Drivers and Factors Affecting B2E Portals Usage by Royal Jordanian Employees

Dhia M. Kassim
Researcher
Middle East University
Faculty of Business
Business Administration Department
383, Amman, Jordan

Ashraf Bany Mohammed
Assistant Professor
University of Ha'il
College of Computer Science & Engineering
Software Engineering Department
2440,Ha'il, Kingdom of Saudi Arabia

Abstract

Business-to-Employee (B2E) portals are a key form of electronic business (e-business). B2E portals provide business with diverse services that allow employee to access a wide-range of electronic self service systems, conduct their tasks effectively and improve organization efficiency. This research seeks to understand the drivers and factors influencing the usage of B2E portals. Using previous literature, this research develops a theoretical model that includes a set of four factors; user characteristics, portal characteristics, usefulness and organization support. Empirical analysis was then utilized to test the model using data collected from a survey distributed among Royal Jordanian (RJ) Staff. Research results revealed that age, salary and computer skills have statistical significant effect on using RJ B2E Portal. However, gender, education, and Internet skills did not reveal any statistical significant effect on using B2E Portal. On the other hand, results indicated a statistical significant effect for portal characteristics, usefulness and organization support on RJ B2E portal use.

Keywords: Adaption, B2E, Developing Countries, e-business, Portals, Usage

1. Introduction

Recently, Information Technology (IT) systems have changed the way we do business (Mohammed & Alkubise, 2012). IT systems and networks improved business process and developed more agile, intelligent and efficient, globally connected and IT-oriented businesses (Lai & Chen, 2009; Davison et al, 2003). The recent developments and growth of IT and networks made it possible for business to conduct many of their functions online (Pedrinaci et al, 2008). The development of e-Business made it possible to substitute traditional employee services with B2E systems by developing online gateway (portals). B2E systems are web-enabled systems that deliver benefits for both employees and their organization (Urbach et al, 2010; Rahim, 2007a).

Comprehensive B2E systems offer the organization less administration tasks, reduced employees' service costs, and improved human resource planning, effective decisions making, self-service and improved employee functionality (Travica, 2008; Lin 2005, Rahim, 2007b). Hence, there is no wonder that B2E e-business systems (Employee portal) became a necessary tool in modern organization. As many other companies, Royal Jordanian (RJ) the chief airline company in Jordan and one of the biggest airlines in the Middle East region with approximately 4500 employees (RJHR, 2011), was one from the early adopter of B2E systems in Jordan.
Yet, the relatively huge number and wide distribution of RJ staff creates enormous difficulty and challenges in adopting B2E systems and the benefits for such employee portal seem not to be foreseen until now. (Mohini, 2008)

1.2 Research problem, question and limitation

Using pilot unstructured interviews with RJ employees and IT department, a notable low usage rate of current RJ B2E portal was revealed. Moreover, from those employees who used the portal, many are not fully aware and utilizing all the services provided by the B2E portal. Employee's utilization is limited to a few services. A simple analysis showed that user characteristics such as age, education and skills may represent important factors that affect the usage of these services, along with some other factors that can play a role in this issue. Consequently, this research came to explore these factors and reveal the current usage patterns in RJ B2E portal.

Consequently this research seek to answer following research questions

1: What is the effect of "user characteristics" on B2E portal usage in RJ?
2: What other key factors affect the usage of B2E portal in RJ? And how much do these factors affect B2E portal usage in RJ?

1.3 Research Limitations

This research experience few limitations that can be summarized as following:

1- Location limitations: RJ stations are spread all over the destinations they reach; hence the survey may not reach all employees.
2- Human resource limitations: This research is limited to ground staff in Royal Jordanian Airlines.
3- Timeline limitations: this research is conducted over the period of one year (2011).
4- Theoretical limitations: Although many other factors can be included in the model, the model considers only some key variables that are believed to affect the usage of the portal in RJ and suggested by previous literatures.

Nevertheless, the significance of this research comes from two key issues: first, the research may reveal useful findings which can contribute to improve B2E portals usage in RJ and other companies. Secondly, scarcity of similar studies on such systems especially in Jordan and aviation industry.

This paper is structured as following: next section present a brief literature review, section 3 provides the theoretical model and section 4 present the data and methodology. Section 5 shows the empirical results and section 6 discusses the results and presents the research recommendation. Finally section 7 concludes this work.

2. Literature review

In the last few years, B2E portals emerged as key forms of e-business and became main business approaches to support their employees and operations. This section discusses the development of B2E portals.

2.1Definition

E-business is not just buying and selling of goods and services online but also serving customers, collaborating with business partners, and conducting electronic transactions within organizations (Turban et al, 2010). E-business has many types these include; B2B, B2C, and B2E. B2B applications include many key applications that support business such as electronic supply chain management (e-SCM) and e-procurement systems (Stein et.al, 2005; Teo and Ranganathan, 2004). E-business portals were categorized by (Davison et al, 2003) as: general portals, community portals, enterprise information portals, vertical & horizontal industry portals, e-marketplace portals, personal/mobile portals and information portals (Timmers, 1998).

A B2E portal can be defined as online gateway which assists organizations in delivering useful information and services to their disperse employees which in turn creates productive and satisfied workforce needed (Stein et.al, 2005; Rahim, 2006; Rahim, 2007). Recently B2E Portals were defined as "large set of applications that integrates information, people and processes across the organizational boundaries.

Finally from users see portals have been as corporate portals, customer portals, employee portals or enterprise portals" (Al-Mudimigh & Ullah, 2010). In summary, and based on previous discussion we see B2E portals are online gateway which uses web applications to provide employees with secured access to their own information and services anytime and anywhere.

2.2 B2E Portal Development

The developments of internet and web technology have increased the adoption & implementation of B2E portals significantly (Tatnall, 2005) especially in the last few years. B2E portals have developed from the simple payroll report to employees being able to monitor and plan their own career development ((Evers, 2009, Davison et al, 2003). The Employee Portals were implemented in the beginning for users as a single gateway to personalize their information (Shilakes & Tylman, 1998). Later on, it was used for gathering, sharing, and dissemination of information (Detlor, 2000). After that B2E portals became more as systems that provides the users with all information they need and evolved to become a key source for achieving organization effectiveness (Mootheril, 2008; Chan & Chung, 2002).

In 2005, B2E portals became easy customizable and can be easily personalized by staff, which allow presented more functions and interaction to business. Hence, B2E portals became provided "improved access to information, increased collaboration, greater use of existing applications, and effective integration between applications" (Daniel & Ward, 2005). However, security remains an issue for employee and organization information, services, applications, and expertise (Chan & Liu, 2007; Urbach et al, 2009). Nevertheless, today's companies rely heavily on B2E applications that are used for organizing business activities, such as flow of documents and other employee services using the Employee Portal (Lesjak & Vehovar, 2005). A survey conducted in the UK in over 500 top firms & companies showed that majority of companies surveyed have basic level of B2E solutions and focused on increasing efficiency by allowing convenient access of employees to their own information (Dunford, 2002). Even in developing countries (such as Jordan), nowadays B2E portals are adopted by most of the leading organizations including universities, banks, and telecommunication companies (such as; Jordan University, Arab bank, and zain telecom).

2.3 RJ B2E Portal

Royal Jordanian has adopted B2E and created its own B2E Portal. RJ Portal is a gateway to all ground staff that provides them with several functionalities and services. It provides a secure access where each employee can get access to his own information by his ID number and password. The following figure (2-1) shows the log-in page:

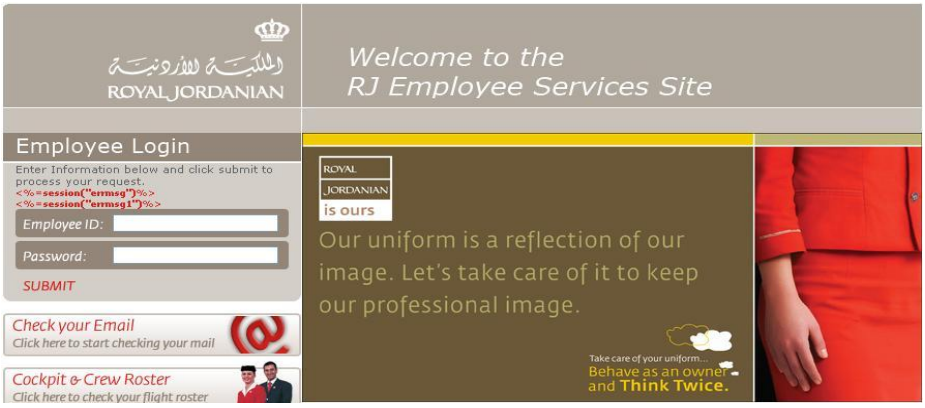

Figure 1. RJ B2E Portal access page. Available at http://rjstaff.rj.com/

RJ B2E portal have four main pages; Staff services, RJ learning, RJ rules and One World documents. Each page provides the staff with different set of services and functionalities. Staff services page contains services such as daily attendance and leave balances, financial services page present payroll information and provident fund (RJ websites, 2011).

RJ learning includes all information of employee training records, staff rules and regulations (RJ website, 2011). Furthermore, the portal has several links to provide the staff with different types of services such as e-mail, special offers and RJ magazine are also available through the portal.

3. Theoretical Model

Many drivers and factors can affect the use of new technology (Mohammed & Alkubise, 2012; Travica, 2008; Ibrahim, 2008; Rahim, 2006). Based on literature review and previous related work, the theoretical model was developed using four key factors. These are: user characteristics, portal characteristics, usefulness and organization support.

3.1 User Characteristics

Many researchers stressed the importance of user characteristics as key factors that affects human computer interaction (Mohammed & Alkubise, 2012). For instance, Rahim (2008) used age and gender in his study and found that age has a significant effect on young employee's use of B2E portals. Moreover, Tojib et al. (2008) found that age and job categories affect the satisfaction in using the employee portal. Furthermore, Urbach (2010) in his study "An empirical investigation of employee portal success" found that gender plays a significant role in portal usage were male have more usage rates. In a recent study by Rahim et al. (2009), they found that education is a key factor that affects the usage of the portal as staffs with higher qualifications are most likely to use the system more. Lai & Chen (2009) studied age, gender and education and proposed that important role of these characteristics on system usage. Based on previous discussion:

Ho1: *There are no statistically significant differences for* ***user characteristics*** *(gender, age, education, salary, computer skills, and internet skills) on using the B2E portal.*

2.2 Portal Characteristics

Portal characteristics are the features that describe the portal including: navigation, search, function, access, compatible, help, language, information quality and reports (Fuangvut & Hasan, 2005). In addition, this category can include information quality which is a key factor of user satisfaction (Tojib et al, 2008). Additionally, accessibility and reports quality were also indefinite as important characteristics of all portals (Lai & Chen, 2009). In addition, we believe that help tool and language support can also contribute to portals characteristics and might increase usage levels of the portal. Thus, we test:

Ho2: *There is no significant effect for the* ***portal characteristics*** *on using the B2E portal.*

2.3 Usefulness

Many scholars emphasized the importance of usefulness as a determinant factor in B2E portals. This includes: convenient access, easy service, flexibility, time saving and news service. Portal service can save lot of time, provide flexibility and news adds value to the employee usefulness of portal (Tatnall, 2005). Perceived usefulness by (Rahim, 2007), ease access by (Sugianto & Tojib, 2006; Rahim et al, 2009), and news (Rahim & Singh, 2006) are identified as key constructs for portals usefulness. Thus, we argue that convenient access and easy to use service have major effect on the usage of the portal. Consequently:

Ho3: *There is no significant effect for the* ***usefulness*** *on using the B2E portal.*

2.4 Organization Support

Finally, researchers suggested that organization support such as training, encouragement, help desk and top management encouragement are main measures for portals usage (McCausland, 2005; Mohammed, 2011). In addition motivation, awareness, training and helpdesk (Rahim et al, 2007; Rahim, 2007) are valuable factors that can have effect on portal usage. Accordingly, following hypothesis need to be tested:

Ho4: *There is no significant effect for the* ***organization support*** *on using the B2E portal.*

Following figure 2. represent our theoretical framework where previously discussed key drivers affecting the use of employee portal are illustrated. These are: **User characteristics, Portal Characteristics, Usefulness and Organization Support.**

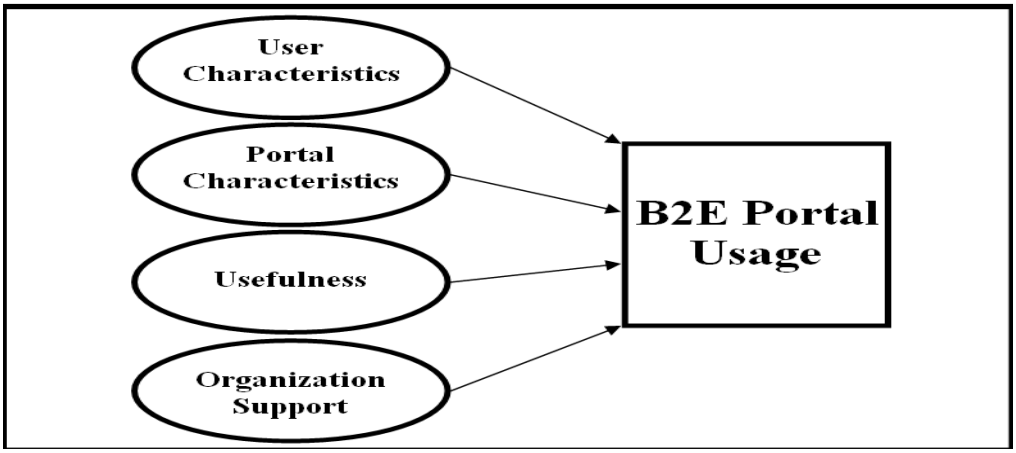

Figure 2. Theoretical Research Model

4. Methodology

Based on previous research framework, this chapter present and describe the statistical analysis used to answer the research questions and research hypotheses. Data analysis includes a descriptive analysis using the Means and Standard Deviations; t-test, ANOVA and finally we employee regression analysis to test our hypothesis empirically.

4.1 Survey and Descriptive statistics

The research population of the research was ground staff in Royal Jordanian. A convenient random sample was taken from the population to represent the different company's departments while considering the relative weight of each department. A total of 450 surveys were distributed to the population of the research and 327 surveys (72.6%) were retrieved and valid for analysis.

The descriptive analysis of user characteristics is illustrated in table (1). 58.7% of the respondents are males while 41.3% are females. On the other hand, it is clear that 34.6% of the research sample ranged between (28 – 32) years old which represents the majority of the respondents. Educational level shows that most of the sample (76.1%) has bachelor degree. Computers and the internet skills results show that 58.1% of the respondents have intermediate skills in using computers, and 74.9% have been using the internet for more than 6 years. Salary wise, statistics shows that 50.2% of the sample is paid more than 500JDs.

Table 1. User characteristics and Demographics'

Variables	Categorization	Frequency	Percent
Gender	Male	192	58.7
	Female	135	41.3
Age	18 – 22	5	1.5
	23 – 27	107	32.7
	28 – 32	113	34.6
	33 & above	102	31.2
Education	High school	16	4.9
	Diploma	34	10.4
	Bachelor	249	76.1
	Graduate studies	28	8.6
Salary	Less than 300	7	2.1
	301 – 400	52	15.9
	401 – 500	104	31.8
	More than 501	164	50.2
Computer Skills	Do not use computer	1	0.3
	Basic use	5	1.5
	Intermediate use	190	58.1
	Professional use	131	40.1
Internet Skills	Do not use internet	1	0.3
	1 – 2	14	4.3
	3 – 5	67	20.5
	6 & Above	245	74.9

4.2 Validity and Reliability

4.2.1 Validation

To test for survey clarity and coherency, a macro review covering all research components was performed by academic reviewers - from Jordanian Universities - specialized in Business, Information Technology and Statistics. Therefore, some items were added while some others were modified. The survey was reviewed by a total of (9) academic reviewers and the overall percentage of response which was 100%.

4.2.2 Reliability

To test the survey reliability, Cronbach Alpha (α) analysis was used to measure internal consistency. A minimum acceptable level (Alpha ≥ 0.65) suggested by (Revelle & Zinbarg, 2009) was adopted. Results show that overall Cronbach Alpha (α) =equaled (0. 885), whereas, the high level of Cronbach Alpha (α) was for the portal characteristics dimensions (0.797) and the lowest level of Cronbach Alpha (α) was for organization support dimensions (0.698). Overall, these results are at acceptable level as suggested by Revelle & Zinbarg 2009.

5. Empirical Analysis Results and Hypotheses Testing

To test if there are any differences on using the B2E portal in Royal Jordanian by ***first hypothesis, user characteristics hypothesis was*** divided into six sub-hypotheses. Independent Sample T Test was used to test the ***gender sub-hypothesis*** and one way ANOVA to test for ***age, education level, salary, computer skills and internet skills***. The results are shown as the following: Table (2) show Results of user's gender effect on the use of RJ B2E portal using Independent sample (T) test. Results show that there are no significant differences by user's gender on using the RJ B2E Portal, since absolute value of T calculated (0.001) is less than T tabulated at level ($\alpha \leq 0.05$) which was (1.960). Thus, we can say that ***there are no statistically significant differences of user gender on using the B2E portal at level ($\alpha \leq 0.05$).***

Table 2. Results of user's gender effect on the usage of RJ B2E portal using Independent sample (T) test

	T calculate	T Tabulated	DF	Sig (2-tailed)
Differences of Gender	0.001	1.960	325	0.999

* Significant at level ($\alpha \leq 0.05$)

. Table (3) shows test results for (age, education, salary, computer skills, and internet skills) using one way ANOVA test. Table (3) clearly illustrates that there are significant differences of user's **age, salary, computer skills** on using the RJ B2E Portal since the absolute value of F calculated for each of them was greater than F tabulated at level ($\alpha \leq 0.05$). Consequently we can conclude that, ***there are statistically significant differences of user's* age, salary, computer skills *on using the B2E portal at level ($\alpha \leq 0.05$.***

However test results show that there are no significant differences of the user's education and internet skills on using the RJ B2E Portal since the absolute value of F calculated is less than F tabulated at level ($\alpha \leq 0.05$). Thus, we can say that ***there are no statistically significant differences of users education and internet skills on using the B2E Portal at level ($\alpha \leq 0.05$.***

Table 3. Results of user's Characteristics differences on the usage of RJ B2E portal using one way ANOVA

	F calculate	F Tabulated	DF	Sig*
Differences of Age	5.888	2.65		0.016
Differences of Education	0.302	2.65	3	0.583
Differences of Salary	15.294	2.65		0.001
Differences of Computer skills	3.899	2.65		0.049
Differences of Internet skills	0.325	2.65	323	0.569

* The impact is significant at level ($\alpha \leq 0.05$)

To answer the hypothesis regarding ***portal characteristics, usefulness and organization support***, Linear Regression Analysis was used to test the effect of these factors on using the RJ B2E Portal. Results are shown in Table (4).

Table 4. Regression Analysis test on the usage of RJ B2E portal

	(R)	(R^2)	F calculate	F Tabulated	β	DF	Sig*
Effect of portal characteristics	0.183	0.033	11.219	3.89	0.183	1	0.001
Effect of Usefulness	0.186	0.034	11.607	3.89	0.186	325	0.001
Organization Support	0.356	0.129	11.939	2.42	0.173	326	0.004

* The impact is significant at level ($\alpha \leq 0.05$)

Table (4) show that there is significant effect of portal characteristics on using the RJ B2E Portal. R was (0.183) at level ($\alpha \leq 0.05$) whereas the R2 was (0.033) and β was (0.183) which indicate significant effect as F Calculate was (11.219) which is greater than F Tabulated which was (3.89) significant at level ($\alpha \leq 0.05$). Thus we can conclude that, ***there is significant effect for the portal characteristics on using the RJ B2E portal at level ($\alpha \leq 0.05$).***

As well, table (4) shows that there is significant effect of usefulness on using the RJ B2E Portal. The R was (0.186) at level ($\alpha \leq 0.05$) whereas the R^2 was (0.034) and β was (0.186) whereas F Calculate was (11.607) which is greater than F Tabulated which was (3.89) significant at level ($\alpha \leq 0.05$). Thus, we can claim that, ***there is significant effect for usefulness on using the RJ B2E Portal at level ($\alpha \leq 0.05$)***.Moreover, table (4) shows that there is significant effect of organization support on using the RJ B2E Portal. R was (0.359) at level ($\alpha \leq 0.05$) whereas the R^2 was (0.129). **Overall** the research found that there is an effect for organization support since the absolute F Calculated was (11.939) and it is greater than F Tabulated which was (2.42) at level ($\alpha \leq 0.05$)

Therefore, the null hypothesis was rejected and the alternative hypotheses was accepted. Thus we can say that, ***there is significant effect for organization support on using the RJ B2E portal at level ($\alpha \leq 0.05$).*** In addition in testing for the effect of each item in the organization support, results of regression analysis show ***weak evidence for the effect of training and encouragement on portal usage***, yet we ***found a significant effect for helpdesk and top management encouragement on portals usage***.

6. Results Analysis & Recommendation

6.1 Results Aanalysis

Results revealed some interesting finding that give us insight on the drivers and factors that affect B2E portal use. Results show that *user's gender, education* and Internet skills have nothing to do with portal use, indicating that all staff regardless of their gender, education and internet skills. This can be understood if we consider that most of the staff is well educated where more than 76.1% of the staff holds a bachelor degree. Additionally, in explaining internet skills effect, descriptive statistics showed that large numbers of the staff (almost 75%) were using the internet for a long enough.

However, results show that user's *age, computer skills, and salary* affects usage levels of the RJ B2E portal and suggests addressing these effects. Properly old staff is not using the portal in the same level as those of younger staff. Computer skills on the other hand were not the same for all staff. Testing for computer skills showed differences on the usage of the RJ B2E Portal among the staff. The usage of the portal will be affected regarding the self-skills the staff. Staff with high computer skills seeks all their services from the portal. Yet, others who do not have that good skill will try to seek the old paper-based to get their services. Moreover, Tukey test results showed that the most significant salary category were (501 & more). High salaries provide the employee with proper access to the portal such as availability of computer and internet access at home or by any wireless device they have, which may explains salary effect.

Portal characteristics, usefulness and organization support, results revealed a *significant effect for each of them* on *using the RJ B2E portal at level ($\alpha \leq 0.05$).* Some items in portal characteristics such as language and information quality showed higher effect on the B2E usage levels. RJ portal is supported by English language only, and since all the employees are locals, language can be a key factor to portal use. Information quality also indicates high significant effect on the usage of the portal, this can be explained as most of the staff does not require just general information, but they rather seek specific information, services and resources.

Usefulness and convenient access were the main desire of portal users. Whereas, organization support (training, encouragement, helpdesk, and top management) results shows that top management support has the most significant effect on the portal usage. Employees need management support to guide them through the change process. Moreover, helpdesk was also a significant factor for B2E portal use, as many employees need technical support to guide their use of the portal while facing technical problems.

6.2 Recommendations

Based on previous results and conclusions, following recommendations can be derived:

1. RJ needs to focus on older and less computer-skilled staff. In general term, companies need to provide computer training and education on regular basis to enhance users experience and increase use levels of their B2E portals.
2. RJ has to improve portal characteristics such as navigation, information quality and news. In addition, search and help tools need to be in place. Moreover, adding local language (such as Arabic language here) is crucial and can increase portal usage especially by those who have difficulties with English language.
3. RJ has to increase the scope and availability of information and services. In fact, B2E portals have to be updated continuously and interactive services need to be embedded.
4. Finally, top management support is vital for increasing the usage levels of B2E portals. Moreover, support and helpdesk for web B2E portals have to be available and in real-time.

7. Conclusion

Business-to-Employee (B2E) became a crucial technology for successful organizations. However, the deployment of such systems doesn't guarantee the use and utilization of these investments. Organizations face many challenges in harvesting the benefits of this technology. This study developed and tested a theoretical model that includes a set of four factors; user characteristics, portal characteristics, usefulness and organization support.

The findings of this research revealed that age, salary and computer skills are key factors that affect the use of B2E Portal. Moreover, results showed the significant effect of portal characteristics, usefulness and organization support on using B2E Portal. Based on these research results training and education, help tools, local language support, information & services availability and Top management support is fundamental for increasing the use levels of B2E portals.

References

Al-Mudimigh, A. & Ullah, Z. (2010). Portal implementation issues. International Conference on Computer Modelling and Simulation. 12 (10), 142-146.

Chan, M & Chung, W (2002). A framework to develop an enterprise information portal for contract manufacturing. International Journal of Production Economics. 75 (1-2), 113-126.

Chan, E.H.W. and Liu, C (2007). Corporate portals as extranet support for the construction industry in Hong Kong and nearby regions of China. ITcon. 12, 180-191. Available from: http://www.itcon.org/data/works/att/2007_12.content.02702.pdf.

Daniel, E. and Ward, J. (2005). Enterprise Portals: Addressing the Organizational and Individual Perspectives of Information Systems, Proceedings of the 13th European Conference on Information Systems (ECIS 05), May 26-28, Regensburg, Germany.

Davison, A., Burgess, S., & Tatnall, A. (2003). Internet technologies and business. Melbourne, Australia: Data Publishing.

Detlor, B. (2000). The corporate portal as information infrastructure towards a framework for portal design. International Journal of Information Management. 20, 91-101.

Dunford, I. (2002). B2E: The future looks rosy. Retrieved April 2011 <http://www.computing.co.uk/ctg/analysis/1856833/b2e-future-looks-rosy>

Evers, F.J. (2009). An assessment of the contribution of an HR portal to HR processes: a case study within Isala klinieken. (Unpublished master thesis), University of Twente, Netherlands.

Fuangvut T., and Hasan H. (2005). Accommodating Inter-generational Stakeholders in a Campus Portal. CD Proceedings of EMCIS, Cairo.

Ibrahim, W. (2008). Factors affecting e-business adoption: study of Nigerian airline industry. (Unpublished master thesis), Ming Chuan University, Taiwan.

Lai, J. & Chen, W. (2009). Measuring e-business dependability: The employee perspective. The Journal of Systems and Software. 82 (09), 1046-1055.

Lin, S. (2005). How do enterprise information portals affect the performance of collaboration commerce?. (Unpublished master thesis), National cheng kung University, Japan.

McCausland, S. (2005). The Conditions Which Facilitate and Challenge Online Support Staff's Services for Web-Based College Courses: A Case Study. (Unpublished master thesis), University of Calgary, Alberta.

Mohammed, A.B. (2011). Jordan Software Industry: Investigating the Role of Human Capital'. International Journal of Business and Management. 6 (5), 217-223.

Mohammed A.B. and M. Alkubise, (2012). How Do Online Advertisements Affects Consumer Purchasing Intention: Empirical Evidence from a Developing Country. European Journal of Business and Management Journal. 4(7), 208-218.

Mohini, S., Waddel, D., & Rahim, M. (2008). Business to employee (b2e) e-business model: service to employees or organisational management. Wseas Transactions on Business and Economics. 5 (5), 270-279.

Mootheril,F. (2008). Achieving organizational effectiveness with b2e e-business model, (Unpublished master thesis), Royal Melbourne Institute of Technology, Melbourne: Australia.

Pedrinaci, C., Domingue, J., Brelage, C., van Lessen, T., Karastoyanova, D., Leymann, F. (2008). Semantic Business Process Management: Scaling up the management of business processes. ICSC08. International Conference on Semantic Computing, 546-553.

Rahim, M. & Singh, M. (2008). Understanding benefits and impediments of B2E e-business systems adoption: Experiences of two large Australian universities. Journal of Internet Commerce. 6(2), 3-17.

Rahim, M. (2006). Understanding adoption and impact of b2e e-business systems: lessons learned from the experience of an Australian university. ColECTeR Conference, December 8-9, Adelaide, Australia.

Rahim, M. (2007a) Factors Affecting Adoption of B2E E-Business Systems: A Case of the Australian Higher Education Industry, Pacific-Asia Conference on Information Systems, New Zealand, July 4-6, 92-105.

Rahim, M. (2007b). Identifying barriers to using business-to-employee (b2e) portals: Some Lessons Learned from an Australian University. Hawaii International Conference on System Sciences, Hawaii, USA.07 (40), 147a.

Rahim, M., Quaddus, M., & Singh, M. (2009). Empirical assessment of an instrument for operationalising factors affecting use of b2e portals. HICSS09. 42nd Hawaii International Conference on System Sciences, 1-11.

Revelle, W., Zinbarg, R. (2009). Coefficients Alpha, Beta, Omega, and the glb: Comments on Sijtsma. Psychometrika. 74(1), 145–154.

RJ (20011). RJ employee services site. Website. Royal Jordanian, Jordan, accessed 20 March 2011.<http://rjstaff.rj.com>.

Stein, A. Hawking, P. and Wyld, D. (2005). B2E SAP Portals: Employee Self-Service Case Study. In Lau, L. Managing business with SAP: planning, implementation and evaluation. USA: Idea Group Publishing.

Sugianto, L. & Tojib, D. (2006). Modeling user satisfaction with an employee portal, International Journal of Business and Information. 1(2), 239 – 255.

Sugianto, L., Rahim, M., Alahakoon, D. (2005). B2E portal adoption: A conceptual model. International Conference on Information and Automation. 37-42.

Tatnall, A. (2005). Portals, Portals Everywhere. In Tatnall, A. (Ed.), Web Portals: the New Gateways to Internet Information and Services, Hershey, PA, Idea Group Publishing, 1-14.

Teo, T., Ranganathan, C. (2004). Adopters and non-adopters of business-to-business electronic commerce in Singapore. Information & Management. 42, 89–102.

Timmers, P. (1998). Business Models for Electronic Markets. Journal on Electronic Markets. 8(2), 3-8.

Tojib, D. & Sugianto, L. (2006). Content validating the B2E portal user satisfaction instrument. ACIS International Conference on Computer and Information Science. 286-291.

Tojib, D. Sugianto, L. & Sendjaya, S (2008). User satisfaction with business to employee portals: conceptualization and scale development. European Journal of Information Systems. 8 (17), pp 649–667.

Travica, B (2008). Influence of information culture on adoption of a self-service system. Journal of Information, Information Technology, and Organizations. 3, 1-15.

Turban, E. (2010). Electronic commerce 2010, (6th ed). New Jersey: Pearson.

Urbach, N. Smolnik, S., & Riempp, G. (2009). A conceptual model for measuring the effectiveness of employee portals. AMCIS 2009 Proceedings. Paper 589

Urbach, N., Smolnik, S., & Riempp, G. (2010a). An empirical investigation of employee portal success. Journal of Strategic Information Systems. 19 (3), 184–206.

Urbach, N., Smolnik, S., & Riempp, G. (2010b). Industry Specificity of Employee Portal Success A Multi-Group Comparison, Americas Conference on Information Systems. 16 (10), 12-15.