and the role of HRM: evidence from Greece. 36: 277-294.
26. Yang KH, Lee SM, Lee SG (2007) Adoption of information and communication technology: impact of technology types, organizational resources and management style. *Industrial Management & Data Systems* 107: 1257-1275.
27. Jayasingam S, Ansari M, Jantan M (2010) Influencing knowledge workers: the power of top management. *Industrial Management & Data Systems* 110: 134-51.
28. Silva L, Figueroa EB, Gonzalez-Reinhart J (2007) Interpreting IS alignment: a multiple case study in professional organizations. *Information and Organization* 17: 232-265.
29. Barbosa DH, Musetti MA (2010) Logistics information systems adoption: an empirical investigation in Brazil. *Industrial Management & Data Systems* 110: 787-804.
30. Doolin B, Troshani I (2007) Organizational adoption of XBRL. *Electronic Markets* 17: 199-209.
31. Kearns GS, Lederer AL (2004) The impact of industry contextual factors on IT focus and the use of IT for competitive advantage. *Information & Management* 41: 899-919.
32. Chau PYK, Hui KL (2001) Determinants of small business EDI adoption: an empirical investigation. *Journal of Organizational Computing and Electronic Commerce* 11: 229-252.
33. Colakoglu S, Lepak DP, Hong Y (2006) Measuring HRM effectiveness: considering multiple stakeholders in a global context. *Human Resource Management Review* 16: 209-218.
34. De pablos PO (2004) Human resource management systems and their role in the development of strategic resources: empirical evidence. *Journal of European Industrial Training* 28: 474-489.
35. Alcazar FM, Fernandez PMR, Gardey GS (2005) Researching SHRM: an analysis of the debate over the role played by human resources in firm success. *Management Revue* 16:213-241.
36. Katou AA, Budhwar PS (2006) Human resource management systems and organizational performance: a test of a mediating model in the Greek manufacturing context. *International Journal of Human Resource Management* 17: 1223-1253.
37. Browning V, Edgar F, Gray B, Garrett T (2009) Realizing competitive advantage through HRM in New Zealand service industries. *The Service Industries Journal* 29: 741-760.
38. Rodriguez JM, Ventura J (2003) Human resource management systems and organizational performance: an analysis of the Spanish manufacturing industry. *International Journal of Human Resource Management*, 14: 1206-1226.
39. Hendrickson AR (2004) Human resource information systems: backbone technology of contemporary human resources. *Journal of Labour Research* 24: 381-394.
40. Schenk KD, Holzbach RL (1993) Getting the job done with HuRBIE: a human resources EIS. *Interfaces* 23: 41-50.
41. Turetken O, Demirors O (2004) People capability maturity model and human resource management systems: do they benefit each other? *Human Systems Management* 23: 179-190.
42. Teo TSH, Lim GS, Fedric SA (2007) The adoption and diffusion of human resources information systems in Singapore. *Asia Pacific Journal of Human Resources* 45: 44-62.
43. Dery K, Grant D, Wiblen S (2009) Human resource information systems: replacing or enhancing HRM. *Proceedings of the 15th World Congress of the International Industrial Relations Association IIRA 2009*, Sydney, Australia, August 27.
44. Wiblen S, Dery K, Grant D (2010) Transitioning from a proprietary to Vanilla HRIS: the resulting implications for talent. *Proceedings of the 3rd European Academic Workshop on Electronic Human Resource Management 2010*, Bamberg, Germany, May 20-21.
45. Henriksen HZ, Mahnke V (2005) E-procurement adoption in the Danish public sector. *Scandinavian Journal of Information Systems* 17: 85-106.
46. Blount Y, Castleman T (2009) The curious case of the missing employee in information systems research. *Proceedings of the 20th Australasian Conference on Information Systems*, Monash University, Melbourne, Australia 300-310.
47. Hussain Z, Wallace J, Cornelius N (2006) The use and impact of human resource information systems on human resource management professionals. *Information and Management* 44: 74-89.
48. Lepak D, Taylor M, Tekleab A, Marrone J, Cohen D (2007) An examination of the use of high-investment human resource systems for core and support employees. *Human Resource Management* 46: 223-246.
49. Premkumar G, Ramamurthy K (1995) The role of inter-organizational and organizational factors on the decision mode for adoption of inter-organizational systems. *Decision Science* 26: 303-336.