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BRIDGING THE DIGITAL DIVIDE WITH COMMUNITY PORTAL REGIONAL E-MARKETPLACES FOR SMEs: THE NEED FOR AN INTEGRATED APPROACH

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Abstract

In the late 1990s it was perceived that a digital divide existed in Australia between regional/rural and metropolitan areas and between small and medium enterprises (SMEs) and their larger counterparts. In response, a number of regional community portals and e-marketplaces for SMEs were funded at the federal, state and local government levels. These initiatives were driven by the hope that they would lead to increased online activity and eventually promote regional economic development. A number of these portals and regional e-marketplaces (REMs) are no longer in existence. Of those that remain, some continue to battle with inadequate funding while trying to recover from the 'build it and they will come' philosophy behind them. This paper reports on two cases of government-funded community portal regional e-marketplaces in Western Australia. They illustrate that such initiatives should be viewed as only one piece of an integrated puzzle of policies designed to narrow the digital divide. They need to be accompanied by simultaneous efforts to build the e-competencies of targeted participants and ensure the adequacy of technological infrastructure. These portals and REMs also need to be grounded on sound theoretical assumptions about the social, technological and economic issues relating to their development and management.

Keywords

Digital Divide, Community Portal Regional e-Marketplaces, SMEs, e-Commerce

INTRODUCTION

In the hubris surrounding the dot.com boom and the spread of the Internet, there was a fear in the late 1990s that a digital divide was developing in Australia. This divide was perceived to be between rural/regional and metropolitan Australia (Curtin, 2001) and between small and medium enterprises (SMEs) and their larger counterparts (Small Enterprise Telecommunications Limited (Setel), 2001). A range of government funding opportunities was made available to address the problem (see for example the Information Technology Online (ITOL) Program of the Department of Communications, Information Technology and the Arts at http://www.dcita.gov.au/ie/about/previous_itol_rounds). A number of these programs were 'bottom-up', developed and managed by non-profit and community groups and local-government authorities, reflecting the Australian Government's belief that these groups were best placed to know "where the gaps are, where the expertise lies and where possible partnerships might be forged" (Williams, 2004).

Community/local consortium-run and owned web portals were one type of local initiative that received government funding. These portals were established to bring together regional stakeholders online. Regional e-Marketplaces (REMs) within the portals were designed to accelerate business to business, consumer to business and business to local government e-commerce by encouraging high regional use of the portals. These portals emulated the ancient Agora type REM, the model upon which the Electronic Mall Bodensee, Europe's first REM, was based (Zimmerman & Schmid, 1998). Some portals catered exclusively for business to business relationships with an emphasis on SME businesses (Fisher & Craig, 2004; Wilkins, Swatman, & Castleman, 2003).

Despite the involvement of local stakeholders in these initiatives, some REMS/portals have failed and were discontinued (Gengatharen, Standing, & Burn, 2004), while others struggle to achieve the levels of activity first envisaged. There are a number of reasons for the failure and the shortfall in anticipated online activity. Some of the failures were horizontal stand-alone B2B (business-to-business) REMs and portals that could not achieve a critical mass of transactions or participants to make them viable or

sustainable in the short term (Fisher & Craig, 2004; Hayes, 2004, June 1). However, the owners of these portals and REMs claim that the projects at least gave SMEs the opportunity to learn first hand about online trading (Hayes, 2004, June 1; Western Melbourne Regional Economic Development Organisation (WREDO), 2003)

In an effort to determine if indeed REMs within community portals are suitable instruments to bridge the digital divide for SMEs and to understand the issues involved in developing and managing them, this paper examines two government-funded community portal horizontal REMs in Western Australia. Both portals were conceived in 1999 but while the one in regional WA continues to operate, the portal in suburban WA failed and was discontinued in late 2004. We compare and contrast the development and management of the REMs using theoretical underpinnings from the literature on e-marketplaces and SME adoption of IT (Information technology)/E-commerce/e-marketplace trading. Our analysis shows that government-supported horizontal REMs created to encourage SME participation in e-commerce should not be viewed as commercially viable models which will be self-sustainable in the short-term. Instead, they should be considered as only part of a suite of integrated programs implemented simultaneously to ensure that SMEs have the necessary infrastructure, targeted training and advice to enable them to compete effectively in the online environment.

This paper progresses as follows: we first look at the literature on e-marketplaces and SME uptake of IT/E-commerce/e-marketplace trading to determine relevant theoretical constructs in these areas that can apply to community-portal REMs. We then provide details of the two cases and the methodology used in our study. The data is then analysed in the light of the preceding theoretical areas and conclusions are made about the role that REMs can play in increasing e-commerce activity among SMEs.

THEORETICAL PERSPECTIVES USED IN THIS STUDY

E-Marketplaces

The critical success factors for eMarketplaces identified in both the business and academic literature are critical mass or liquidity (Brunn, Jensen, & Skovgaard, 2002; Raisch, 2001), strategic partnering in B2B marketplaces (Lenz, Zimmerman, & Heitman, 2002), identification and recruitment of key players to create a bandwagon effect (Grewal, Comer, & Mehta, 2001), provision of value-added services (Ordanini, 2003), perceived relative advantage (Koch, 2004), provision of revenue streams, trust and privacy.

The e-marketplace concept is still evolving and a few sources in the literature on eMarketplaces can be used to advise some areas of REM development and management. Raish (2001) describes e-marketplace activity as evolving in phases from early matchmaking models to inter-connected value trust networks. Some researchers view eMarketplaces through the lens of interorganizational relationships or inter-firm alliances (Koch, 2002) and communities of practice (Braun, 2002; Brown & Lockett, 2001). Grewal et al (2001) used constructs from institutional theory (legitimacy as a motivation) and resource-based theory (ability or competences) to examine organizational participation in B2B eMarketplaces. Kurnia & Johnston (2000) used factor and process approaches to study the adoption of EDI (Electronic Data Interchange) in the Australian grocery industry. Their model considered external factors (e.g. demand, competition), the nature of the technology (e.g. relative advantage, compatibility), capability of the organization (top management commitment, IT infrastructure) and the supply chain or industry structures (relationships in terms of power, economics, etc.).

Khalifa, Banerjee & Ma (2003) extended the Kambil & Van Heck (1998) model of trade processes (search, valuation, logistics, payments and settlements, authentication) and trade context processes (product representation, legitimation, influence and dispute resolution) in the successful deployment of e-markets. The extended model includes a socio-political context (government support and environmental factors like the political and cultural scenario, infrastructural adequacy, technical sophistication of e-market providers) and strategic processes (financial backing, support services like training and consultancy, alliances).

The e-marketplace models discussed above are profit-driven commercial models. While many of the constructs are important in developing and managing REMs, the motivation behind government-supported REMs for SMEs (bridging the digital divide by increasing adoption of e-commerce by SMEs within the region) warrants a shift of focus from the profit motive to the community motive

(knowledge sharing, communities of practice, online networks, competence building) and a close scrutiny of the characteristics of the targeted participants and of the region concerned.

SME Adoption of IT/eCommerce /eMarketplace Trading

In examining IT/eCommerce/eMarketplace adoption by SMEs the following factors emerged as significant inhibitors: lack of organizational readiness in terms of knowledge skills about technology (Chau, 2001), lack of support from market makers who may not understand the specific needs of SMEs; lack of standards; SMEs' lack of understanding of perceived immediate benefits from e-marketplace trading (Stockdale & Standing, 2004).

Facilitators of IT/eCommerce/eMarketplace adoption by SMEs are: higher order knowledge skills or competences (Evans, 2002); managements that viewed IT/IS as an important determining capability and developed internal IT/IS competences (Caldeira & Ward, 2003); user involvement and highly effective external expertise (Thong, 2001); supplier or trading partner push (Prananto, McKay, & Marshall, 2004); customer pressure (Beckinsale & Levy, 2004) and trust (Brown & Lockett, 2001). There is also evidence to suggest that some SMEs' progression along the eCommerce maturity curve can be characterised according to distinct stages, phases or levels (Daniel, Wilson, & Myers, 2002; Prananto, Marshall, & McKay, 2003).

Steinfeld and Whitten (1999) examined the socio-economic impacts of eCommerce on local or regional communities. They showed that supplementing transaction cost and competitive advantage approaches to eCommerce with perspectives from research on social networks and trust enabled locally sensitive eCommerce strategies for businesses in a given community.

In synthesising the literature on e-marketplaces and SME adoption of IT/e-commerce/e-marketplace trading, we arrived at the following framework to determine factors that facilitate the use of REMs to bridge the digital divide:

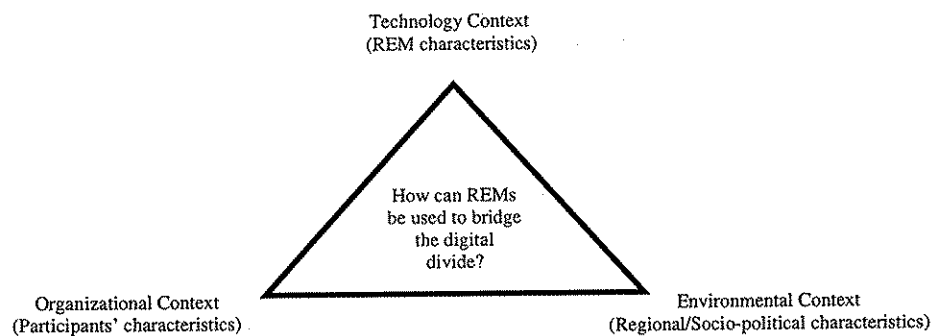


Figure 1: Framework to Examine the Role of Community Portal Regional e-Marketplaces in Bridging the Digital Divide

THE CASES

	(Case1) TwinTowns.com	(Case2) RegWa.net
<i>Year Initiative First Conceived & by Whom</i>	1999. Business Enterprise Centre of one of the towns, supported by some people in the two local governments and a local university.	1999. Committee of a few people in the chamber of commerce of the largest town in the region, resident web site developers and ISPs (Internet Service Providers), a couple of the larger businesses in the region, interested community members.
<i>Ownership Structure</i>	Not for Profit Organization comprising Local Governments of 2 neighbouring towns, their Business Associations and a University in the region	The Chamber of Commerce of the largest town. Managed by the above-mentioned committee. In June 2003, purchased by the region's Development Commission and a Not-for-profit organization was formed to own it.

	(Case1) TwinTowns.com	(Case2) RegWa.net
<i>Location to be served by the REM & demographics</i>	Two neighbouring towns in metropolitan Western Australia covering 900 km ² , having about 220,000 residents and 7000 small businesses. Major industries: manufacturing, agriculture, retail trade, services and tourism.	Regional area of Western Australia (2 hours drive from metropolitan WA) covering 24,000 km ² , having a population of 123,000 & 10,500 small businesses. Major industries: manufacturing, mining, agriculture, tourism, retail trade and services.
<i>Funding/Year/Source</i>	A\$ 20,000 (2000) (State government) A\$ 90,660 (2001) (Federal government) A\$ 108,000 (2001) (Local governments of the two towns & University) A\$ 92,000 (2002) (state government-for training SMEs on REM use) A\$50,000 (2003) (Local governments of the two towns) *Request for further federal/state government funding declined in 2002.	A\$6,000 (pre 2000) (regional development corporation) A\$30,000 (pre 2000) (State government) A\$90,000 (2001) (Federal government) A\$126,000 (2001) (State government) A\$2,200,000 (2003) (State government, however only a portion of this will be directly for the portal; other use will be for training etc.)
<i>Date portal/REM launched and Technical Development</i>	December 2002 portal & REM launched simultaneously despite technical problems. Portal & REM technical development outsourced at a cost of A\$70,000. Continued technical problems and lack of funding resulted in a concerted marketing effort only in early 2004.	Regional portal & Business directory launched March 2000. REM launched November 2002. Development of REM (by local IT company) about A\$30,000. Hosted by developer for free. REM upgrade (different contractor) about A\$200,000.
<i>Portal/REM Features</i>	Internet based community portal. Horizontal REM with business directory. Request-for-quote (RFQ) mechanism. Quotes can only be received by registered users by e-mail, fax or SMS but user has to log onto system to retrieve quote and reply. Community groups listed and can have 1-page web site for free. Businesses listed for free but pay A\$199 for RFQ-enabled REM link and an additional A\$99 for a flyer page. Live links to user's websites if registered REM member. Corporate sponsorship (advertising fee) of site is available.	Internet based community portal. Business directory with live links to SME pages. Request-for-quote (RFQ) mechanism. Shopping cart facilities in November 2004 (E-commerce activities on the portal no longer labelled under a REM). Quotes can only be received by registered users by e-mail, fax or SMS but user does not have to log onto the system to retrieve them. Community groups listed and can have 1-page web site for free. Businesses listed for free but pay <ul style="list-style-type: none"> • A\$22 for an e-mail link • A\$66 for e-mail & web link • A\$199 for self-managed websites. • A\$250 for shopping cart facility Corporate sponsorship (advertising fee) of site is available.
<i>Number of paying clients (early 2004)</i>	157	1790 of which 419 had full e-mail, web & REM links.
<i>Current Status</i>	Ceased Operations late 2004	Continues to operate

DATA COLLECTION AND RESEARCH METHODOLOGY

Data for TwinTowns.com was collected over a one and a half year period beginning early 2003 from a variety of sources including the REM website, historical documents, minutes of meetings, internal memos, e-mail communications, meetings with REM staff and via observation by attendance at REM board meetings. Secondary data collected from RegWa.net was from the REM/portal website and published documents.

Constructs from the literature on e-marketplaces, SME adoption of IT/eCommerce/eMarketplace trading were used to design a case protocol for the next stage of data gathering. This involved semi-structured interviews of 1 to 1½ hours duration with 9 REM owner representatives and 9 SME participants of Twin Towns.com between February and August of 2004. The interviews were audio-taped, transcribed and transcripts were shared with participants to omit errors and to validate interpretations of the participants' views (Klein & Myers, 1999). Field notes and transcripts were made within 24 hours of each interview. All project and case data was maintained in a database, was coded according to the constructs identified in the literature and was checked by another researcher. The data was then analysed and additional constructs were added or existing ones modified as new themes emerged from the analysis and from the extant literature on eMarketplaces and SME adoption of

eCommerce and eMarketplace trading. The revised conceptual framework was then used to collect data by way of in-depth interviews between August 2004 and November 2004 with 4 owner representatives of RegWa.net and 6 RegWa.net SME participants. A comparative analysis of the data from both REMs was then conducted.

ANALYSIS OF THE CASES

Technology Context (REM Characteristics)

Ownership Structure, Governance and Trust

Although both REMs had the involvement of the local business community, TwinTowns.com was still viewed as a 'top down' initiative, with the major role played by the local governments.

In contrast, although RegWa.net had received less funding than TwinTowns.com at the time the REM was launched, the broad consultative approach and management style produced technology champions within the community. A big portion of the work on the portal and REM was done on a voluntary basis.

"Because of the people that were involved, quite high profile, local key people, a lot of people really supported the initiative really thinking about how it was going to help their businesses" (E-Commerce Manager, RegWa.net.).

This engendered trust in the initiative, something which was missing in TwinTowns.com.

Perceived benefits, relative advantage, usefulness and perceived ease of use

In TwinTowns.com, although the local governments hoped the REM would stimulate B2B trading, many of the participants saw the REM as a way to get a share of the local government business. Early proposals to integrate the REM technology with the procurement systems of the local governments' were rejected because it was expensive. Even so, the major portion of the local government procurement was already locked into contracts. The majority of SMEs interviewed would not consider using the REM to source their own business needs. The SMEs who joined the REM for B2C (Business-to-consumer) business saw no benefits because the portal was not widely promoted in the region.

RegWa.net was also built on the mistaken premise that major buyers in the region would be procuring through the REM. However, the development of the portal in stages meant that community support of the portal and the up-to-date directory listings provided a cheap advertising alternative for regional SMEs at the least. The portal is now aggregating niche products via its shopping cart pages to sell products and services for which the region is renowned (tourism and agriculture). However, this could also mean that vertical REMs in strategic industries may offer more immediate benefits to SMEs than horizontal REMs, mirroring the patterns in the regular e-marketplace landscape.

While the participants in RegWa.net perceived the REM technology as easy to use, there were other infrastructural considerations for the owners. Spikes in the power supply meant that prospective participants in certain areas did not want ADSL connections that had to be continuously open because *"there's no way our computers are always on because of the spikes we get everyday. We've already done 5 hard drives"* (SMEs in RegWa.net). In TwinTowns.com, although in theory the REM technology was easy to use, technical problems and slow response times caused mistrust of the system. Furthermore, some areas covered by the REM were in an urban broadband 'blackspot' up until recently.

Value added services

According to Ordanini (2003), B2B exchanges that survived the digital shakeout offer services other than those directly related to transaction costs. These services are in the areas of human resources, logistics, finance, information and knowledge brokerage, supply-chains, content and information and consultancy. In TwinTowns.com there were no value-added services offered to participants.

In RegWa.net, all stakeholders saw the free one-on-one IT/e-commerce consultancy services for SMEs and free IT training to community groups as value-added services. The portal owners were also responsible for lobbying for ADSL (Asymmetric Digital Subscriber Line) services for regional players and are in talks with Australia Post to aggregate *"the spend to reduce distribution costs for everyone who will be involved in the portal"* (E-Commerce Manager, RegWa.net). However, these services would not have been possible without the A\$2.2 million provided by the state government in 2003. Apart from these services, some SMEs interviewed felt that some data-mining feedback from the portal

could be useful while other types of value-added services like logistics and insurance would be more easily provided to industry clusters rather than across a horizontal B2B/B2C REM.

Organizational context (Participants' characteristics)

Owner-Innovativeness and Internal IT/IS/e-business competencies

In both REMs, SME participants who were initially targeted were already connected to the Internet and many had their own websites (although only a few were capable of handling online transactions). In most cases it was the business-owners' decisions to join the REM and they viewed participation as the next step in their e-commerce journey. They either had their own internal IS (Information Systems) capabilities or were comfortable with the external IT services received up till then. They looked to the REM to widen their markets and expected some immediate economic benefits in the form of increased sales.

In TwinTowns.com, this did not happen and neither did the project result in SMEs in the region growing their e-competencies. In RegWa.net, the initial involvement of a few local ISPs and IT providers in the development and management of the REM and portal opened up other SMEs in the region to e-commerce. However, only a handful can claim to have seen any economic benefits from participation.

The additional A\$2.2 million funding has eased the pressure on the need to generate REM participation 'at all costs' allowing RegWa.net's free one-on-one IT/e-commerce consultancy services for SMEs to be more targeted. REM participation is being targeted at SMEs in tourism and agriculture (the region's niche areas) to allow them to 'dip their toes' into the world of e-commerce. For A\$250, the portal will provide shopping cart facilities for these SMEs. The e-commerce consultancy will not only enable the SMEs to experience online trading, but follow-up services provide for advice on growing their e-business if their supported 'first outing' in e-commerce proves successful. Other SMEs, who may not benefit from participation just yet, are given IT/e-commerce advice without REM participation being sold to them. According to the RegWa.net's owners, early statistical evidence appears to indicate that SME uptake of e-commerce in the region is higher than the national average.

Environmental Context

REM owners need a good understanding of the businesses and trading/consumption patterns in the region in order to successfully use it to promote e-commerce adoption by SMEs.

In both cases in our study, although the CEOs (Chief Executive Officers) of major regional buyers supported in theory the idea of buying local online via the REM, the reality was that more than 90% of their procurements were already locked into contracts, discretionary purchasing was small and occasional, and the odd purchase that was put to tender was too large to be channelled through the REM. Typical SME responses to the question of procuring via the REM were "No, I have no need to. We have our established suppliers" or "I won't be going out to people asking for quotes because I don't have a great need. My suppliers are locked in". These factors should have precluded any thought of early transactional B2B liquidity on the REMs.

As far as geographic location is concerned, TwinTowns.com served a suburban area where the nearest competitors outside the region were equidistant (or in some cases nearer) to prospective local buyers. This and the face-to-face way of doing business with SMEs meant that B2C business on the REM could not have provided the necessary transactional liquidity to make it a viable short-term prospect. In RegWa.net, although the nearest competitors to the region are two hours drive away, the personal contact in a lot of local purchasing can also account for the lack of transactional B2C activity on the REM. In recognizing these environmental factors, the owners of RegWa.net are now using the portal to market the tourism, agricultural and speciality products of the region to the rest of the state, country and the world. However, in order to sustain local interest in the portal, hybrid online/offline strategies (for example online competitions for participants with prizes provided by local businesses) are being designed.

DISCUSSION, CONCLUSIONS AND FURTHER RESEARCH

Many of the problems with the REMs in the study stem from the misguided notion that the ubiquitousness of the Internet will make horizontal REMs within community portals an inexpensive way to bridge the digital divide for SMEs. RegWa.net is considered one of the more 'successful' portals especially on the e-commerce side. Apart from the relatively substantial amount of funding

received one other reason that the management of RegWa.net attributes its 'success' to, is the integrated efforts within the region to improve online activity. The presence of the e-commerce gateway within the portal is viewed as a vehicle for SMEs to put into practice (inexpensively and in a trusted environment) the IT and e-commerce training and advice they get.

Training for and promotion of the community side of the portal sustains interest in it and makes it a cheap local advertising alternative. At the same time, coordinating efforts to secure better telecommunications infrastructure for the region helps to ensure that the portal and REM technology can continue to be supported and that more people and businesses in the region can participate in them.

Even so, undertaking its current level of portal maintenance, marketing, training and consultancy services, and data collection to evaluate its efforts costs approximately A\$28,000 per month. At the moment, participation fees amount to A\$7,000 per month and the entire effort produces approximately 7000 hits per month to the portal and 33 RFQs. This supports our contention that a REM used to promote e-commerce uptake by SMEs should not be considered a commercially viable short-term option. It should be viewed as a development tool to build community benefits (like competence building and knowledge sharing), part of an integrated suite of development tools or policies to bridge the digital divide and should be planned and funded as such. The use of a program logic model which "links outcomes (both short and long-term) with program activities/processes and the theoretical assumptions/principles of the program" (W.K. Kellogg Foundation, 2004) may prove beneficial.

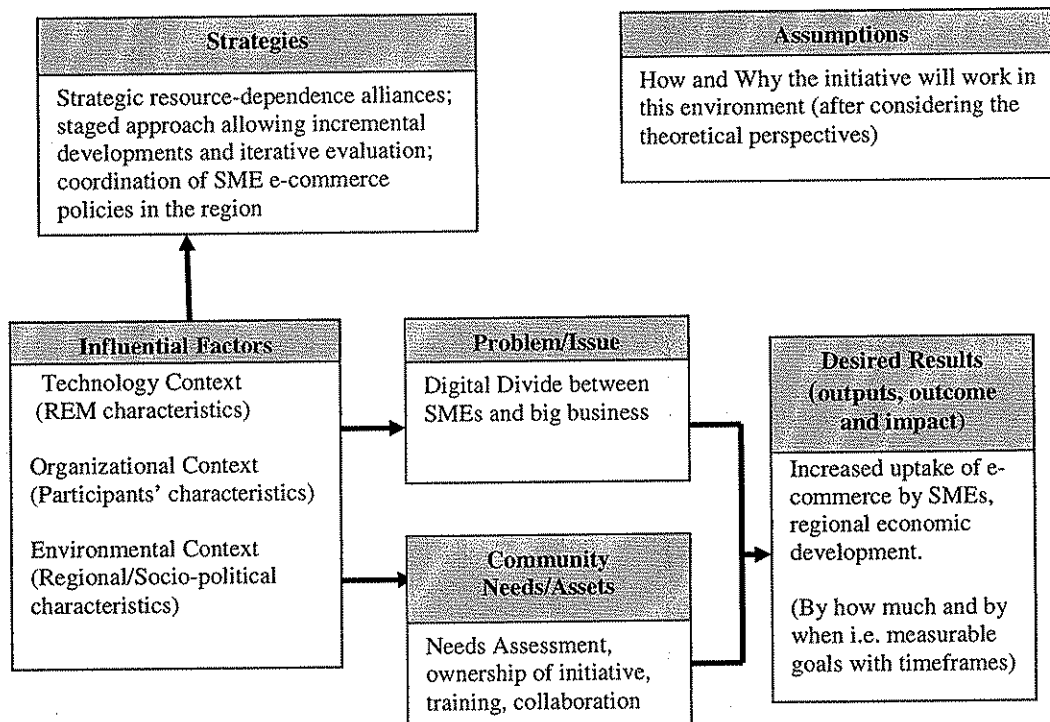


Figure 2. Logic Model for REMs/Regional Portals (adapted from the W.K. Kellogg Foundation 2004)

The above findings appear to concur with studies showing that even Australian government e-procurement portals having wider objectives of increased SME e-commerce adoption and regional development need to have other measures implemented simultaneously to e-enable SMEs (Vaidya, Callender, Sajeev, & Gao, 2004). We believe that what is needed firstly is a proper identification of the circumstances under which such integrated efforts will prove beneficial to the SME community. Secondly, there needs to be a proper evaluation of the costs and benefits of such initiatives and instruments to measure their outcomes.

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