



User Acceptance of the Human Resource Information System: A Study of a Private Hospital in Malaysia

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ABSTRACT

Technological acceptance and usage is a critical concern as substantial investments are made implementing new information systems (IS). Ipoh Specialist Hospital (ISH) adopted the human resource IS (HRIS) to better manage its HR functions. Nonetheless, low usage levels have alerted top management that the system may have failed its intended purpose. Thus, this study aims to understand the underlying factors that influence user acceptance of the HRIS at the hospital. Using the technological acceptance model (TAM), we found relations between the following TAM constructs: (1) Perceived ease of use, (2) perceived usefulness, (3) information quality, (4) social influence and (5) user satisfaction with system usage. Data from 267 users of the HRIS at ISH show that usage is influenced by perceived ease of use, information quality and social influence towards the system. Surprisingly, perceived usefulness was found to be inversely related to usage. Lastly, system usage was found to influence user satisfaction rather than the other way around. Our findings support management's wariness about the lack of acceptance of the HRIS at ISH. Our study bridges a gap in the HR management literature and contributes to the application of the TAM in the context of Malaysian healthcare environment, which has thus far been scarce.

Keywords: Human Resource Information System, Technological Acceptance Model, Organizational Change

JEL Classifications: C2, M150, M500, O330

1. INTRODUCTION

Over the last several decades, technology has pervasively affected organizations, society and individuals to a great extent. Organizations have adopted management information systems (IS) as both an operational tool to organize and manage data and a strategic tool to help support the decision-making process. As much as the vast potential expected from successful implementation has been widely proclaimed, high failure rates have also been recorded (Fisher and Howell, 2004). One organizational function that has benefited generously from the diffusion of IS is the human resource (HR) function (Gueutal and Stone, 2005; Kavanagh, Thite, and Johnson, 2015; Parry and Tyson, 2011; Strohmeier, 2007; Maier et al., 2013; Bondarouk et al., 2009). The introduction of electronic HR management systems has greatly modified HR processes (Stone and Dulebohn, 2013), from the automation of routine HR tasks to the transformation of HR into a strategic player in the organization (Maier et al., 2013; Hussain et al., 2007). Despite the profound impact IS has in HR, issues of acceptance and usage of

technologies remain both a challenge and a major concern in IS research (Walsh, 2014; Hussain et al., 2007; Maier et al., 2013).

The main issue in information management and technology is to ensure that the right person uses the relevant information in a timely manner. Without this aspect of user acceptance, any new IS will be utilized merely superficially, mostly as a means of storing data electronically, which will hinder its maximum potential from being explored (Youngberg et al., 2009). As a result of the widespread use of technology, a significant body of literature (Youngberg et al., 2009; Moon and Kim, 2001; Davis, 1989) has been devoted to examining the complex implementation process and understanding the underlying factors and/or attributes that result in user acceptance and/or resistance (Jiang et al., 2000). It has been argued that widespread user acceptance of an information technology (IT) application determines the level of success of IT/IS system adoption (Davis, 1993). To a certain extent, user acceptance of an IT application can be used to assess the level of success of its implementation (Davis, 1993).

This study investigates the factors that influence employees' acceptance of the HRIS at Ipoh Specialist Hospital (ISH) (hereafter known as ISH). ISH is a member of the KPJ group of hospitals, one of the key private healthcare providers in Malaysia. ISH adopted the HRIS as a response to the directives of its parent company to automate and provide efficient HR processes to its employees. ISH adopted the HRIS in 2010 and has operationalized the system ever since. However, management has been puzzled and unsettled that employees have been reverting back and forth to traditional HR processes whenever they like. Thus, using questionnaire design and quantitative analyses, this study was commissioned to identify the level of HRIS usage and the underlying factors that affect user acceptance at ISH.

Drawing on the technology acceptance model (TAM), this study aims to investigate the drivers affecting user acceptance of the HRIS. The TAM is a parsimonious IS model that has had great success explaining user acceptance of technology. While many studies have drawn from the TAM to predict user intentions, few studies have examined actual usage. Thus, this study examines whether TAM factors can explain HRIS usage at ISH. In addition, studies involving the application of the HRIS in a Malaysian context are limited (with the exception of Razali and Vrontis, 2010). Healthcare organizations like ISH deal closely with human lives. The efficient and effective coordination and management of healthcare personnel is thus critical to saving time and patients' lives. Therefore, investigating user acceptance of the HRIS is not only timely but also important for determining the viability of the system to other healthcare organizations, operating in a similar context and environment, which intend to adopt the new system.

This paper is organized as follows: First, the literature review section reviews recent literature related to the diffusion of the HRIS in organizations and its underlying benefits, particularly in healthcare organizations in Asia. The second section discusses the underlying theoretical framework, as posited by the TAM, which has been adapted in this study to organizational characteristics that better explain HRIS adoption at ISH. Subsequent sections present the research methodology, research findings, discussion and conclusion.

2. THEORETICAL BACKGROUND AND RESEARCH MODEL DEVELOPMENT

Prior to the HRIS, HR functions, in particular payroll and employee absences were done manually. With the introduction of the HRIS, all HR functions and record keeping are done electronically. Different labels have been attributed to the HRIS, including electronic human resource management (e-HRM), web-based HRM, intranet-based HRM and HR IT (Heikkila, 2013). While the name and delivery platform may be different, the underlying function of all of these applications is to provide HR management through the use of IS and technology.

In the context of the present research, HR functions at ISH have been automated by the HRIS, benefitting HR personnel, line managers and employees. The HRIS aims to reduce face-to-face interactions between HR personnel and other employees through

self-service systems mediated by intranet-based applications. Heikkila (2013) argued that a system that benefits both HR personnel and employees is more suitably known as e-HRM than HRIS. The HRIS is more focused on the automation of HR functions for the sole benefit of HR personnel (Heikkila, 2013). Nevertheless, because the difference between e-HRM and HRIS is rather obscure (Ruël et al., 2011), they are regarded as one and the same in this study.

Stone and Dulebohn (2013) suggested that one of the most important functions of the HRIS is to facilitate HR planning by enabling organizations to better match and utilize their organizational talents and skill sets. In addition to HR planning, the HRIS enhances HR efficiency, provides cost savings, decreases substantial administrative burden on HR staff, and enables HR professionals to become strategic business partners in organizations (Stone and Dulebohn, 2013; Guetal and Stone, 2005; Kavanagh et al., 2011). From the beginning of its introduction until now, the HRIS has received a positive response from both academics and practitioners. Many organizations have adopted the HRIS to take advantage of its technical efficiency (Stone and Dulebohn, 2013; Parry and Tyson, 2011; Ruël et al., 2004; Ruta, 2005), while others have been attracted to the cost savings it engenders (Hannon et al., 1996). Arguably, the automated HR system has been successful in replacing the once mundane, cumbersome and very time-consuming HR record-keeping function (Stone and Dulebohn, 2013), which has inadvertently also freed up time for HR personnel to contribute strategically to their organizations. HR personnel who are less involved in record keeping can channel their time and become more strategically involved in organizational planning, design and development (Lawler and Mohrman, 2003). The HRIS supports the decision-making process by providing the necessary information to potential users at every organizational level - strategic, tactical and operational.

Another important function of the HRIS is as a strategic tool to support the business decision-making process. The HRIS facilitates the provision of quality, timely information to management (Hussain et al., 2007). In a knowledge-based economy, human capital is the critical success factor for organizational success; therefore, HR management through adoption of the HRIS is key to unlocking an organization's competitive advantage (Teo et al., 2007; Hussain et al., 2007). Lawler and Mohrman (2003) found that HRIS usage has increased over the years; in particular, they observed the transformation of the HR function as an organizational strategic partner. However, the HRIS has often been side-lined, only functioning to provide typical support; this, in turn, has limited its potential as an organizational strategic partner (Maier et al., 2013). Yet, the HRIS cannot achieve its optimum potential when users do not fully utilize the system. Such 'lost opportunities' are discussed in the extant literature (Marler and Fisher, 2012; DeSanctis, 1983; Martinsons, 1994). Therefore, understanding the factors that influence users' perceptions about the usefulness of the HRIS system is critical to enhancing its level of utilization (Maier et al., 2013).

One of the barriers to enhancing the strategic value of the HRIS is the limited skill of HR teams. HR teams cannot be strategically

deployed due to their lack of expertise in technical, consultancy and project management skills (Parry and Tyson, 2011). Aside from personnel issues, the system itself can be limited in its strategic competencies. If the system needs to be used strategically, then its design needs to incorporate the strategic data that are required (Heikkila, 2013). Subsequently, the HR team needs the requisite skills and knowledge to analyse and use the data meaningfully (Heikkila, 2013). Despite the reported novelty of the HRIS as a strategic tool, little evidence has been found to support this claim (Marler and Fisher, 2012). Marler (2009) found it unlikely that a newly adopted e-HRM would serve the strategic role of an HR function; instead, the e-HRM would only continue to facilitate a strategic role already assumed by the HR function, which would later be reflected in the organization's competitive advantage. Teo et al.'s (2007) study of HRIS implementation in Singapore also found that the HRIS is mainly used for administrative purposes, payroll and employee record keeping. A more recent study of HRIS implementation in Hong Kong industries also made a similar observation about the mundane manner in which the HRIS is used. Ngai and Wat (2006) reported that despite substantial investment, the HRIS is mainly used to automate various HR activities rather than for decision support. The perceived benefit of HRIS implementation is the quick response and access to information, while the main barrier to successful implementation is the lack of commitment from top managers.

2.1. Factors Influencing User Acceptance

The usefulness of an IS is subject to its users. There are two types of HRIS users: (1) HR personnel who manage the HR function, and (2) the end users of the system. In this study, users are defined as end users who utilize the HRIS for their own personal needs – namely, leave applications, updating personnel information, and retrieving personnel evaluations, among others.

The present research investigates the level of user acceptance from manual information processing to highly digitized HRIS, to support its prevalent business functions. Many theories and frameworks have been devised to conceptualize user acceptance, including the theory of reasoned action (TRA) and the theory of planned behavior. Yet, the most relevant and reliable (albeit parsimonious) framework is known as the TAM (Davis, 1989; Davis et al., 1989). The original TAM model has been continuously developed and extended over the years to better explain the conditions and attributes of user acceptance of technology (Venkatesh and Davis, 2000). The more refined models of the TAM are widely known as TAM 2 (Venkatesh and Davis, 2000), TAM 3 (Venkatesh and Bala, 2008) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). Until now, the original TAM has been successful in predicting user acceptance of new IT systems (Venkatesh and Davis, 2000; Legris et al., 2003; Chuttur, 2009; Winkler et al., 2013).

User acceptance is a critical factor that determines the success or failure of IS implementation (Davis, 1993). Understanding the reasons for user acceptance or resistance is crucial to improving the chance of successful implementation. The TAM has been developed from Fishbein and Ajzen's (1975) TRA. The TRA argues that one's behavior is determined by his or her

prior intentions alongside his or her beliefs about that particular behavior. For example, if ISH's employees feel that manual record keeping is time consuming but that using the HRIS would result in time savings, then that attitude will influence their behavior and consequently their actions (Chuttur, 2009). Second, Fishbein and Ajzen (1975) argued that social influences (subjective norms) are the direct determinant of behavioral intentions. They defined social influence 'as a person's perception that most people who are important to him think he should or should not perform the behavior in question' (Fishbein and Ajzen, 1975, p. 302, cited in Venkatesh and Davis, 2000). Based on the TRA, it is argued that employees will choose to perform a behavior as long as they are perceived to act in accordance with their important referents' expectations – namely, higher management, line managers or supervisors. This construct has somewhat been eliminated in the original TAM. Davis et al. (1989) found that subjective norms had no significant effects on intentions. Nevertheless, they did not completely reject the effect of social influences on usage behavior, but suggested that more research was needed to confirm this finding (Davis et al., 1989; Venkatesh and Davis, 2000).

Davis (1986) suggested that the actual use of a system is a behavior and that the TRA is useful for predicting this behavior (Chuttur, 2009). However, the TRA comprises many beliefs that influence one's attitude towards a given behavior (Chuttur, 2009). In contrast, Davis (1986) examined only two beliefs that could influence users' attitude towards using the system: Perceived ease of use and perceived usefulness of the system. He argued that these two constructs are more than enough to explain and predict users' attitude about system usage (Davis, 1986). Perceived usefulness is 'the belief that using a system would enhance job performance', while perceived ease of use is 'the belief that using a system would be free of physical and mental effort' (Davis, 1993). These two belief constructs have been widely used to inform organizational research (Legris et al., 2003; Davis, 1989; Goodwin, 1987; Gould et al., 1991; Hill et al., 1987). Perceived ease of use has a significant relationship with perceived usefulness, notably because a system that appears easier to use will be regarded as more useful (Davis, 1993).

The first refinement of the TAM introduced behavioral intention as a direct variable to predict user acceptance and system usage (Chuttur, 2009). In the earlier TAM, behavioral intention was perceived to influence users' attitudes, which in turn affected users' acceptance (Davis, 1989). However, Davis et al. (1989) argued that there was strong evidence to support a direct relationship between behavioral intentions and actual system usage, displacing the attitude construct as an intervening variable. Further, they asserted that perceived usefulness highly influences users' intentions; likewise, perceived ease of use was believed to have a small but significant influence predicting users' intentions, but that this effect subsided over time. Nevertheless, Davis et al.'s (1989) argument that perceived usefulness and perceived ease of use are two profound factors influencing behavioral intention hence override the need for attitude constructs (Davis et al., 1989; Venkatesh and Davis, 1996).

The original TAM assumed that system characteristics, including management support, were external stimuli that influence users'

attitudes through perceived usefulness and perceived ease of use. In the later refinement of the TAM, the attitude variable was eliminated, exposing a direct relationship between external variables influencing behavioral intention and actual usage (Venkatesh and Davis, 1996).

3. RESEARCH FRAMEWORK

The research instrument was designed to test the relationship between the following TAM constructs while using the HRIS: Perceived ease of use and perceived usefulness. Information quality was included as a determinant of the system's usefulness, which subsequently translates to HRIS usage. User satisfaction was examined as (1) a determinant of perceived usefulness and (2) a determinant of usage. Lastly, we also considered the effect of social influence on HRIS usage.

3.1. Development of Hypotheses

The TAM argues that user acceptance is highly dependent upon the user's intention to use the IS. In the context of ISH, whether or not the HRIS is widely used is highly dependent upon whether employees feel that the system can be used without additional effort (Davis, 1986). If employees perceive that the system is easy to use and useful for their work productivity and job performance, then they would use the HRIS rather than the manual method. The indicators for perceived ease of use and perceived usefulness were adapted from Winkler et al. (2013).

H₁: Perceived ease of use influences HRIS usage

H₂: Perceived usefulness influences HRIS usage.

Hypothesis 3 was based on a more refined version of the TAM (Venkatesh and Davis, 2000). Information quality is a 'belief' variable (DeLone and McLean, 1992; Seddon, 1997; Rai et al., 2002) that measures the perceived usefulness of a system. It is argued that if a system provides output that is precise and relevant for decision making, then the system will be perceived as useful and thus encourage user acceptance (Winkler et al., 2013). The newer TAM attempts to overcome the previous version's limitation in explaining the usefulness of a system (Venkatesh and Davis, 2000). In this study, three measures of information quality were adapted from Winkler et al. (2013). Arguably, if the HRIS provides important information relevant to the decision-making process at all organizational levels, then the system will be perceived as useful. In turn, perceived usefulness is linked to HRIS acceptance and usage. Therefore, the third hypothesis augments the second hypothesis regarding the perceived usefulness of the system.

H_{3a}: Important information from the system influences usage

H_{3b}: Important information that is relevant to one's jobs and tasks will be perceived as useful

H_{3c}: Important information influences user satisfaction.

Venkatesh and Davis (2000) proposed that social influences via subjective norms influence user acceptance and system usage. The original TAM, drawing from the TRA, did not find a significant effect of subjective norms on the capability to influence behavior beyond perceived usefulness and perceived ease of use. Hence, this construct was omitted from the original TAM. However, other studies have yielded mixed findings on the effect of subjective

norms on intentions, particularly in contexts where the use of technology is mandatory. As such, in a mandatory setting, whenever an individual perceives that a social actor has the ability to reward or punish certain behaviors in relation to system usage, the direct effect of subjective norms is apparent beyond perceived usefulness and perceived ease of use (Venkatesh and Davis, 2000). Additionally, important cultural factors and values, such as respect and obedience towards seniors (superiors or elders) and a preference for hierarchy (Ansari et al., 2004), could exacerbate the effect of social influence in the Malaysian workplace context. In such a context, subordinates are expected to conform to and appease their seniors, not to express disagreement or displeasure (Ansari et al., 2004). Because of this, in the Malaysian workplace, higher management support and encouragement of the HRIS may be an important determinant for its level of usage because employees do not want to be perceived as defiant or disobedient. Thus, our fourth hypothesis is derived from this argument:

H₄: Higher management support and encouragement in using the HRIS influence its usage at ISH.

The last hypothesis was developed based on the argument that user satisfaction with a system affects its usage (e.g. Venkatesh et al., 2003). Here, user satisfaction is examined on two levels, first, its link (1) with HRIS usage and (2) whether perceived usefulness and ease of use are determinants for satisfaction. If a system is deemed useful, providing quality information for decision-making and enhances performance and easy to use; this will lead to user satisfaction, which in turn enhances usage. Previous studies that examine the relationship between user satisfaction with system usage result in mixed findings. Some studies support the positive relationship between user satisfaction and usage (Bokhari, 2005) while others found only weak or non-existent relationship (Sabherwal et al., 2006). Initially, we hypothesize the relationship between user satisfaction as a predictor for system usage (Venkatesh et al., 2003). However, we failed to fit our model based on this assumption. Thus, we decided to change the hypothesis and path direction of the causal relationship between user satisfaction and HRIS usage. Our hypotheses are as follows:

H_{5a}: Users are satisfied with the system when it is perceived to be useful

H_{5b}: Users are satisfied with the system when it is perceived to be easy to use

H_{5c}: HRIS usage influences user satisfaction.

Figure 1 presents the proposed research model and its hypotheses that would be examined in this research.

3.2. Selection of Measures

The questionnaire comprises three parts. In the first part, users were asked to provide basic demographic information, including age, gender, length of time employed at ISH, job scope and job-related computer usage. For this part, nominal variables were used to examine the backgrounds of the respondents. In the second part, multiple choice questions were included to examine system characteristics, levels and types of HRIS usage. In the final part of the questionnaire, user opinions on the perceived usefulness of the system, perceived ease of use, information quality, social influence and user satisfaction were evaluated using likert scales. All of the

hypotheses that were developed earlier were directly tested in this part of the questionnaire. The questionnaire was developed by adapting Winkler et al.'s (2013) research instruments.

3.2.1. *Perceived ease of use*

We adapted Winkler et al.'s (2013) measures of perceived ease of use: "The HRIS is user friendly," "I really understand how to use the HRIS" and "I find the system easy to use" (Cronbach's $\alpha = 0.85$).

3.2.2. *Information quality*

We also adapted Winkler et al.'s (2013) three measures of information quality. However, we reclassified one item as a measure of satisfaction. Thus, our measure of information quality only has two items: "The HRIS provides important information for me to do my tasks" and "The HRIS is exactly what I need to make workforce-related decisions" (Cronbach's $\alpha = 0.90$).

3.2.3. *Perceived usefulness*

Winkler et al.'s (2013) measures for perceived usefulness were adapted as well, with some modifications. They listed two separate items to distinguish HRIS usage for leaders and managers, while we combined this measure. Further, after performing reliability tests for the three measures of perceived usefulness, we eliminated one item from our model. In the end, we adapted only two items to measure perceived usefulness: 'Using the HRIS makes it easier to do my job as a leader/manager' and 'I find the system useful for my work' (Cronbach's $\alpha = 0.91$).

3.2.4. *Social influence*

Initially, we used three items to measure support. One item directly measured HR support of the HRIS. The other two items measured support and encouragement towards using the HRIS by respondents' line managers or supervisors. After performing an initial confirmatory factor analysis and reliability tests, we decided to drop HR support from our model. Support that seems befitting the model reflects support from the higher management or supervisor. This indicates that the support required is more social than technical. This further reaffirms our argument about the cultural context of social influence. Since Winkler et al. do not consider the social influence construct in their model, we adapted measures from Venkatesh et al. (2003): 'My supervisor supports me in using the HRIS' and 'My supervisor encourages me to use the HRIS' (Cronbach's $\alpha = 0.93$).

3.2.5. *User satisfaction*

Winkler et al. (2013) used one measure for user satisfaction, following Rai et al.'s (2002) model. We intended to do the same; however, after some reliability tests and refits of the model, we found that an item measuring information quality was a better measure for satisfaction. As a result, our measure included two items: 'I am satisfied with the information provided by the HRIS' and 'I am very satisfied with the system' (Cronbach's $\alpha = 0.91$).

3.2.6. *HRIS usage*

HRIS usage was measured using two items: 'I use the system frequently' and 'I use the system daily, weekly, monthly or yearly', both of which were derived from Winkler et al.'s (2013) measures of HRIS use (Cronbach's $\alpha = 0.91$).

4. RESULTS

4.1. *Data Collection Procedures and Sample*

ISH has over 800 employees who work in various organizational levels. To ensure the validity of the research findings, the questionnaires were distributed to employees over a 6-week period. All questionnaires were distributed as hardcopies and respondents were informed that they would be collected as soon as possible. While the size of the study population was 800 employees, targeting all of them was unfeasible. Accordingly, we distributed around 400 questionnaires between November and December 2014, 267 of which were completed and returned, suggesting a 67% response rate. Table 1 provides demographic details about the respondents.

The questionnaires were collected in two batches. The first batch was collected after a week, and 15 questionnaires were used to inform the pilot study. The pilot study involved tests carried out to assess the validity of the questionnaire and the reliability of the measurement scales used. Respondents were asked about the clarity of the statements. In general, all respondents agreed that the statements used were easily understood and clearly presented. No changes were made to the content, only to the layout of the questionnaire. The questionnaire from the pilot study was excluded from the main study samples.

The second round of data collection began on 22 November and concluded after 1 month. 1 week after the questionnaires were distributed, a friendly reminder was sent to recipients and a target date for collection was proposed. Most respondents had completed the questionnaire by the time we collected them. However, some respondents requested extra time, which we agreed to, and another date for collection was set.

4.2. *Data Analysis*

4.2.1. *Respondent profiles*

Table 1 provides the respondents' demographic information: Gender, age group, length of service at ISH, job type, job position, and computer usage at work.

The data are highly skewed towards female (90%) respondents. This is not surprising, as gender disparities in the healthcare workforce are common around the world: The World Health Organization (WHO, 2008) suggests that women comprise 75% of the workforce. Of the respondents, 36% belonged to the 26-30 age group, with more than 73% having worked for more than 3 years at ISH. In addition, 82% of respondents surveyed were medical professionals, while 96% stated that they used computers to work. This implies that access to computers is available and should not be a factor hindering HRIS usage. Moreover, all computers are connected to the ISH's intranet, which is directly accessible to the HRIS.

4.2.2. *HRIS usage demographics*

Table 2 examines HRIS usage and frequency. Figure 2 charts the types of HR processes used at ISH.

Of the respondents, 60% suggested using the HRIS: 18% indicated daily usage, 28% weekly usage, and 53% monthly usage. Only

Table 1: Demographics of respondents

Demographics	Frequency (%)
Gender	
Male	25 (9.4)
Female	242 (90.6)
Age group	
20-25	58 (21.7)
26-30	95 (35.6)
31-35	39 (14.6)
36-40	19 (7.1)
41-45	29 (10.9)
46-50	8 (3.0)
More than 50 years	19 (7.1)
Length of service at ISH	
0-3	73 (27.3)
3-6	75 (28.1)
6-9	35 (13.1)
9-12	17 (6.4)
12-15	11 (4.1)
More than 15 years	56 (21.0)
Job types	
Medical professional	220 (82.4)
Administrative staff	21 (7.9)
Managerial staff	26 (9.7)
Job position	
Top management	30 (11.2)
Manager or director of department, division, etc.	40 (15.0)
Business supporting staff	100 (37.5)
Technical supporting staff	97 (36.3)
Computer usage	
Yes	257 (96.3)
No	10 (3.7)

Table 2: HRIS usage demographics

HRIS usage	Frequency (%)
HRIS usage	
Yes	161 (60.3)
No	106 (39.7)
Level of usage	
Daily	48 (18.0)
Weekly	74 (27.7)
Monthly	141 (52.8)
Never	4 (1.5)

HRIS: Human resource information system

1.5% of the sample indicated never using the HRIS. The first question examining HRIS usage was answered with either a “Yes” or a “No.” In this question, the level of non-usage appeared to be higher (40%) compared to the subsequent question (1.5%). We argue that while employees generally do use the HRIS, at least on a monthly basis, they may not consider it to be active usage, hence explaining the negative answers when prompted. This is further supported by the analysis of the bar graph below, where HRIS usage is concentrated on reviewing payslips (95%) and leave applications (77%).

4.2.3. Analysis of measurement model validity

The research model was analysed using SPSS Amos 23, a structural equation modeling tool. The fit indices were within the suggested range, indicating good model fit. The ratio of chi-square to degrees of freedom was 1.534 within the suggested value of 3 (Hair et al., 2010). The goodness-of-fit index (GFI) and adjusted GFI (AGFI) were 0.963 and 0.919, respectively. The normalised

Figure 1: Proposed research model and its hypotheses, H₁-H_{5c}, examining user acceptance at Ipoh Specialist Hospital

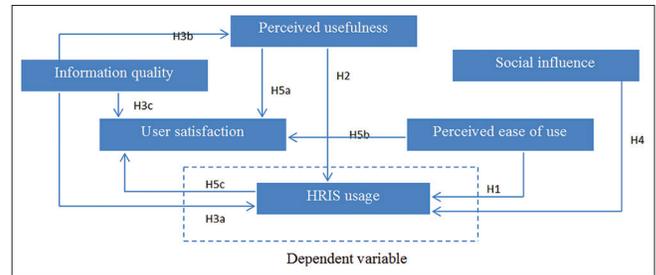


Figure 2: Human resource information system usage at Ipoh Specialist Hospital

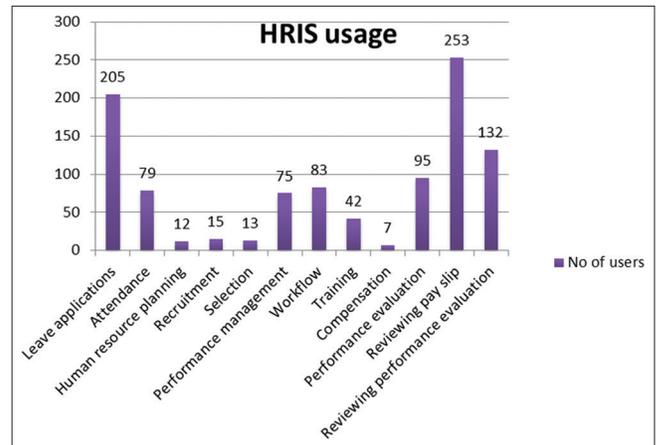
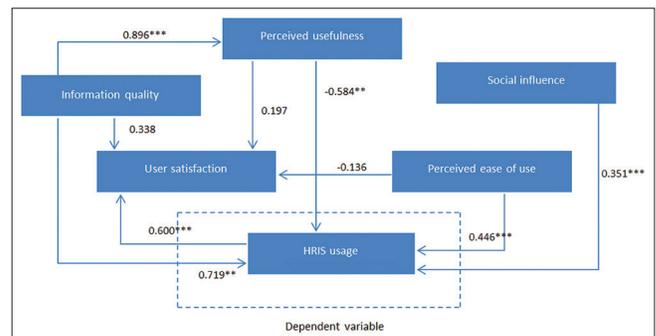


Figure 3: Empirical results for final research model β *** (P<0.001), β ** (P<0.05)



fit index (NFI), non-NFI and comparative fit index were 0.979, 0.986 and 0.992, respectively, indicating model fit (Hair et al., 2010). Finally, the root mean square residual (RMSR) was 0.023 within the suggested value of <0.10. The RMSR provides an indication of the proportion of variance not explained by the model. Our model’s root mean square error of approximation index was 0.047, which was within the suggested upper threshold value of 0.08 (Hair et al., 2010). With all the fit indices within the suggested value, we proceeded in our analysis of the psychometric properties of the instrument.

We analysed the reliability and convergent validity of the model through measures of Cronbach’s alpha, composite reliability and average variance extracted (AVE) (Table 3). We found that our Cronbach’s alpha, composite reliabilities and AVE were well

Table 3: Descriptive statistics and convergent validity

Descriptive statistics and convergent validity	Cronbach's alpha	Composite reliability	Mean±SD	Factor loadings	Squared multiple correlations
Perceived ease of use	0.85	0.854			
Ease_1			3.54±0.857	0.842	0.710
Ease_2			3.31±0.910	0.875	0.766
Ease_3			3.15±0.877	0.715	0.511
PU	0.91	0.910			
PU 1			2.83±0.918	0.870	0.756
PU 2			2.79±0.910	0.956	0.914
IQ	0.90	0.901			
IQ 1			2.90±0.894	0.906	0.820
IQ 2			2.81±0.868	0.905	0.819
User satisfaction	0.91	0.910			
STSFN 1			2.84±0.937	0.902	0.814
STSFN 2			3.02±0.924	0.926	0.858
Social influence	0.93	0.931			
Support 1			3.11±1.016	0.900	0.932
Support 2			3.14±1.001	0.965	0.811
HRIS usage	0.91	0.917			
Usage 1			3.06±0.832	0.990	0.980
Usage 2			3.15±0.975	0.846	0.715

SD: Standard deviation, PU: Perceived usefulness, IQ: Information quality, HRIS: Human resource information system

within the suggested range: The value of our Cronbach's alpha and composite reliabilities were higher than the recommended value of 0.70, and all of the AVEs were >0.60, higher than the recommended value of 0.5 (Hair et al., 2010). The AVE measure suggests that more than half of the variances can be explained by their hypothesised constructs (Hair et al., 2010). Convergent validity was assessed using the factor loadings, which were >0.70, and squared multiple correlations from the confirmatory factor analysis (Hair et al., 2010). The squared multiple correlations between individual items and intended constructs were >0.50.

The final measure was on discriminant validity. We found that the shared variances between constructs were lower than the AVEs of the individual constructs (refer to Table 4), hence confirming discriminant validity (Hair et al., 2010). In sum, all items and measures showed good reliability, convergent validity and discriminant validity. In order to test for the common method bias (CMB), we performed a chi-square difference test between the unconstrained common latent factor model and the fully constrained common latent factor model. The test showed a significant chi-square difference of 27.9 ($P < 0.01$), which suggests that our model may be influenced by the CMB. The Chi-square difference tests showed that our model had significant shared variance, which led us to retain the common latent factor in our structural model analysis (Podsakoff et al., 2003).

4.3. Analysis of the Structural Model

The structural model was built retaining the common latent factor. The model fit indices were based on the CMB-corrected measures. All of the fit indices of the structural model showed good fit for the research model. The ratio of chi-square to degrees of freedom was 1.342 ($P > 0.05$) within the recommended value of 3 (Hair et al., 2010). Comparisons of other fit indices are as follows: presented in Table 5.

With all of the fit indices meeting the threshold, we next examined the path coefficients of the structural model in Table 6 and Figure 3.

Table 4: Discriminant validity

Construct	Mean±SD	1	2	3	4	5	6
1. PEOU	3.33±0.773	0.662					
2. PU	2.81±0.875	0.366	0.835				
3. IQ	2.85±0.840	0.440	0.810	0.820			
4. User satisfaction	2.93±0.892	0.415	0.542	0.750	0.836		
5. Social influence	3.13±0.975	0.187	0.277	0.383	0.468	0.871	
6. HRIS usage	3.10±0.866	0.516	0.253	0.396	0.590	0.354	0.848

The values in bold in the diagonals represent the average variance extracted. Other entries represent the shared variance, SD: Standard deviation, PEOU: Perceived ease of use, PU: Perceived usefulness, IQ: Information quality, HRIS: Human resource information system

Our first hypothesis supports the TAM postulates, where perceived ease of use has a positive significant effect on HRIS usage ($\beta = 0.446$, $P < 0.001$). Our second hypothesis indicates an inverse relationship between perceived usefulness and HRIS usage, contrary to findings from the extant literature ($\beta = -0.584$, $P < 0.05$). Information quality ($\beta = 0.719$, $P < 0.05$) and social influence ($\beta = 0.351$, $P < 0.01$) both positively and significantly affect HRIS usage. Thus, H_{3a} and H_4 are supported. As predicted by the TAM literature, perceived usefulness is strongly and positively affected by the information quality of the system ($\beta = 0.896$, $P < 0.001$). Information quality explains 80.2% of the variance in perceived usefulness. The model does not support our hypotheses that a positive relationship exists between user satisfaction and perceived usefulness, perceived ease of use and information quality. Thus, we had to reject H_{3c} , H_{5a} and H_{5b} at a 5% significance level. Finally, our last hypothesis indicates that usage has a strong, positive effect on user satisfaction ($\beta = 0.600$, $P < 0.01$).

5. DISCUSSION

This study was initiated with the intention of evaluating user acceptance of the HRIS at ISH. The general analysis of the mean

indicates that the usage level ($M = 3.11$) was mid-range, while user satisfaction ($M = 2.93$) was found to be on the lower side of the scale. Because HRIS usage is deemed mandatory and despite the lower score on user satisfaction, actual usage appeared higher than user satisfaction.

As the TAM predicted, the path analysis indicates that perceived ease of use influences HRIS usage (Davis et al., 1989). Similarly, social influence and the information quality of the system also influences usage (Winkler et al., 2013; Rai et al., 2002; Venkatesh and Davis, 2000) Nonetheless, the inverse relation between perceived usefulness and usage refutes the TAM postulates. The significantly negative beta coefficient indicates that perceived usefulness has a negative effect on system usage (Bajaj and Nidumolu, 1998). We believe this observation lends some insights into management's initial concerns about lack of acceptance and usage - concerns which motivated the present study.

The inverse relationship suggests that users do not perceive the system to be useful ($M = 2.82$). However, the mandatory nature of the HRIS at ISH has caused the system to be used, albeit sparingly. As illustrated in Table 1, nearly 40% of respondents answered 'No' when asked about whether they used the HRIS. Yet, from the usage analysis, it was found that users at least used

the system on a monthly basis to view their payslips (95%) and/or for leave applications (77%). Arguably, respondents do not think using the HRIS for these purposes indicates the usefulness of the system. In fact, they do not acknowledge using the system at all, hence the large number of respondents (40%) who denied HRIS usage. Predictably, such meagre usage does not translate to user satisfaction ($M = 2.93$).

The general TAM model indicates positive support towards user satisfaction as an explanatory variable of usage (Venkatesh et al., 2003), but our findings indicate otherwise. We found that user satisfaction is not connected to the perceived usefulness and/or information quality of the system as postulated by the TAM. In addition, despite its ease of use ($M = 3.33$), usage does not lead to user satisfaction, as indicated by the negative sign of the beta coefficient. This finding is consistent with Sabherwal et al.'s (2006) meta-analysis, in which they concluded that no relationship may exist between user satisfaction and system usage.

Arguably, low user satisfaction implies potential resistance towards the system. To corroborate our prediction, we interviewed some respondents regarding their perception of the HRIS in general. One user suggested that usage is not consistently practised throughout the organization: "It depends on the manager in the respective departments or units." This user believed that the lack of buy-in from managers reduces user acceptance of the system. Another respondent admitted that she preferred the manual way of doing things: "We normally record our leaves in a book located in our department instead of using the HRIS system." According to her, "this normally happens to the staff from the nursing services where they have limited access to the system due to an insufficient number of personal computers at the ward level." These comments suggest that despite mandatory usage at ISH, employees can still use HR services manually. Arguably, such a situation further promotes a negative perception of system usefulness.

The earlier comment relating the manager's buy-in of the system with usage supports our argument about the importance of social influence in encouraging acceptance and system usage at ISH. In a culture where respect for seniors and a preference for hierarchy are emphasised (Ansari et al., 2004), the manager's actions are considered exemplary by his or her subordinates. In this case, if the manager was perceived to be having an unfavourable response towards the system, subordinates would also reject it. Likewise, if the manager lent positive support to the system, his

Table 5: Analysis of the CMB-adjusted fit model

Model GFI	Results	Recommended value
GFI	0.968	>0.95 (Hu and Bentler, 1999)
AGFI	0.929	>0.80 (Hu and Bentler, 1999)
NFI	0.981	>0.92 (Hair et al., 2010)
NNFI	0.991	>0.92 (Hair et al., 2010)
CFI	0.995	>0.95 (Hu and Bentler, 1999)
RMSR	0.020	<0.09 (Hu and Bentler, 1999)
RMSEA	0.037	<0.05 (Hu and Bentler, 1999)

This table compares the fit indices between the structural model and the recommended values. The recommended values were proposed by Hu and Bentler (1999) and Hair et al. (2010), CMB: Common method bias, GFI: Goodness-of-fit index, AGFI: Adjusted goodness-of-fit index, NFI: Normalised fit index, NNFI: Non-normalised fit index, CFI: Comparative fit index, RMSR: Root mean square residual, RMSEA: Root mean square error of approximation

Table 6: Results of the structural model

Hypotheses	Independent variable	Dependent variables	t-value (CR)	Beta: Standardised coefficients	R ² (%)
H ₁	Perceived ease of use	→ Usage	4.410***	0.446	0.701
H ₂	Perceived usefulness	→ Usage	-2.041**	-0.584	
H _{3a}	Information quality	→ Usage	2.023**	0.719	
H ₄	Social influence	→ Usage	4.206***	0.351	
H _{3b}	Information quality	→ Perceived usefulness	11.362***	0.896	0.802
H _{3c}	Information quality	→ User satisfaction	1.012	0.338	0.822
H _{5a}	Perceived usefulness	→ User satisfaction	0.760	0.197	
H _{5b}	Perceived ease of use	→ User satisfaction	-1.184	-0.136	
H _{5c}	Usage	→ User satisfaction	3.798***	0.600	

***P<0.001, **P<0.05

or her subordinates would use the system irrespective of its lack of usefulness or their satisfaction with it. Arguably, the significant findings supporting HRIS acceptance and usage in this study might largely be explained by measures of social influence over and above other factors. However, to what extent social influence affects HRIS usage is beyond the scope of our study.

Lastly, as predicted by our last hypothesis (H_{5c}), it was found that only when users used the system effectively did it engender user satisfaction. Our initial analysis looked at the relationship between user satisfaction and usage as postulated by TAM constructs (Davis et al., 1989), which caused the model to be flawed. We changed the path direction of the two variables accordingly. Instead of looking at the relationship between user satisfaction (exogenous variable) and usage (endogenous variable), we examined the effect of usage as the exogenous variable on user satisfaction as the endogenous variable. This hypothesis was strongly supported by our model ($\beta = 3.798, P < 0.01$).

Our work has some similarities with Hu et al.'s (1999) study on physician acceptance of telemedicine. For example, both studies were conducted in a healthcare setting in Asia. However, while this study looked into user acceptance of an HR system, Hu et al. studied acceptance of a healthcare system, which has a direct impact on the work of healthcare professionals. Unfortunately, Hu et al.'s findings do not support the TAM model. They argued that due to the higher level of intelligence of healthcare professionals, the system does not need to be easy to use. Rather, it must be very useful in order to be used. In contrast, our findings suggest that due to the system's lack of perceived usefulness, its ease of use and social influence can instead explain usage.

The mandatory nature of HRIS usage at ISH has resulted in perceived ease of use, perceived usefulness and information quality having no influence on user satisfaction. Further, because the system is not deemed useful, user satisfaction is not high, even if users believe that the system is easy to use, provides important information, and receives support and backing from higher management. And, surprisingly, the way the system can engender user satisfaction is through more usage. Lastly, we believe that management concerns are justifiable; in other words, there does appear to be a lower level of acceptance of the HRIS in ISH, even to the point of resistance.

6. CONCLUSION AND IMPLICATIONS

In a highly competitive and globalised business environment, an organization needs to be able to change to adapt to technological advancements and innovations. Thus, despite receiving wide coverage in IS literature, the TAM is still widely drawn upon to validate findings in different organizational contexts with different technological applications (Legris et al., 2003). This study presents research on the applicability of the TAM in explaining user acceptance of the HRIS in a Malaysian private hospital context.

Several implications from the findings of our study deserve mentioning. From a theoretical perspective, our study expands on the notion of subjective norms and social influence to include

specific cultural contexts, a factor which has not yet been explored. While earlier TAM versions did not agree about whether subjective norms affect the acceptance of technology, our study suggests that social influence is an important driving factor, particularly in a society that upholds hierarchy and respect for authority. Arguably, social influence will be greater in a high 'power distance' society (Hofstede, 1991) like Malaysia or other Asian countries. Consequently, social influence should be examined as one of the underlying factors that affects technological acceptance. Nevertheless, more studies should be conducted to confirm and validate this argument.

From a practical standpoint, the findings reveal that in a demanding work environment such as a hospital, the HRIS system must be easy to use above and beyond other factors. The user interface has to be simple and straightforward since confusing and complex systems can reduce acceptance and usage. Mandatory compliance may influence usage but does not provide user satisfaction. As a consequence, users will attempt to find gaps in the system and, at every opportunity, revert to the manual way of doing things, as reflected in the respondent's comment above. Thus, considering the high "power distance" environment in which ISH operates, capturing the effect of subjective norms on usage may have strategic value for inducing long-term commitment to and satisfaction with the system. In addition, increased usage and satisfaction may be achieved if the system is perceived to be useful. The importance and usefulness of the HRIS system in managing personnel in hospitals should be communicated. Clear evidence about the way the system contributes to the effectiveness of resource allocation and control may improve users' perceptions about its usefulness.

7. LIMITATIONS AND FUTURE STUDIES

This study has several noteworthy limitations. First, the measurement of the constructs is mostly <3 items. However, the reliability and validity tests do not suggest that this is a concern in the measurement model. Second, the model was affected by the CMB. This problem was addressed by including the common latent factor in the structural model. Third, the study was based on a single organization, which may compromise its generalizability to a wider population. Fourth, the measure of usage was based on self-reported usage rather than on an objective measure of system usage. However, this is still a controversial issue in IS studies (Venkatesh and Davis, 2000).

Study of user acceptance of the HRIS is an interesting research avenue that spans many disciplines. While the main concern for the present study was to understand user acceptance, lack of acceptance instigated by resistance should also be investigated to understand the underlying reasons for low levels of system usage. Notably, studying resistance instead of acceptance brings forth completely different theories to inform the study. Future research could investigate the same underlying issue regarding technological acceptance by employing different theoretical standpoints; for example, new institutional theories (Scott, 2001) could be used to explain organizational responses to change.

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