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Measuring Employee Portal Success: an Evidence from Malaysian Private Higher Institution

Azlina Abu Bakar, Fahmi Zaidi Abdul Razak and Wan Salihin Wong Abdullah

Department of Psychology and Counseling, School of Social & Economic Development, University Malaysia Terengganu, 21030 Terengganu, Malaysia

Abstract: Employee portals are utilized by many companies to get better companies' information exchange, communication and employee collaboration, as well as to better support their business processes. Since the cost to develop the portal is expensive, assessing the benefits of these is an important field in research and practice. Thus, the purpose of this study is to gain better understanding of employee portal success. To empirically test the model, a survey is administered to 200 University College Shah Putra's employees (hereinafter referred to as UCSA). The result indicates that besides the factors contributing to IS (information system) success in general, other external variables – like perceived usefulness and perceived enjoyment – have to be considered in order to determine a successful employee portal. The results demonstrate that perceived usefulness, service quality, system quality, information quality and perceived enjoyment, altogether positively affected employees' satisfaction ($\beta = 0.17$, $p < 0.05$), ($\beta = 0.29$, $p < 0.05$) ($\beta = 0.32$, $p < 0.05$) ($\beta = 0.17$, $p < 0.05$) ($\beta = 0.05$, $p < 0.05$) respectively. While satisfaction positively affected employee's continuance intention to use portal system ($\beta = 0.80$, $p < 0.05$). The model explained 64 percent of the variance in continuance intention and 75 percent of the variance in satisfaction.

Key words: Continuance intention · Service quality · Partial least squares · Satisfaction

INTRODUCTION

There are several kinds of portals, including internet call centre, a business to employee (b2e) intranet portal, a b2b Extranet portal, a business to consumer (b2c) e-commerce portal and a self service portal [1]. According to [2], there are two ways of classifying portals: 1. Portals related to their respective environment (public or corporate) and 2. Portals related to their functions (decision support and/or collaborative processing). Portals are gateways enabling viewers to access organizational services via the internet. Portals integrate a variety of services, providing them to viewers in a single window [3]. The ways employees handle information, communicate, share knowledge, as well as execute business processes have significantly changed with the emergence of web-based technologies and the subsequent spreading of employee portals. In addition, a portal hides coordination problems associated with the construction of service-based information systems [3] Over the years, company intranets have been transformed from collections of static web pages into highly integrated and interactive information systems [4]. While first-generation intranets only provided a comfortable interface to information, today's employee portals build a ''single point of access" by enabling the front-end integration of information, communication, knowledge sharing, applications and business processes within corporations. In many cases, an employee portal is the primary tool through which employees do their work. Today, most of the big companies already have their own portals. The use of these portals is rapidly increasing. However, portal projects are usually complex, time and cost-consuming, with a high failure risk [4]. If the employees do not make full use of the system, then the investment becomes a waste. Therefore, a study on the continuance intention for using the system is crucial. However, a portal's success and its continued usage cannot only be measured by just its reach and practitioners should not simply rely on ''hit counts" as measures of success [4].

Corresponding Author: Azlina Abu Bakar, Department of Psychology and Counseling, School of Social and Economic Development, University Malaysia Terengganu, 21030 Terengganu, Malaysia.
Tel: +6096683750, Fax: +6096683790.

The purpose of this study is to gain better understanding of employee portal success and it continuance intention to use. Existing research on employee portals investigates only the single aspect of success which is only the first step of success [5] none of these studies; [6,7,8,9,4 and 10] focused on eventual success or its continued use rather than first-time use. The study of the eventual success of a particular information system (IS) is vital. Bhattacherjee (2001) argued that Information System (IS) continuance at the individual user level is central to the survival of many business- consumer electronic commerce firms, such as Internet Service Providers (ISPs), online retailers, online banks, online brokerages, online travel agencies and the like. Consequently, we proposed our model based on the De Lone Mc Lean IS Success Model which considers employee portals' specific requirements. To this end, the researchers modified the proposed success dimensions with the inclusion of perceived enjoyment as predictor of satisfaction.

Theoretical Framework: Portals provide an aggregated and personalized view of information through a large application integrating information, people and processes across organizational boundaries [3]. As such, portals can significantly impact organizations, completely changing how they work and operate. [11] argued that an early definition of a portal in the corporate context appeared in Merrill Lynch report. Enterprise portals, amongst others, consist of weblogs, social networks, collaboration functionality such as electronic discussion forums, virtual team rooms and instant messaging/ awareness [4]. Web-based intranet was first introduced before portal technology. However, Web-based intranet has several disadvantages such as lacking personalization, poor navigation and did not provide centralized access to information, which often led to losses in productive employee time [12]. In the context of UCSA, the new implemented portal information system will help employee to share information via email, apply for leave, fill-out students' marks, registration purposes and timetable viewing. However, since its inception, there is no study conducted to assess the extent of the adoption of the portal.

Technology Acceptance Model: Technology acceptance model was first introduced by [13]. This theory was developed based on the Theory of Reasoned Action (TRA) by Fishbein [14], which points out that TAM is mainly used to explain the degree of acceptance of information technology by a person, while perceived usefulness (PU) and perceived ease of use (PEU) explain the two most important factors affecting the behaviour of using technology. TAM can explain the willingness of a user to accept a new technology and at the same time it can also analyse the relevant factors that influence the degree of acceptance of a user. TAM can be used to discuss which external factors influence the user's internal beliefs, attitude and intention and thus, further influence the condition of the usage of technology.

Recently, there are numerous studies using TAM to explain individual acceptance towards technology including e-government [15-16], healthcare information system [17-19], business management software [20], digital library system [21], wireless technology [22], electronic transaction [23], electronic toll collection service [24], digital learning system [25], e-shopping [26], information technology in university [27], web-based training [28], personal computing technology [29], digital archives system [30], laboratory evaluation [31]. While perceived enjoyment is defined as the extent to which the use of the employee portal system is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated [32]

De Lone Mc Lean IS Success Model: [33] reviewed IS (Information System) success measures and devised a model of the interrelationships between six IS success factors: (1) system quality, (2) information quality, (3) IS use, (4) user satisfaction, (5) individual impact and (6) organizational impact. Based on prior studies, De Lone and McLean [34] updated their model of IS success by adding a ''service quality" measure. In general, the IS success model consists of three dimensions–system quality, information quality and service quality. According to [35], system quality is based on the productivity model, which evaluates the extent of information system resource and investment utilization. However, whether service quality should be included in the IS success model is still debatable. Based on the aforementioned literature, the researchers' posit that information quality, service quality, system quality, perceived usefulness and perceived enjoyment will affect user's satisfaction and thus lead to user's continuance intention to use employee portal system.

In this study, perceived usefulness is defined based on [13] work which is ''the degree to which a person believes that using a particular system would enhance his/her job performance. The following hypothesis is proposed;

H1: Perceived usefulness is positively related to the user's satisfaction with employee portal.

Information quality refers to the measure of the quality of different attributes of information [36] The most commonly used variables for measuring information quality are accuracy, currency, relevance, completeness and understandability [34]. Information quality examines a user's perception of the quality of information obtained from the use of IS. Information quality is characterized by how much information is correct and whether the information is what users want [33];

H2: Information quality is positively related to user's satisfaction with employee portal

According to [37], system quality is a measure of the information processing system itself. Similar to information quality, system quality depends on three factors: accessibility, interactivity and ease of use;

H3: System quality is positively related to user's satisfaction with employee portal.

[38] argued that, the underlying assumption of Service quality research is to improve the quality and therefore affect customer retention. This construct is also crucial for the success of e-commerce IS [15]. De Lone and McLean suggested five variables to measure service quality: tangibility, reliability, responsiveness, assurance and empathy. Prior studies have investigated service quality as a significant predictor of satisfaction [37]; [36].

H4: Service quality is positively related to user's satisfaction with employee portal.

[39] argued that satisfaction is an affective state that is the emotional reaction to a product or service experience. Previous research on technology post-adoption has shown that users' continuance intention is primarily determined by their satisfaction with prior IT use [5]. Following a prior work of [5], satisfaction in this study is defined in an educational context as a psychological state related to and resulting from a cognitive appraisal of the expectation–performance discrepancy. Previous studies such as [40,41,42 and 43] have consistently shown the positive correlation between satisfaction and continuance intention. Therefore, the following hypothesis is proposed.

H5: Satisfaction is positively related to user's intention to continue using employee portal.

Perceived enjoyment in this study is defined as the extent to which the activity of using the employee portal is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated [32]. According to [32], perceived enjoyment can be described as an intrinsic motivation, whereas perceived usefulness in TAM is an example of extrinsic motivation. Given the technological trend where more and more technologies can be used to meet various user needs, it is likely that the post-adoption level of enjoyment would also become important in developing user satisfaction towards the use of a technology [42]. Therefore, the following hypothesis is postulated.

H6. Perceived enjoyment is positively related to user's satisfaction with employee portal.

MATERIALS AND METHODS

The data used in this study were obtained through questionnaires distributed to 250 UCSA employees. A total of 250 questionnaires were distributed and a total 250 completed questionnaire were returned. To obtain participants, an e-mail announcement was sent to UCSA employee. The survey questions were aimed at assessing their perceptions of the dependent and independent variables. The research was a cross-sectional study. Demographic questions were included last on the survey, as fatigue effects would have less influence on them. All surveys were confidential and no identifying personal information was required. The results were analyzed using structural equation modelling techniques utilizing SmartPLS 2.0 [44]

Sample: The survey was completed by 76 respondents from UCSA. A questionnaire was originally developed in English and then translated into Malay. A Malay language lecturer was invited to proofread and amend the questionnaire in the pre-test stage. Sixty-eight percent of the participants were female and thirty-one percent were male. The sample's age ranged from 18 to 5, with 60% of the sample being in the 26–35 year old age group.

Instrument: The items in the survey were developed by adapting existing measures validated by other researchers. All variables in the survey were measured on

a seven-point Likert scale from (1) strongly disagree to (7) strongly agree. Table 1 shows the research constructs, their measurement variables and the internal reliability assessment.

RESULTS AND DISCUSSION

Smart PLS 2.0 [44] was used to test causal and measurement model in this study. PLS-SEM is a causal modelling approach focusing on maximizing the explained variance of the dependent latent constructs [45]. As the study is an extension of an existing structural theory, PLS-SEM was chosen as a method to analyze the empirical data [45].

The analysis of the measurement model within PLS involves examining the item reliability, convergent validity and discriminant validity [46]. Results from the reliability analysis of the measurement model are described in Table 1. The data demonstrates that measures are robust in terms of their internal consistency as indexed by their composite reliabilities. The internal composite reliabilities range from 0.94 to 0.98 and exceed the established threshold value of 0.7 [47]. Item loadings and internal consistencies greater than 0.70 are generally considered acceptable [46] . However, we noted that one item for the System Quality (Sq5) was dropped due to unsatisfactory loading on its respective construct. AVE indicates the percentage of the variance of the construct that is explained by the items used to measure the construct. Consistent with the recommendation of [46], the AVE for each measure is equal to or exceeds 0.50.

Discriminant validity is the degree to which items differentiate between constructs or measure different constructs [48]. We used the criterion established by Fornell & Larcker [49] to assess the discriminant validity. According to the criteria, in order for each construct to possess sufficient discriminant validity, the square root of AVE for every individual construct should be greater than construct's correlations with the other factors. Table 1 presents the result of the discriminant validity of the measured scales; the bolded values on the matrix diagonal represent the square root of AVE for each construct in the corresponding row and the non-bolded values represent the correlations among each pair of constructs. AVE values are greater in all cases when compared with off diagonal elements in their corresponding rows and columns. This provides sufficient evidence for the discriminant validity of the scales used (Fornell & Larcker, [49].

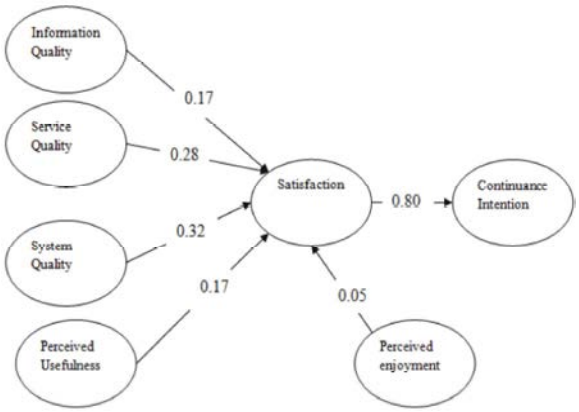

Fig. 1:

Table 1: Assessment of discriminant validity

	CONTI	ENJOY	IQ	PU	SATIS	SERVQ	SQ
CONTI	0.97						
ENJOY	0.64	0.92					
IQ	0.68	0.69	0.89				
PU	0.55	0.52	0.61	0.94			
SATIS	0.80	0.66	0.75	0.67	0.93		
SERVQ	0.63	0.54	0.64	0.59	0.76	0.89	
SQ	0.72	0.78	0.79	0.58	0.78	0.70	0.83

Diagonal elements represent the square root of the average variance extracted (AVE)

Convergent validity refers to the consistency that multiple items exhibit in measuring the same construct. Average variance extracted (AVE) and composite reliability (CR) are adequate indicators of the convergent validity of measurements [50]. Thus, they were included in the study. The results of AVE and CR are provided in Table 1. All constructs had AVE values higher than 0.5 and CR values higher than 0.7, which indicate commonly acceptable convergent validity of measurements [25]

Given adequate validity and reliability of our measurement model, we proceeded to empirically examine the structural model. In PLS path modelling the predictive power of the structural model is assessed by the R2 in the endogenous constructs [51]. The Smart PLS analysis results are shown in Figure 1. The model explained 64 percent of the variance in continuance intention and 75 percent of the variance in satisfaction see Figure 1. Satisfaction has a salient effect on continuance intention; it obtains a significant path coefficient with a value of .80. This finding is consistent with the research findings of [52,53] and [54] reveals that satisfaction indeed influences continuance intention to use particular systems. The path significance levels (t-values) are estimated by the bootstrapping method.

Table 2: Hypothesis testing

Hypothesis	Path coefficient	t-value	Remarks
H1: Perceived usefulness → satisfaction	0.19	2.38*	Supported
H2: Information quality → satisfaction	0.19	1.76	Not supported
H3: System quality → satisfaction	0.32	2.64**	Supported
H4: Service quality → satisfaction	0.28	2.64**	Supported
H5: Satisfaction → intention to continue	0.80	23.56***	Supported
H6: Perceived enjoyment → satisfaction	0.03	0.33	Not supported

*p < 0.05, **p < 0.01, ***p < 0.001.

The results indicate that all the hypotheses, excluding H2, H4 and H6 (Table 2), were supported. H1, which predicted, that perceived usefulness would have a positive effect on satisfaction, was confirmed. This finding corresponds with a number of prior studies such as [6, 55]. Contrary to the stated prediction, the data did not support H2 which suggested that information quality would have a positive effect on satisfaction. This is contrary to [56], who found that information quality would have a positive effect on satisfaction. A plausible explanation for this result might be due to the portal that does not provide a lot of information [57] and it might also due to the lack of e-mail usage. The hypothesized, system Quality on satisfaction (H3) was also supported by the data. H4, which predicted service quality would affect positively on satisfaction was supported. This finding corresponds to [58] who reported that service quality is positively affected satisfaction. This result may be due to the possibility that services provided by the IT department do not meet employees' requirements. The path perceived enjoyment exhibits weak linkage for satisfaction, thus suggested H6 is not supported. This finding is contrary to [59] who found that perceived enjoyment affected positively to satisfaction. The results suggest that the portal is lack of employees' utilitarian and hedonic benefits [59].

This study develops and empirically validates a research model that extends De Lone Mc Lean IS success Model by integrating perceived usefulness and perceived enjoyment in employee portal continuance intention context. Research on the effects of IS success construct on continuance intention is still in its infancy. This construct helps to explain why employees are willing to continue using employee portal. The proposed model increases our understanding of employee portal continuance intention by integrating perceived usefulness, perceived enjoyment, service quality, system quality, information quality and satisfaction into a parsimonious continuance intention model. Future research should look into the significance of role of experience and innovation characteristic, mandated or voluntariness setting and role of moderating effect e.g., age and gender. This study presents satisfaction as an important predictor of employee portal continuance intention. The findings highlight the need for further exploration of its influence on the continuance intention decision.

There are several implications for the organization. Firstly, the study highlights the fact that employee continuance intention to use the portal is significantly influenced by their satisfaction of the portal. Satisfaction toward the quality of the portal increases their likelihood to continue using the portal. This highlights, to the organization (UCSA), the fact that satisfaction towards portal system process is absolutely critical. Prior research has shown that satisfaction plays an important role [5]. Second, as the relationship between Information Quality to Satisfaction and perceived enjoyment to Satisfaction indicated the least strength statistically in our model, this information might be interpreted to mean that there is a need for the organization (UCSA) to pay more attention on portal's information quality and employees' perceived enjoyment towards using the portal system. We recommend that organization should focus on improving their employees' utilitarian and hedonic benefits gained from using the portal by, for example, enhancing system speed, guaranteeing system availability, enriching content and providing reliable and personalized information [59].

There are some limitations to this study that should be noted. The most notable is the exclusion of main predictors of expectation confirmation model [5]. Literature has shown that ECM predictors associated with satisfaction and thus relate to the continuance intention. Secondly, since this study only examines the sample of 76 employees in UCSA, the results may not be generalized to other employee portal systems. Future research should attempt to validate the findings of this study by testing more diverse survey participants within different contexts. Another limitation is that the data for this study was collected through a survey, therefore, allowing a potential of self-report bias from respondents. Although the model explains 64% of the variance in intention to use and 75% of the variance in satisfaction, it does not include several other continuance constructs explored in the literature.

CONCLUSION

Researchers propose an extension of the framework for assessing the success of employee portal. The extended employee portal success measurement model derived from prior extant IS literature and our extended model was found to have a reasonable explanatory power. Also, our research provides empirical analysis in support of the direction of flow in the De Lone & Mc Lean IS Success [34] IS success framework as well as their relationships. As such, three out of the six hypothesized paths in model were found to have statistical significance. Our results support findings and observations in prior IS studies thus enriches the IS literature accordingly. However, more work is expected in order to gain better understanding towards employee portal success.

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