TECHNOLOGICAL INNOVATION AND THE NON-ADOPTION OF A B-B PORTAL

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ABSTRACT

After receiving a Government grant under an 'early movers' scheme, the Western Region Economic Development Organisation in Melbourne, Australia, conceived and developed a business-to-business portal for use by small to medium enterprises in the region. This innovative project was to create a horizontal portal – Bizewest, which would enable the whole range of SMEs in Melbourne's west to engage in an increased number of e-commerce transactions with each other. This paper describes the development of the Bizewest portal and the difficulty its proponents had in persuading regional SMEs to change their business processes to make best use of on-line trading with each other. The research was socio-technical in nature and was based on considering this innovation through the lens of innovation translation, informed by actor-network theory. Although Bizewest ceased operations in June 2003, the portal project as a whole must be considered a success as it produced substantial benefits.

Keywords: Portal, small to medium enterprise, e-commerce, innovation, actor-network theory.

1. INTRODUCTION

The Western Region of Melbourne contains around 20,000 businesses and is regarded as the manufacturing, transport and distribution hub of south-eastern Australia [1]. Traditionally, this region had encompassed much of the industry in metropolitan Melbourne. The Western Region Economic Development Organisation (WREDO) is sponsored by the six municipalities that make up the Western region of Melbourne. It is a not-for-profit organisation and is also supported by major business enterprises operating in the western suburbs. WREDO is charged with fostering economic growth and encouraging investment within the Western region of Melbourne, and is involved in a variety of initiatives.

The paper describes the creation of the Bizewest Business-to-Business (B-B) Portal, and WREDO's difficulty in persuading local businesses to change their ways sufficiently to fully utilise the portal. It begins with WREDO applying for a Government grant, without much prior discussion on its purpose or value, to set up the portal: it just seemed like a good opportunity. Next we discuss the development problems WREDO experienced in setting up the portal, and finally WREDO's attempts to get local SMEs to make use of the portal.

2. THE BIRTH OF A REGIONAL BUSINESS-TO-BUSINESS PORTAL

In February 2000 the Victorian State Treasurer announced a new government initiative known as the Victorian E-commerce Early Movers Scheme (VEEM). The scheme was designed to provide assistance to local government to allow it to encourage small to medium enterprises (SME)

operating within their boundaries to use e-commerce for the purpose of expanding business and to make these trading entities more competitive. A cornerstone of the scheme was the acknowledgement that insufficient numbers of small to medium organisations were using new technology to build business and to enhance competitiveness. This was of concern because international experience with the information economy indicated that significant benefits fall to early movers into e-commerce [2], and the Government decided to empower businesses by providing opportunities to reap the benefits of being online early.

Assistance under the VEEM scheme could cover up to 75% of all costs associated with projects, and grants were to be made on a case by case basis. Councils were able to put in joint submissions in order to obtain a higher level of funding for a project that crossed municipal boundaries. Funding could involve capital, equipment costs and labour implementation costs but was not to include ongoing maintenance or operating costs of the project. Projects needed to demonstrate that they would provide significant leverage to indirectly improve local economies, and that they would reach a level of self-sustainability within the period of their business plan as no funding was to be provided for maintenance purposes [3].

WREDO thought that this grant was worth pursuing, and after some internal discussions it decided to apply for funding for the 'Western Melbourne Business-to-Business Portal'. Due to time constraints in applying for the grant there was little time for discussion with local SMEs or others outside WREDO. In its submission WREDO argued that this B-B Portal was to provide a regional approach to enabling business in Melbourne's west to actively participate in the information economy. It was to be a true B-B portal with trading facilities and a payments gateway linked with a major bank. This was to be exclusively regional, and only businesses in Melbourne's Western Region would be permitted to set up trading on the portal. Specifically, the project was to:

- Create a web portal for business and local government in Melbourne's West to provide a mechanism for businesses to engage in business-to-business e-commerce and to encourage business-to-local-government transactions in the local area.
- Initially target 50 businesses from each of the six western region municipalities making up a total of 300 businesses to participate in the project. These businesses were to come primarily from the key and emerging industries in the region in the transport and distribution, manufacturing and services sectors.
- Develop a regional web-based registry for the businesses involved. This was to include a web site for each business and the provision of a range of e-commerce enabling tools that would facilitate business-to-business transactions taking place.
- Increase awareness and participation with emerging technologies. The project aimed at encouraging SMEs in Melbourne's west to be more aggressive in their uptake of e-commerce opportunities. It also aimed at working with these SMEs and operating in growth industry sectors in the region to find and exploit e-commerce solutions.
- Create an ongoing program of regional seminars and training, both informal and formal, for the pilot businesses involved, and for new entrants. Training was to focus on effective trading and exporting opportunities in the online environment and was to be provided through existing programs available in the western region.
- Focus on involving the youth of the area in the promotion of new technologies for business. The project team was to work with secondary schools in the region to involve senior high school students studying Information Technology or Engineering and Design, in the development of e-business solutions for businesses in the region.

In June 2000 it was announced that WREDO's submission for a B-B portal had been successful and that Government funding of $247,400 for the project was to be provided for a period of twelve months on condition that WREDO provide an additional amount equivalent to one third of this amount from its own funds. WREDO then allocated the further $88,000 towards the project making a total project budget of $335,400 for the year.

3. BUILDING AND DEVELOPING THE PORTAL

After receiving a grant for what it thought to be a large amount of money, WREDO originally intended developing the portal, possibly with the assistance of a software company, and providing training to locals SMEs itself [4], but it did not really anticipate the size or complexity of the task it was undertaking. WREDO issued specifications to both Telstra Australia and Cable and Wireless Optus for hosting the portal, pointing out that they were looking at small business sites of around 10Mb. They requested a price for hosting these sites, but the telecommunications companies did not appear to understand small business requirements, and what WREDO got back had nothing to do with the specifications and little to do with businesses of this size. It was clear that more work would also have to be done to identify a software company to assist with building the portal.

Negotiations continued and an arrangement was finally made with Optus to host the portals and to find a software company to build it. At the WREDO networking breakfast in November 2000 it was formally announced that the Bizewest Steering Committee would work with Cable and Wireless Optus and Infosentials Limited on the development of the portal. Unfortunately, in December 2000 Infosentials was placed in voluntary administration, forcing WREDO to terminate that company's involvement. Cable and Wireless Optus then sought an alternative provider of services for building the portal and final agreement was reached in January 2001 with Optus for the supply of services to build and host the Bizewest portal. Building of the portal was subcontracted by Optus to a company called Batteries Included, who used a product called ReadyHub to construct the portal infrastructure. The development of the portal infrastructure and services commenced in late January 2001 with initial testing beginning in late April of the same year. Bizewest (www.bizewest.com.au) became operational on 22nd May 2001, but without a payment gateway. This gateway did not become available until February 2003, after 21 months of further development.

WREDO soon discovered that what it was doing was anything but straightforward and that little precedent existed, at the time, for a regional horizontal B-B portal of this type. They also discovered that the money they had available did not go as far as they had thought it might. Some of the difficulties they experienced in building the portal have subsequently been discussed by other researchers [5-7]. Further, to add to these difficulties, some internal issues associated with Batteries Included meant that this company eventually split into several bits. The part that built the portal became known as Kitchen Sink Software, and assumed responsibility for the operation and maintenance of the Bizewest site.

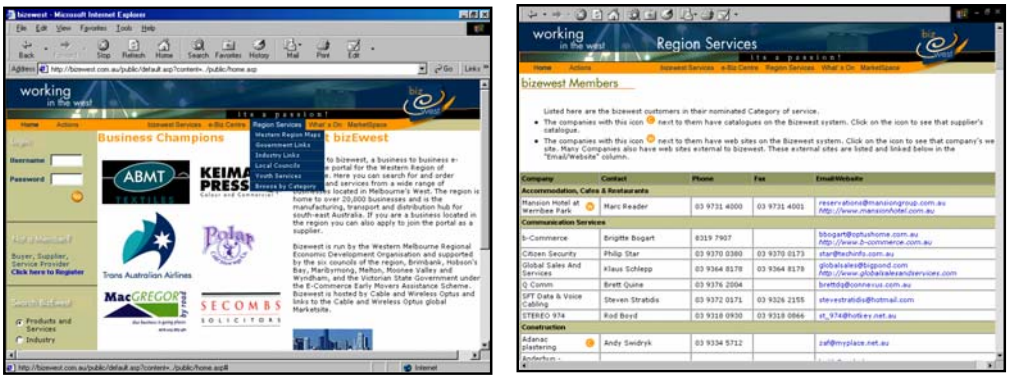

Figure 1: The Bizewest Portal.

Once the portal was operational, getting local business online was the next step and this involved two parts: convincing regional SMEs to adopt the portal, and providing them with suitable web sites to link to the portal. Business breakfasts, workshops, lots of publicity, and no initial costs to the business who adopted were part of the considerable effort made by WREDO to convince SMEs that getting onto the portal would be a good idea. To assist businesses to create web pages to link to the Bizewest portal, WREDO held two Web-A-Thons at local shopping centres. At

these sessions, year 11 students from local secondary schools assisted local organisations to create their web pages. WREDO also arranged for some of these students to consult with local businesses on a one-to-one basis on their 'work experience' days to set up their web sites. This had the advantage to these businesses of being a very cheaply created web site – the cost of using a 'work experience' student is only $5 per day. The simple site was, however, one that would serve their initial needs very well. This arrangement continued for some time.

4. RESEARCH METHODOLOGY – INNOVATION TRANSLATION

While many approaches to research in technological areas such as this treat the social and the technical in entirely different ways, actor-network theory (ANT) proposes instead a socio-technical account in which neither social nor technical positions are privileged. ANT deals with the social-technical divide by denying that purely technical or purely social relations are possible, and considers the world to be full of hybrid entities [8] containing both human and non-human elements. Actor-network theory developed around problems associated with attempts to handle socio-technical 'imbroglios' [8] like electric cars [9], supersonic aircraft [10], and a new railway system in Paris [11] by regarding the world as heterogeneous [12]. The utilisation of heterogeneous entities [13] then avoids questions of: 'is it social?' or 'is it technical?' as missing the point, which should be: "is this association stronger or weaker than that one?" [14 :27]. ANT offers this notion of heterogeneity to describe projects such as the Portal Project discussed in this paper in which a local semi-government organisation has engaged an Internet service provider (ISP) and a computer software company to build a B-B portal for use by SMEs within a regional area. The project involves not just these entities, but also non-human entities such as computers, modems, telephone lines, Web development tools, and human entities including local business proprietors from small and medium-sized enterprises, customers, programmers, development managers, and local government staff.

Adoption of the Bizewest portal was seen as an innovation, and examined accordingly. Information systems researchers using an actor-network approach in this investigation concentrate on issues of network formation, investigating the human and non-human actors and the alliances and networks they build up [15]. They concentrate on the negotiations that allow the network to be configured by the enrolment of both human and non-human allies, and consider any supposed characteristics of the technology only as network effects resulting from association. An actor is seen not just as a 'point object' but rather as an association of heterogeneous elements, themselves constituting a network. Each actor is thus itself also a simplified network [16]. In actor-network theory interactions and associations between actors and networks are the important thing, and actors are seen only as the sum of their interactions with other actors and networks. Innovation translation, from actor-network theory, offers useful insights on how innovation occurs and the remainder of this paper will make use of this approach.

A simplistic view of the e-commerce Portal would have it that businesses make their adoption decisions primarily because of the Portal's characteristics, and would miss other influences due to inter-business interactions and the backgrounds of the people involved. This is the type of approach that would be used if framing the research through innovation diffusion [17]. Using an essentialist approach like this to the research, the researcher may begin by outlining all the characteristics of e-commerce portals and all the advantages and problems associated with their use, and then go on to suggest that the adoption, or rejection, of this technology by the local businesses was due largely to these characteristics. While this is likely to be partially true, it is unlikely to provide a complete explanation.

In this case the actor-network research began by identifying some of the important actors, starting with the Portal project manager. The interview with the project manager revealed why the project was instigated, and identified some of the other actors. One line of inquiry resulting from the interview with the project manager was to approach the Portal software designer and programmers. It was determined that another set of actors consisted of the proprietors of the local businesses themselves, and the project manager suggested some 'business champions' to

interview first to find out why they had adopted the Portal and what had influenced them in doing so. Some of these business people then pointed to the influence exerted by the computer hardware or software as a significant factor, so identifying some non-human actors. From this point on the key was to follow the actors, both human and non-human, searching out interactions, negotiations, alliances and networks. Negotiations between actors needed to be carefully investigated. Apart from the obvious human to human kind of negotiation, there was also human to non-human interactions such as the business people trying to work out how the portal operates, and how to adapt this technology to their own business purposes. In ANT terms they 'negotiated' with the portal software to see what it could do for them, and it 'negotiated' with them to convince them to adopt its way of doing business. (Obviously this is not to suggest any direct agency on the part of the software itself, and is just ANT's way of describing how the human software designers imparted properties to the software that may or may not have made it useful to the SMEs.) The process of adopting and implementing the portal could now be seen as the complex set of interactions that it was, and not just the inevitable result of the innate characteristics of this technology as innovation diffusion theory would suggest.

5. CONVINCING REGIONAL SME TO ADOPT THE PORTAL

For the project to be successful the Bizewest portal needed to be seen by the proprietors of the SMEs as a necessary means of undertaking e-commerce and business-to-business transactions. They needed to be convinced that this technology was more worthwhile and offered them better business prospects than the approaches, such as post or fax, they had previously used. In actor-network terms the portal needed to set up a problematisation [18] of B-B trading that brought out the benefits of using a portal for this purpose. There also needed to be an interessement [18] to interest and convince these SMEs to change from their old business culture and adopt the portal. It was not enough for those promoting the portal to eloquently espouse its benefits: the SMEs would also have to give up at least some of their old methods of business-to-business transactions. After enrolment of these businesses, the portal could be judged to be truly successful when SME proprietors begin advocating its advantages to each other [19]. In actor-network theory Callon [18] calls this process 'mobilisation'.

Interviews with various stakeholders involved in the project, including the project manager, software designers and programmers, and some businesses that were using the portal were conducted in late 2001 and early 2002. One particularly important group were the five companies designated by WREDO as 'business champions' for this project. Some of the issues considered important by several of these business champions are discussed below. One of the business champions was a medium-sized Melbourne company, with about 100 employees, that stores frozen food and transports it to supermarkets and other locations around the country. A major reason that this company adopted the portal was the hope that it would provide a better opportunity to deal with people in the local region [20]. The general manager indicated that he thought it was going to provide benefits for everybody and not just his company. This was important to him. He could see use of the portal changing his business by enabling it to use people in the local region, and that "working together for the benefit of everybody" would be advantageous for the region [21].

A firm of solicitors had also just started making use of the portal and were trying to work out the best ways to utilise it to advantage. Their primary goal was to use the portal to increase their visibility. "What we want is for people to discover something that they may not have recognised and that is that there is a top quality legal service in the Western Region that they can come to for most of their legal services." They had few specific expectations of the portal, but hoped later to allow businesses to register interest and gain some access to their legal services using the portal [22].

Another business champion was a small printer with 15 employees that had just begun using the portal. They saw the portal as having "fantastic possibilities" but there were currently some problems: "I suppose that people who are on the portal see us and they contact us, but there is

something wrong with it at the moment. The problem is that they can't actually ring a quote with us. It has to be fixed up, but once it is fixed it will be good." [23].

Finally, a textile company just outside the metropolitan area were using the portal mainly for promoting their image but did intend to move to B-B operations in the future. "I think that it will be inevitable, but not next month, it's still a year or two off. I'm uncertain of what the plan is at this point; there is no plan." One of the problems that this small business faced was lack of computing expertise. This is a common problem among small businesses [24]. Typically there are one or two people who know something about computers, but do not have much spare time to plan and implement these systems. "I think the way that we will go is like many businesses; we will dip our toe in the water and do some basic ordering: stationery that's a common one. We will choose to start the ball rolling, get our head around a few of the practical issues of that, and then on to bigger things." [25]

In summary, the interviews showed that most businesses adopting the Portal did so because it seemed to them to be 'a good idea' rather than because they had any clear idea of its benefits. Few had looked objectively at the characteristics of portal technology or business-to-business e-commerce. Common reason for adoption included: "If other businesses adopt it and we don't we will be left behind." "All the talk is about e-commerce and how it is the way of the future." "It doesn't look too hard to make it work and we have little to lose." and "My kids tell me that everyone will be on the Internet soon and we had better be too." [19].

In each case, these reasons were not closely related to the characteristics of the technology itself as the theory of innovation diffusion [17] would suggest. An innovation diffusion approach to investigating these potential adoptions would have looked for explanations for the uptake, or lack of uptake, primarily in the characteristics and properties of the technology itself. It would not have regarded as particularly important the human and non-human interactions described here. Innovation translation, from actor-network theory, would seem to offer a much better explanation in its investigation of the series of interactions, some human to human and some human to non-human that led to adoption of the portal by each of these organizations. In our view, the decision to adopt, or not to adopt, has more to do with the interactions and associations of both human and non-human actors involved in the project rather with characteristics of the technology itself.

6. THE DEMISE AND TRANSFORMATION OF THE PORTAL

Activity on the Bizewest site was always extremely disappointing. The proportion of sessions that were one page hits and/or lasted for one minute or less seems to indicate that a large proportion of sessions were accidental or unintentional.

Month	Sessions	One Minute Sessions	One Page Sessions
September 2002	2208	68.6%	86.2%
October 2002	3672	77.1%	90.0%
November 2002	2848	74.6%	88.0%
December 2002	2766	71.7%	85.9%
January 2003	2706	82.8%	90.2%
February 2003	2804	86.7%	89.6%
March 2003	2934	88.7%	90.5%
April 2003	2254	87.7%	88.7%
May 2003	2865	86.4%	86.7%
June 2003	2200	84.0%	86.7%
July 2003	78	75.6%	85.9%

Table 1: Usage of the Bizewest Portal

Although a considerable number of businesses had taken up the offer and joined with Bizewest, many baulked when it was suggested that in future they would need to pay an annual fee to cover the costs of Kitchen Sink Software hosting the portal. The problem was that the grant to set up the

portal provided no funds for on-going maintenance and enhancement, and Bizewest was running out of money.

In early 2003 the WREDO Board began considering options for the Bizewest Portal. It was clear that WREDO could not continue to spend money on the hosting and maintenance of the portal at the rate it had been doing. It was also clear that insufficient local business would be prepared to pay for the privilege of using the portal. The Bizewest site was intended primarily for business-to-business trading with an internal regional focus. To use the portal you had to be a business in Melbourne's West. The SMEs in this region, however, seemed to be resistant to embracing their new toy. Even though the portal infrastructure was in place there was still a great deal of work to be done to encourage business to use this tool. In June 2003 operation of the Bizewest portal ceased. WREDO, however, also operated another website: www.melbwest.com.au and some parts of Bizewest would live on in this portal. The MelbWest site has recently been redesigned with an outward look to market the region and WREDO believes that it has potential to be further developed as a broad regional portal with sections on tourism, learning and other matters.

7. CONCLUSION

The attempt to establish and maintain an inward-focused business-to-business e-commerce portal to allow small and medium sized businesses in the Western Region of Melbourne to take advantage of emerging technologies was a brave move. To attempt to change the culture of 300 businesses was, however, a monumental task and Bizewest was probably doomed to failure right from the outset. Because WREDO has a good, solid reputation in the West a lot of the businesses became involved because WREDO convinced them that this was the way to go. They were not, however, willing to contribute money when the Portal floundered financially as they could not see any immediate tangible benefits.

The training needed to make these businesses appreciate the long term benefits of e-commerce could not be had because of time and resource constraints. Also in hindsight the establishment of a payment gateway probably was a mistake. The Bizewest site, at least for a period, could have remained a catalogue only and resulted in a good deal less anguish to its managers. In hindsight it would probably have been better to scale down the size and scope of the Portal and to treat it as a pilot project. WREDO was paying so much less for the maintenance of its main MelbWest site (www.melbwest.com.au) compared to the cost of Bizewest that it would seem that this excessive cost ultimately precipitated the collapse of Bizewest in its original form. Despite its final demise however, the emergence and development of the Bizewest portal left a legacy of useful benefits and its development costs were certainly not wasted.

As a postscript to the demise of the Bizewest portal, in January 2005 WREDO itself unfortunately also ceased operations and closed down due to lack of on-going funds to fulfill its mission.

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