B2E Portal Adoption: A Conceptual Model

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Abstract—The objective of this paper is to explore and analyse Business-to-Employee (B2E) portal solution as technology support tool for today’s strategic workforce. The paper outlines the driving factors and benefits of b2e portals from the industry perspective. The paper also provides literature survey findings on b2e portal use and adoption. The literature review forms the basis for the proposed b2e portal adoption model. The conceptual model has been developed employing the Technology – Organizational – Employee - Environmental framework. The factors that influence b2e portal adoption are identified and discussed in this paper.

I. INTRODUCTION

A distinct characteristic brought upon by the era of globalization is the free flow of information. Thus, the mainstream acceptance of the internet and its enabling technology comes as no surprise to all. Many organizations today deploy internet and mobile devices as they believe that workforce needs to be empowered with all the tools they need to be efficient and effective. Today, these tools comprise information and applications.

Everyone in the organization — from the fabricator on the assembly-line floor to the shipping, receiving, and sales staff, to the line managers and corporate executives — must have access to these tools, in context, to achieve their own objectives and accomplish the goals of the organization. Ultimately, the context is the key to meeting those requirements. Although today’s enterprise offers an ever-growing portfolio of applications and rich information sources, it has become increasingly difficult to navigate and ultimately find the right tool for the task at hand. It is common for executives and employees to spend inordinate amounts of time searching through a virtual jungle of data and applications to find the tool they need. That tool could be strategic information about a competitor to help close a multimillion-dollar deal. Or it might simply be the data needed to complete basic tasks and projects on time and within budget.

A solution that has emerged in the recent decade is the corporate portal or Business-to-Employee (B2E) portal. B2e portals have recently been emerged that use e-business approaches and internet technologies for delivering a comprehensive set of services to employees [1]. B2e portals provide not only general corporate information for employees but also some applications aimed at assisting employees in performing many of their tasks without the intervention from administrative staff [2]. In principle, corporate portal is similar to other internet portals, such as MyLycos (http://my.lycos.com) and MyYahoo (http://my.yahoo.com). These portals allow site visitors to customize their view of the resources available on the public internet, EIP provide a personalized window into the enterprise for individual users or classes of users, based on job functions or roles.

There are many success stories from the deployment of corporate portal. On the other hand, businesses that are not so successful in their deployment are also numerous. In Australia, the number of organizations implementing b2e portals is increasing [3]. However, very little research has been done about the adoption of B2e portals. This is not surprising because b2e portal is an emerging technology and academic literature had traditionally been slow to follow up the fast-moving trend of e-business in general [4]. Considering the enormous potential benefits that b2e portals can provide to organizations, in this paper we aim to identify those factors that significantly influence the decision of organizations to adopt b2e portals. The conceptual model presented in this paper is a result of preliminary study that is being pursued further. The research finding is hoped to enrich current literature on portal adoption and inform senior management of potential adopter organizations of the success factors when embracing such an initiative.

The remainder of this paper is organized as follows. The next section describes the taxonomy on different types of portals. This is followed by an overview of the b2e portal market from the industry perspective, including its vendors, driving factors and benefits that can be gained by deploying b2e portal in organizations. Then, the paper introduces the conceptual framework based on existing literature review on b2e portal. Last but not least, it describes the on-going research activity and future research.

II. PORTAL TAXONOMY

In order to have a complete understanding on the portal
technologies, it is useful to evaluate the different categories of portals. The difference in categorizing the portals allows us to appreciate the fundamental aspects of the portals.

A. Target Audience

Based on the Target Audience, portals can be classified as Horizontal Portal and Vertical Portal. The former is also known as Mega Web Portal, Public Portal or Internet Portal. Horizontal portal caters for general audience. In contrast, Vertical Portal (also known as Vortal) caters for more specific audience with particular areas of interests, such as steel industry and automobiles.

B. Purpose

Based on the purpose of the deployment of the portals, they can be classified as Corporate portal, Marketplace portal and Personal portal. Corporate portal (also known as Enterprise Information Portal or EIP) is utilized by organizations as a means to disseminate information and assist staff with decision making process. E-commerce portal, may it be Business-to-Business (B2B) or Business-to-Customer (B2C), is used to facilitate organizations with organizing business transactions. Personal portal is used to support personal applications, often in the form of gadgets, such as mobile phones and PDAs.

C. Scope


D. Technology

Specifically on corporate portals, Eckerson in [6] introduced four generations of portals defined by their characteristics. The first generation is the Referential portal featuring search engine and hierarchical function. The second generation is the Personalized portal which has the ability to personalize views based on users’ preference and specification. The third generation is the Interactive type in which the portal is embedded with applications to support work productivity. The fourth generation is the Specialized portal that hosts applications accessible based on the role of the employee within the organization.

E. Functionality

Still on corporate portals, Dias [7] segmented portals into ten categories: decision support portal, information portal, business portal, decision processing portal, collaborative processing portal, collaborative portal, expertise portal, decision support and collaborative processing portal, knowledge portal and EIP.

III. B2E Portal Market

The market for corporate portal has been increasing over the past several years. Portal software market size is projected to have an increasing growth rate: 24% growth rate through 2006 forecasted in [8]. Some past research into the market indicates growth to 14.8 Billion in 2002, competing with the growth rates of other fast growing enterprise application markets including CRM and supply chain management [9], utilised by 60% of Fortune 500 companies [8], $10 billion by 2003-2004 [10], $7 billion by 2005 [11].

The following is a list of references to case studies on the use of B2E portal. The articles have been categorised according to the vendors. They described problem background, deployed solution, some results and benefits gained by the companies:

- Plumtree: Boeing Company in [12]
- CITRIX Systems: Radisson Edwardian Hotels in [13]
- Corechange: Philips Electronics in [14], BroadVision in [14], UnumProvident in [15]
- Hummingbird in [16]: Aird & Berlis LLP, Dickstein Shapiro
- Microsoft Share Point Portal Server: Nucor Corporation in [17].
- Autonomy Inc. in [18]: Barclays Bank, Shell International
- Viador Inc in [18]: Charles Schwab, Cisco Systems
- Glyphica in [18]: First American Financial Company, Wells Fargo Bank
- Brio Technology in [18]: State Uni. of New York
- MineShare Inc. in [18]: Union Bank of California.

Plumtree software [19] documented its findings on the driving need for b2e portal in the research report as shown in Figure 1. The promising benefits gained from the utilization of the portal include [20]:

- Streamlined information access - to improve communications by aggregating information and make relevant sections accessible based on users’ roles. This reduces publishing, distributing and searching time of information.
- Reduced Customer Support – EIP supports “self service model”. Employees are encouraged to find out about they need to perform a particular task, as well as in relation to their personal needs.
- Business Intelligence resulting in improved decision-making process – the business intelligence component allows dynamic report generation. Further, the portal can compile a log of frequently retrieved information. This results in efficient web-based customer service.
- Enhanced Collaboration resulting in establishment of intellectual capital – employees can identify colleagues working in similar areas. Access to
expertise and intellectual capital, such as patents, methodologies and data warehouse can be centralized and stored securely. Employees can share such resources, collaborate in their work and avoid duplicate efforts.

IV. DEVELOPMENT OF THE CONCEPTUAL MODEL

A. Background

Despite result of software-buying survey indicating portal to be at the top of the list, data shows that portal projects struggle to find a reason to exist [21]. In her Forrester research report, Ramos also pointed the main cause for this struggle to be weak alignment of the deployment project with business goals, soft budget justification, and too many choices lacking compatibility. In addition, she suggested that companies should not take the IT-centric portal mindset, but rather, tie portals to specific business processes, and recognize the role portals will play in ushering in the next generation of packaged composite applications.

Departing from the intention to make portal investment a worthwhile initiative, this preliminary research is aimed at identifying factors to ensure portal deployment is a successful project. Literature review on b2e portal has been conducted and the research finding serves as a conceptual model for further investigation.

B. Theoretical Framework

The framework that we used in developing the conceptual model is based on the Technology-Organization-Environment (TOE) model developed by Tornatzky & Fleischer [22] to study adoption of general technological innovations.

The TOE framework outlines that there are three aspects in the context of an entity that are responsible for influencing the process of adoption and implementation of technological innovations. They are technological context, organizational context, and environmental context. The scope of technological context extends to all available technologies; internally within the organization and externally accessible at the market. Organizational context is typically defined in terms of several descriptive measures, such as firm size and scope; the centralization, formalization, and complexity of its managerial structure; the quality of its human resource; and the amount of slack resources available internally.

Environmental context includes the relevant domains in which the organization interacts with to conduct its business, such as the industry, competitors, access to resources supplied by others, and dealings with government [22, pp.152-154]. Extensive examinations of the framework for different types of technology innovations and its application in different domains (including internet) by Swanson [23], Iacovou et al. [24], Chau & Tam [25], Thong [26], Kuan & Chau [27], and Zhu, Kramer & Xu [28]. Zhu, Kramer & Xu [28] also reported that this framework is consistent with Rogers’ theory of innovation diffusion in organizations [29], and that the TOE framework has consistent empirical support. Thus, this framework can be used for studying the adoption of b2e portal because b2e portal is enabled by the net technology.

In addition to the TOE contexts, we have introduced the

Fig. 1. Driving Factors for B2E Portal Application (Source: Plumtree Software [19])
fourth aspect to be the Employee context. This is necessary considering the technology innovation is catered specifically for the employees within the organization. The conceptualization of the b2e portal adoption model using this Technology-Organizational-Environment-Employee (TOEE) framework is discussed in detail in the next section.

C. Influencing Factors in B2E Portal Adoption

A proposed conceptual model for b2e adoption is shown in Fig. 2. This model is based on the TOEE framework discussed above. A number of factors that significantly influence the decision of organizations to adopt b2e portals have been listed in Table I.

In this study, the scope of Technological Innovation context encompasses the perceived impact upon the adoption of the technology innovation, including perceived issues that will be arising from the adoption. Perceived benefits have been frequently found in the portal literature – hence included as one of the factors influencing the decision to adopt b2e portal. Aneja, et. al [30] has identified increased employee productivity to be the main benefit of a corporate portal resulting from improvements in information reorganization allowing quick access of information, as well as personalized interface on the portal. Using case study approach, Hawking, et. al. [31] concluded that the use of b2e portal brought upon a number of benefits for the companies and the employees of the organization by simplifying and streamlining many of HR

![Fig. 2. Conceptual Model for B2E portal adoption.](image-url)
processes. Employees are empowered through the use of the portal system that features multiple value propositions, consistent portal GUIs, real-time dynamic information delivery and a comprehensive collaborative work environment [32].

While increased in productivity has also been identified by Meuse [33], he also proposed other benefits, such as facilitating communication and collaboration in the company. The literature also proposed perceived complexity of the portal system to be an influencing factor in the adoption process. In particular, Brosche [34] emphasized that personalization and user friendliness should be closely linked together and aligned with user’s needs. The portal should be built in a simplistic and consistent fashion, so that it is easy to operate, practical to use and predictable.

Hazra [35] asserted two important influencing factors in the technology context that lead to success in portal initiatives: technology (or product) selection and delivery planning. Further, he elaborated that the most pertinent factors in selecting the products are compatibility, interoperability and support for frameworks, patterns and connectivity, as well as pricing and licensing fees. As an innovative move, b2e solution is a promising solution for empowering today’s workforce. It offers to deliver numerous benefits to the organization with minimal risks and has a relatively low impact compared to other e-business solutions [32].

Both the adoption and the portal literatures reported that senior management should provide support. This includes providing long-term resources and budget [36], [37]. When developing new applications and corresponding new processes and management policies, it is also important for the portal project to receive senior management support [36]. In situation when senior management commitment is lacking, it is quite likely that the portal will become underutilized and / or fail because its purpose will not be aligned with the organization’s needs [37].

Within the Employee context, we proposed two factors that influence successful b2e portal adoption: perceived IT knowledge of employees and perceived willingness of employees. We purposely extracted this context out of the Organizational context as we believe that the role of employees in the b2e portal adoption is dominant and can be regarded as a separate construct.

Potential implementation problems are change management and passwords. This is confirmed by Hawking et. al. in [31] with their research findings. Employees who are inexperienced with computer will be reluctant to use the portal. Even staff with computing experience still took a while to accept the new functionality. Thus, it is important for the portal to be browser-based in order to gain acceptance for use by employees. Passwords became a problem as the system required employees to change their passwords regularly and there are many instances where employees forgot their passwords and required password reset. In summary, it is important for every member of the organization to share the same view of the portal. For that to happen, employee’s views and behavior must change [37].

Lastly, within the Environmental context, we proposed two factors that influence successful b2e portal adoption: perceived pressure on employee and that arising from portal vendors. These pressures mainly emerge from competitive attitudes: among the employees and among the portal vendors. Porter and Millar [38] studied the rationale behind competitive pressure as an IS adoption driver. In our research, we proposed this relationship to be extended to the b2e portal domain.

V. FUTURE WORK

Two important issues in the adoption and use of b2e portal in organizations can be summarized as follows. Firstly, organizations of b2e portal potential adopter must identify the need and justification for the applicability and use of the portal. They must have an accurate perspective for b2e portal deployment based on sound business principles. Secondly, it is crucial for organizations to be able to identify performance measures that will allow them to assess the effectiveness of the portal adoption.

The present study addresses the first issue through: initially - conceptual development of decision model of b2e portal adoption; and later – investigation and analysis of the influencing factors using case study approach. Research agenda includes collecting data through semi-structured interviews on selected case organizations. Australian education industry is chosen because B2e portals are reported to be introduced by some Australian leading universities [39]. Data obtained from interviews will be analysed using pattern matching technique Yin [40].

VI. CONCLUSION

This paper has introduced a conceptual model on the decision to adopt b2e portal in organizations. The model has been developed based on existing literature on the topic. It identifies a number of factors that influence management decision to adopt b2e portal. These factors have been classified under four contexts: organizational context, employee context, technological innovation context and environmental context. The model at its current form serves as a useful map so that this pre-theoretical stage can be carried on further by exploring and testing relationships among the factors. Ultimately, the research finding can assist senior management of potential adopter in evaluating the organization for its readiness to ensure that the deployment of the portal is a worthwhile investment.
REFERENCES


