

REGIONAL E-MARKETPLACES: TOWARDS A UNIFIED THEORETICAL FRAMEWORK FOR ASSESSING FACILITATORS AND INHIBITORS OF SUCCESS

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Abstract

Regional electronic marketplaces (REMs) are currently one of the measures adopted by some local governments and regional organizations to improve uptake of e-commerce by small and medium enterprises (SMEs). The rationale behind this move is to ensure SMEs do not fall on the wrong side of a digital divide. REMs are also viewed as a way to improve business efficiency and increase trade within the locality, expand into new markets and develop the region generally. However, while the development and management of REMs can be advised by a number of theoretical frameworks and models, there is no one definitive framework that can be used to comprehensively examine the factors that facilitate and inhibit the successful implementation of such e-marketplaces. This paper reviews the literature on e-marketplaces and IT/IS/ e-commerce adoption by SMEs and discusses how the constructs of existing theories and models can be used to examine REM success. It demonstrates how the constructs can be combined, refined and extended with insights from involvement in a REM in Western Australia and from content analysis of published case studies of e-marketplaces and e-marketplace participation, to form an integrated theoretical framework upon which the assessment of REM success can be grounded.

Keywords: Regional e-marketplaces, Small and Medium Enterprises, digital divide, IS adoption theories, unified model, facilitators and inhibitors of success.

1 INTRODUCTION

Small and medium enterprises (SMEs) are significant contributors to economies worldwide. In Australia, 95% of companies are SMEs (www.noie.gov.au), while in the United States, SMEs account for 51% of private non-farm GDP (USSBA 2001, p. 57). The 19 million SMEs in the European Union comprise over 99% of businesses in its member states (EBPG 2002). The Internet has been viewed as a way for SMEs to overcome the disadvantages of distance and size and compete with large companies, both locally and internationally. Much research has gone into the uptake of Internet e-commerce by SMEs (Daniel & Wilson & Myers 2002, Poon & Swatman 1997, Walczuch & Van Braven & Lundgren 2000), but while these and other studies indicate growing levels of awareness and enthusiasm for e-commerce adoption by SMEs, they also show that only a small proportion of SMEs are realising substantial benefits from the Internet. Some studies show that the majority of SMEs use the Internet mainly for communication and research, and that e-commerce is not integrated with their business processes (Stansfield & Grant 2003, Walczuch et al. 2000). A number of the major challenges faced by SMEs in adopting e-commerce stem from a lack of technological expertise and uncertainty about the benefits offered by e-commerce.

In an effort to ensure that SMEs do not fall on the wrong side of a digital divide, governments at both national and regional levels have introduced a number of measures to encourage an increase in the uptake of e-commerce by SMEs. At the regional level, some governments and multi-stakeholder regional bodies are creating or sponsoring Internet-based e-marketplaces for SMEs (henceforth referred to as SME-REMs), motivated by regional economic and community development issues. Western Australian examples of SME-REMs are the Albany GateWay Online Shopping Mall (<http://www.albanygateway.com.au/ECommerce/Shopping.asp>) and the South West Internet Marketplace (<http://www.mysouthwest.com.au/>).

These SME-REMs were established to encourage participation of SMEs in the e-economy by providing them with a low-cost, low-technology-compliance introduction to e-marketplace participation. The REMs have differing business models and varied ownership structures. To date little is available in either the business or academic literature on the issues relating to the development, management and success of these types of REMs and whether or not they are meeting their objectives. In the absence of a comprehensive or definitive theoretical framework, researchers and practitioners in this area depend on picking and choosing relevant constructs of existing best practices, theories and models from related areas on which to base the assessment of facilitators and inhibitors of SME-REM success. We are of the view that in using SME-REMs as a tool to bridge the digital divide, a broader-based theoretical framework is necessary to examine as many factors affecting success as possible, as these REMs can adopt different business models, some evolving and changing with the passage of time.

In order to create such a framework, a review is conducted of best practices, theoretical frameworks and models in the area of e-marketplaces and IT/IS/e-commerce adoption by SMEs. From these studies, constructs relevant to SME-REM success are selected and duplicates eliminated. The framework is then tested and refined using content analysis of published cases on e-marketplaces and insights from our involvement with a SME-REM in Western Australia. The resultant integrated framework of factors affecting SME-REM success forms the theoretical basis of our future research, which will be in-depth case studies and cross-case analyses of SME-REMs.

2 THEORETICAL PERSPECTIVES ON E-MARKETPLACES

E-marketplaces can be categorised differently based on the exchange mechanism used (for example, e-procurement, e-malls, e-auction, value chain service providers, collaboration platforms etc. (Timmers 1998)) or focus (economic/price focused, stakeholder focused, (Grieger 2003)) and ownership

structures (third party neutral e-marketplaces, consortia e-marketplaces and private exchanges etc.), which impact on the type and level of benefits that can be derived from them. In the last few years the profusion of e-marketplace models with various ownership structures and the resulting shake-up and contraction (Sawhney 2002) has left potential adopters with a confused picture of e-marketplace participation.

The potential benefits of e-marketplaces include reduced costs typically in procurement, communication, inventory holding and search activities (Bakos 1991, Benjamin & Wigand 1995). E-marketplace participation can also result in improved customer service, better quality goods and services through transparency, value-added information and new levels of innovation arising from network externalities and knowledge sharing (Braun 2002, Brunn & Jensen & Skovgaard 2002, Le 2002, Raish 2001), and the income generated from participation, transaction and advertising fees for neutral owners. However, while there are business reports on the benefits actually reaped from e-marketplaces (see for example www.emarketservices.com) empirical evidence of the benefits of e-marketplaces and the measurement of e-marketplace participation is difficult to find in the academic literature.

The critical success factors for e-marketplaces identified in both the business and academic literature are critical mass or liquidity (Brunn et al. 2002, Raish 2001), strategic partnering in B2B marketplaces (Lenz & Zimmerman & Heitman 2002), identification and recruitment of experts or key players who will motivate others to join (Grewal & Comer & Mehta 2001), provision of value-added services, provision of revenue streams, trust and privacy.

As the e-marketplace concept is still relatively new, there are few sources in the literature in this area that claim a distinct theoretical framework. Raish (2001) describes e-marketplace activity as evolutionary, evolving in phases from early matchmaking models to inter-connected value trust networks, alluding to a stages of growth theoretical basis. However, no research is currently available to validate this hypothesis. Some researchers view e-marketplaces through the lens of inter-organizational relationships or inter-firm alliances (Koch 2002) and communities of practice (Braun 2002). Fong, Fowler and Swatman (1998) viewed e-marketplaces in terms of specific industries. Le (2002) examined e-marketplaces from a value proposition perspective. Brunn et al. (2002) attempted to provide a holistic framework of e-marketplace success. However, their model, which was tested on a single e-marketplace, does not consider the effect of financing on e-marketplace success and considers an e-marketplace a success only if it is profitable.

Kurnia and Johnston's (2000) model to study EDI adoption in the Australian grocery industry uses the constructs of external factors (eg. demand, competition), the nature of the technology (eg. 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.). However, their model only looks at a vertical e-marketplace. Grewal et al's (2001) motivation-ability framework to examine organizational participation in B2B e-marketplaces uses constructs from institutional theory (legitimacy as a motivation) and resource-based theory (ability or competences). However, they view e-marketplace participation from the lens of building critical mass and do not consider other effects like the motivation and competences of the market maker or financial aspects of e-marketplaces.

The research area of e-marketplaces does not itself have a unified or definitive and comprehensive theoretical framework upon which facilitators and inhibitors of success can be evaluated. This could be due to the different models and motives of existing e-marketplaces. However, as SME-REMs are most often funded by public funds which have huge opportunity costs and as a number of them appear to be struggling and more complex to develop and manage than first envisaged, there is a need to provide an integrated theoretical framework to evaluate SME-REM success; one which can cater for the various motives behind their creation and the various business models that they can adopt. To begin, it is necessary to examine existing related theoretical frameworks to determine the contribution they can make in understanding the factors that can influence SME-REM success.

3 THEORETICAL FRAMEWORKS TO EXAMINE IT/IS AND E-COMMERCE ADOPTION BY SMEs

Research on adoption of IT/IS and e-commerce use the popular theories and models of IT adoption like the diffusion-of-innovation theory, resource-based theory, the technology acceptance model, the theory of planned behaviour and stage theory. Given the inter-organizational aspect of SME-REMs, SME participation in e-marketplaces should also be examined through the lens of institutional theory and inter-organizational relationships. Table 1 summarises these theories in terms of their key constructs and identifies SME studies which use them.

Theory	Core Constructs	Sources
Diffusion of Innovation Theory (DOI). DOI throughout organization & adoption by single users	5 broad factors affect adoption: Innovation factors- (i.e. relative advantage, compatibility, complexity or ease of use, trialability, observability & communicability). Individual , Task, Environmental and Organizational factors.	Rogers (1995), Tornatzky and Fleischer (1990). SME studies using hybrid DOI models-Iacovou, Benbasat and Dexter (1995), Cragg and King (1993), Thong and Yap (1995), Scupola (2003).
Resource-Based Theory (RBT)	Exploitation of core competences to gain competitive advantage. Core IT/IS capabilities (Feeny et al. 1998) among others: IS/IT governance, Business systems thinking, Relationship building, Making technology work, Informed buying, and Vendor development. Other resources- e.g. financial	Feeny and Wilcocks (1998), Mata, Fuerst and Barney (1995), Grewal et al. (2001), Braun (2002). SME IT adoption & RBT: Caldeira and Ward (2003), Chau (2001), Commission of the European Communities (2003), EBPG (2002), Iacovou et al. (1995), Thong et al. (1995). Van Akkeren and Cavaye (1999), Thong (2001).
Stage Theory (based on stages of growth theory to describe the process by which IS/IT evolves in an organization)	Adoption of IT progresses in stages. Stages have distinct benchmark variables. DTI e-commerce adoption stages: Messaging, On-line marketing, On-line ordering, On-line payment, Order progress/on-line sales support, E-business.	SME-E-Commerce Stage Adoption: DTI (2001), Daniel et al. (2002), Poon and Swatman (1997), Prananto, Marshall and McKay (2003), Rao, Metts and Mora Monge (2003)
Theory of Planned Behaviour (TPB). Intention /behavioural model-general theory of behavioural decision making.	An “active deliberate decision process within constraints of social expectations and limited resources” Harrison et al. (1997). Perceived behavioural intention is a function of attitude, subjective norm and perception that one has the ability and resources to perform the behaviour. Moderators : firm size, perceptions of internal & external constraints	SME IT adoption & TPB: Harrison, Mykytyn Jr and Riemenschneider (1997)
Technology Acceptance Model (TAM). TAM2	The Intention to use a new IT is determined by two beliefs, perceived usefulness of IT and perceived ease of use. Includes social norms, which are likely to have a greater effect on perception & behaviour when a user does not have first hand experience of an IT.	Davis, Bargozi and Warshaw (1989) Venkatesh and Davis (2000). SMEs and IT adoption using TAM: Igabria, Zinatelli, Cragg and Cavaye (1997).

Theory	Core Constructs	Sources
Unified Theory of Acceptance and Use of Technology (UTAUT) – integrates determinants from TRA, TAM, TPB, combined TPB/TAM, DOI, model of PC utilisation, motivational model & social cognitive theory.	4 core determinants of intention & usage: a) Performance expectancy, b) Effort expectancy, c) Social Influence, d) Facilitating conditions. 4 moderators: Gender (moderator to a, b & c), Age (moderator to all 4 determinants), Experience (moderator to b, c & d), Voluntariness of use (moderator to social influence).	Venkatesh, Morris, Davis and Davis (2003). This theory is included because the size of SMEs means that in many cases, the decision to adopt IT/IS/e-commerce is dependent on an individual's (CEO, owner) attitude and experience.
Institutional Theory Inter-Organizational Relationships (IOR)	Firms face coercive, normative and mimetic pressure to adopt IT. Set of six determinants of the formation of IORs: Necessity, asymmetry, reciprocity, efficiency, stability and legitimacy	Teo, Wei and Benbasat (2003). Oliver (1990). Some studies show that the main factors affecting SME adoption of e-commerce are customer demand and competition.
Partial, Hybrid and Integrated Models of IT/IS/e-commerce adoption used to examine adoption by SMEs.	<ol style="list-style-type: none"> 1. A study of the impact of external context (local and regional governance intervention) 2. A 4-stage model of SME Internet use during different stages of business relationship development. 3. A study of inhibitors to EDI adoption by SMEs 4. Integrated TPB/TAM model to examine IT adoption decisions of small business executives regarding having a web presence 	<p>Evans (2002) - no fundamental change in relative economic status of the region. In some industries, potential to develop e-commerce services dependent on higher order skills (competences in RBT).</p> <p>Poon et al. (1997)- key drivers of Internet use: perceived benefits (relative advantage in DOI theory) and management involvement (organizational context of DOI theory or managerial IT skills in RBT).</p> <p>Chau (2001)- factors classified under DOI theory constructs. Suggests the most significant inhibitors are related to constructs of RBT.</p> <p>Riemenschneider et al. (2003). Main determinant - improved social contact with customers (also relative advantage under DOI theory).</p>

Table 1. Theoretical Frameworks Used to Examine IT/IS/E-Commerce Adoption by SMEs

Table 1 shows that not only do the different theories on IT/IS/e-commerce adoption have areas of overlap, in the SME context most studies are not based entirely on any one framework. The community and economic development motives underlying the creation of SME-REMs introduce additional significant constructs (like the not-for-profit motive of the market maker, ownership structure of the SME-REM and competences of the market-maker), which cannot be explained or satisfactorily dealt with by existing theoretical frameworks or adoption models individually. It is therefore proposed that an integrated theoretical framework, which can be used in evaluating the facilitators and inhibitors of SME-REM success, can be created from a synthesis of the following: relevant constructs of existing theories and best practices in e-marketplaces and IT/IS/e-commerce adoption by SMEs and insights gained from our ongoing involvement in a SME-REM in Western Australia. The next section deals with this integrated framework.

AN INTEGRATED THEORETICAL FRAMEWORK OF FACTORS AFFECTING THE SUCCESSFUL IMPLEMENTATION OF SME-REMs

In Table 2, factors influencing SME-REM success have been synthesised from the literature on e-marketplaces, IT/IS/e-commerce adoption by SMEs and from our involvement with a SME-REM in Western Australia. These factors are sorted into four categories with an indication of their theoretical basis and the implications that each factor can have on SME-REM success.

Category	Factors/Constructs	Implications and effect on SME-REM success
Market-Maker's Characteristics (Constructs in this category are based on e-marketplace literature and RBT)	Ownership structure	➤ Single vs multiple stakeholders. Latter has potential for collaboration & larger funding but also for conflict.
	Motivation/focus.	➤ Motive affects market mechanism & services offered, benefits and success and the time taken to achieve it.
	Competences (IS/ Project management skills).	➤ Critical factor. Has implications for issues like proper needs analysis, level of funding, ongoing support, which can directly affect success.
	Financial resources.	➤ Research shows large investments needed.
E-Marketplace Characteristics (Nature of technology or Innovation Characteristics. Constructs are based on e-marketplace literature, DOI, RBT, TAM, UTAUT and Stage Theory)	Perceived benefits, relative advantage & usefulness.	➤ Need to convince participants of benefits to facilitate adoption. May require one-on-one consultation.
	Critical mass/Liquidity.	➤ Critical factor. Low entry fees alone not sufficient to guarantee success.
	Value added services/ Strategic partnering (eg logistics, financial).	➤ Provides convenience and/or trusted services and knowledge networks, which can enhance attractiveness of participation and therefore success.
	Compatibility (with users' systems & business objectives).	➤ Promotes participation in SME-REM by improving efficiency and lowering costs for participants. Need to match SMEs' attitude to growth.
	Targeted training and support in e-commerce for potential users (building competences).	➤ Depending on e-readiness of SMEs, there may be a need to provide one-on-one low cost consultancy on e-business process re-engineering to ensure liquidity and success of the REM.
	Governance, trust, privacy.	➤ Has a significant effect on participation and success.
	REM Development & timing of features offered.	➤ Need to match sophistication/e-readiness of SMEs to ensure liquidity.
	Perceived ease of use.	➤ A system perceived to be difficult will have negative effect on participation.
Participant's (Owner/ Manager Firm) Characteristics (Constructs of RBT and TAM)	Good marketing plan.	➤ Creates awareness of REM within/outside region.
	Top management commitment /innovativeness	➤ Direct effect on decision to participate in REM. May need to target SMEs with strong owner-innovativeness.
	Internal IT/IS /e-business (readiness).	➤ Direct effect on participation. Greater proportion of e-ready SMEs can lead to quicker liquidity.
	Size of firm.	➤ May need to target larger SMEs first.
External Factors (Constructs of Institutional Theory, Inter-organizational relationships and RBT)	Financial resources/ ROI.	➤ Need for clear idea of returns. May need demonstration or one-on-one consulting.
	Regional SME profile.	➤ Determines exchange mechanism & type of benefits.
	Government support/ incentives.	➤ Tax breaks for participation/e-business training & consultation could positively affect uptake.
	Effective external expertise (vendor support for participants).	➤ Access to trusted and reasonable-cost vendor support can positively affect REM participation and success.
	Normative, coercive and mimetic pressure.	➤ Can positively affect participation via bandwagon effect.

Table 2. *Integrated Theoretical Framework of Factors Affecting SME-REM Success*

The framework is then used to examine how the issues affecting success are treated in case studies of e-marketplaces and e-marketplace participation (including the SME-REM we are involved with). A summary of the case studies is as follows:

Case 1: TwinTowns (actual names have been suppressed for confidentiality) is a SME-REM set up by two neighbouring towns in Western Australia. It is intended to be an electronic gateway to access and interact with local players in the area and is intended to spearhead regional economic activity by providing SMEs in the region with a low cost, low technology-compliance introduction into an e-marketplace (Gengatharen & Standing 2003a, 2003b). It is owned by a not-for-profit organization whose stakeholders are the councils of the two towns, their business associations and a higher education institute in the region. The REM went live with a soft launch in December 2002 with a total investment of close to A\$400,000. It is a horizontal e-marketplace.

Case 2: Lonxanet (Dans & Freire 2002) is an e-marketplace set up to address issues of fragmentation, inefficiencies, income inequalities and economic and biological sustainability in the Galacian artisanal fisheries industry in Spain. It was established in July 2001 and its shareholders and founding members include academics in anthropology and biology with close links to the industry, an academic involved in e-marketplace research, a management executive formerly from the logistics area, a logistics company and a technology partner. Four fishers' guilds were non-financial stakeholders, contributing the use of infrastructure and personnel at ports to the Lonxanet. The Lonxanet began commercial activities in December 2001. As at 2002, the amount invested in the Lonxanet was €10,000.

Case 3: Gatetrade.net (Brunn et al. 2002, Hunter & Doz. 2002) is a public e-marketplace founded in October 2000 by a consortium of four industry heavy weights in Denmark at an investment cost of €13.6 million. The key strategic intent of the market maker was for the e-marketplace to be a profit-driven process improvement company. In 2001, gatetrade.net was awarded a contract by the Danish State that would have the potential of passing a potential volume of €7 billion over five years through the e-marketplace.

Cases 4, 5, 6 and 7: As part of the virtualisation of the Hong Kong textile and clothing industry, vertical e-hubs or intermediaries funded by venture capitalists, host neutral e-marketplaces in the Hong Kong textile industry. Examples of the e-hubs are i-textile, TradeTextile and TexExchange (Ho & Au & Newton 2003). In addition to providing e-marketplaces and industry-specific information, the e-hubs also partner with trade support partners to provide value added services in areas like logistics, insurance etc. Market-making mechanisms employed by these e-marketplaces are exchange and auction models. A vertical e-hub with government links is garments.hkenterprise.com, an e-catalogue. It is linked to garments.tdctrade.com, a vertical portal providing industry-specific information, news and electronic message boards where subscribers can post buying requests and product offers. The Hong Kong Trade Development Council owns garments.tdctrade.com.

Case 8: The eighth case deals with participation on Polygon, a subscription-based neutral B2B electronic market for jewellery and related products in the United States (Grewal et al. 2001), which was migrated to the Internet in 1995. Polygon does not enable on-line payment of trade but provides ratings on all participants based on their payment history in addition to gemological and other related technical information.

The following section comprises the results of a content analysis of the case studies, which attempts to determine the extent to which the factors affecting success derived in Table 2 have been addressed or discussed and the authors' perceptions of their impact on e-marketplace success. This is to determine if the integrated framework is a useful tool that can be used in future in-depth and cross case analyses of SME-REM success. (Note: it is not an indication of whether the e-marketplace has actually considered these factors).

5 ANALYSIS OF CASE STUDIES AND DISCUSSION OF SUCCESS FACTORS

Market-Maker's Characteristics	TwinTowns	Lonxanet	Gatetrade.net	Hong Kong textile Industry	Polygon
Ownership Structure.	H	H	H	H	M
Motivation/focus.	H	H	H	H	M
Competences (IT/IS).	H	M	H	M	N
Financial resources.	H	H	H	H	N
Key: H-Significant impact, M-Medium impact, L-Low impact, N-Not discussed					

Table 3. *Case Studies of E-marketplaces and their discussion of Market Maker's characteristics*

Table 3 shows that in all the case studies except Polygon, all factors classified under market maker's characteristics were thought to have a medium to significant impact for success from the planning stage. Multiple stakeholders broaden the funding base and ensure that all stakeholder groups have input into the development and management of the REM but can also introduce stakeholder conflict. This was evident in cases 1 and 3. In case 2, the steps taken by the Lonxanet to overcome the legal problems associated with the fishers' guilds' ownership resulted in an arrangement that had positive outcomes for all parties. IS and project management competences of the owner/sponsor to manage REM development themselves or to manage the vendor selected is also important (Feeny et al. (1998), view IS governance and vendor development as core IS competences). This is evident in TwinTowns where lack of internal IT expertise and problems with the vendor led to a delay in the project. In gatetrade.net, the internal IT expertise of the owners, coupled with the reputation of the vendor, Oracle, was sufficient to overcome technical issues. In Polygon, these factors were not discussed in depth perhaps because the e-marketplace had already been operating for six years and the accent of the study was on participation.

E-Marketplace Characteristics	TwinTowns	Lonxanet	Gatetrade.net	Hong Kong textile Industry	Polygon
Perceived benefits, relative advantage & usefulness.	H	H	H	H	H
Critical mass/Liquidity	H	M	H	M	H
Value added services/ Strategic partnering	H	H	H	H	M
Compatibility	M	L	H	H	L
Training support	H	L	L	M	M
Governance, trust, privacy.	M	M	H	M	M
Development of marketplace, timing of features offered	H	M	M	H	M
Perceived ease of use.	M	M	M	M	L
Good marketing plan	H	H	M	N	M
Key: H-Significant impact, M-Medium impact, L-Low impact, N-Not discussed					

Table 4. *Case Studies of E-marketplaces and their discussion of E-Marketplace characteristics*

E-marketplace success is also dependent on features and services offered. In Table 4, in all the case studies, the perceived benefits, relative advantage and usefulness (constructs of diffusion of innovation theory and the Technology Acceptance Model) of the e-marketplace in terms of cost savings and efficiencies have been extensively discussed as having a significant impact on e-marketplace success. Liquidity and value added services were perceived to have a medium to significant impact. In cases 1 and 2, the e-marketplace was viewed as a way to improve the economic position of SMEs by helping

them bridge the digital divide. Compatibility (of the e-marketplace with the systems of the players), was perceived to have a low impact on e-marketplace success in the case of the Lonxanet, as a call centre was set up to connect some of the players to the e-marketplace. Training and support provided by the e-marketplace to participants received only a low to medium level discussion in all cases except for TwinTowns where the researchers felt that the regional economic and community development motive of the REM should be strongly tied to the building of e-commerce competences in SMEs, a view borne out by the research of Caldeira et al. (2003). Factors like governance, trust and privacy were considered to have a medium to strong impact on e-marketplace success, especially in the case of gatetrade.net where the target market is major players. While the development of the e-marketplace (in terms of timing of the features offered) was considered to have a medium to high impact, it was of greater importance in TwinTowns and the Hong Kong textile industry given that a large proportion of their players are SMEs. Perceived ease of use had a medium to low level of discussion in the case studies, while interestingly, case studies 1 and 2 indicated the importance of a good marketing plan. In the case of TwinTowns the lack of marketing efforts was one reason the authors cited for the lack of success while in the Lonxanet, online visits to the e-marketplace increased after heavy promotion.

Participants' Characteristics	TwinTowns	Lonxanet	Gatetrade.net	Hong Kong textile Industry	Polygon
Top management commitment / Owner-Innovativeness.	H	M	N	N	L
Internal IT/IS/e-business competences (readiness)	H	L	N	M	H
Size of firm	M	M	N	M	N
Key: H-Significant impact, M-Medium impact, L-Low impact, N-Not discussed					

Table 5. Case Studies of E-marketplaces and their discussion of Participants' characteristics

Characteristics of participants also have an effect on e-marketplace success. Research has shown that SMEs with high owner-innovativeness and top management commitment to IS changes have a better chance of successfully adopting IS (Thong et al. 1995). This is also true of SMEs with internal IS or e-business competences. Market makers may need to target this group of SMEs in order to build early liquidity. As size of a firm and its 'slack' resources can have an impact on its willingness to venture into 'unchartered territories', SME-REM operators may also need to target this group by way of incentives to achieve early critical mass. Table 5 shows that these factors have been discussed as being significant in the case of TwinTowns. In the case of the Lonxanet, the lack of Internet penetration among smaller buyers was resolved with the setting up of a call centre to cater for them. Participants' characteristics are not discussed in the case of gatetrade.net possibly due to its profit focus and the fact that it is targeting major players whose e-readiness may not come into question.

External Factors	TwinTowns	Lonxanet	Gatetrade.net	Hong Kong textile Industry	Polygon
Participant Profile	M	H	N	M	H
Government Incentives	H	H	N	H	N
Effective external expertise (vendor support for participants)	M	L	N	L	N
Normative, coercive and mimetic pressure	M	M	L	M	H
Key: H-Significant impact, M-Medium impact, L-Low impact, N-Not discussed					

Table 6. Case Studies of E-marketplaces and their discussion of External Factors

External or environmental factors in the form of government intervention can also affect the success of an e-marketplace (Scupola 2003). There was evidence of this in cases 1, 2 and 4 (Table 6), where SMEs are a main target of the e-marketplace. The profile of players targeted by the e-marketplace (whether they are predominantly B2C, B2B or both) will mean that e-marketplace operators need to ensure that the e-marketplace not only provides the right solution for the majority of players but is also flexible enough to incorporate changes or additional functionality as and when the changing environment demands it. Finally, e-marketplace operators may need to consider the effect that coercive, normative and mimetic pressures can have on early liquidity. SME-REM operators may choose to target business associations to be partners so that they could influence their members to join. This has been the case with TwinTowns. Major regional buyers could be persuaded to show support by procuring via the e-marketplace thus encouraging liquidity, as in *gatetrade.net*. E-marketplace operators can exploit mimetic pressure by recruiting a few major players to participate in the hope of creating a bandwagon effect where the players' competitors and customers will follow suit (Grewal et al. 2001).

Many of the constructs synthesised in the framework developed in Table 2 have been discussed in the study of the eight cases. This gives support to the usefulness of the framework in taking a broader, theory-based view of the factors affecting REM success. The factors in Table 2 that have not been discussed in the case studies can be considered contextual, for example effective external expertise for participants may not be a factor for profit-driven e-marketplaces like *gatetrade.net* and *Polygon*. It is our view that all these factors need to be considered in a SME-REM.

6 LIMITATIONS

The integrated theoretical framework presented in Table 2, while representing a synthesis of constructs from current theories, models and best practices in related areas, may not encompass all factors that can affect REM success. Neither does it explain the degree to which these factors can affect REM success. Nevertheless, it does provide a starting point for further research in the area of REM success, which is necessary, as REMs are being used in some regions to encourage e-commerce uptake by SMEs. Future research will be required to test the framework empirically.

7 CONCLUSION

Having an integrated theoretical framework or model on which to assess inhibitors and facilitators of SME-REM success allows practitioners and researchers in the field to have their own frame of reference from which to work. As the framework has been synthesised from theories and best practices in related areas as well as from insights from actual case studies of e-marketplaces, it provides a good grounding for future research in this area. It forms a basis upon which to study the success of individual REMs, it can be used as the conceptual framework for cross-case analyses and for further research into the determinants or moderators of REM success. It therefore provides a sound theoretical platform on which to evaluate one of the policies used to bridge the digital divide.

References

- Bakos, Y. (1991). A Strategic Analysis of Electronic Marketplaces. *MIS Quarterly*, 15(3), 295-310.
- Benjamin, R., & Wigand, R. (1995). Electronic markets and virtual value chains on the information superhighway. *Sloan Management Review*, 36(2), 62-72.
- Braun, P. (2002). Digital Knowledge Networks: Linking Communities of Practice with Innovation. *Journal of Business Strategies*, 19(1), 43-54.
- Brunn, P., Jensen, M., & Skovgaard, J. (2002). eMarketplaces: Crafting A Winning Strategy. *European Management Journal*, 20(3), 286-298.

- Caldeira, M. M., & Ward, J. M. (2003). Using Resource-Based Theory to Interpret Successful Adoption and Use of Information Systems and Technology in Manufacturing Small and Medium-sized enterprises. *European Journal of Information Systems*, 12(2), 127-141.
- Chau, P. Y. K. (2001). Inhibitors to EDI Adoption in Small Businesses: An Empirical Investigation. *Journal of Electronic Commerce Research*, 2 (2). Retrieved June 20, 2003, from <http://www.csulb.edu/web/journals/jecr/>
- Commission of the European Communities. (2003). Adapting e-business policies in a changing environment: The lessons of the Go Digital initiative and the challenges ahead. Retrieved May 21, 2003 from http://www.eu.nl/comm/enterprise/ict/policy/doc/com_2003_148_en.pdf
- Cragg, P. B., & King, M. (1993). Small-Firm Computing: Motivators and Inhibitors. *MIS Quarterly*, 17(1), 47-60.
- Daniel, E., Wilson, H., & Myers, A. (2002). Adoption of e-commerce by SME's in the UK: towards a stage model. *International Small Business Journal*, 20(3), 253-268.
- Dans, E., & Freire, J. (2002). IT as an agent of social change: Lonxanet and the case of the Galician artisanal fisheries. In *Proceedings of the Twenty-Third International Conference on Information Systems* (pp. 769-777). Association for Information Systems. Retrieved November 2, 2003 from <http://aisel.isworld.org/>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982-1003.
- DTI. (2001). *Business in the Information Age*. International Benchmarking Report. London: Department of Trade & Industry. Retrieved May 7, 2003 from <http://www.ukonlineforbusiness.gov.uk/main/resources/publication-htm/bench2001.htm>
- EBPG. (2002). *eEurope Go Digital: Benchmarking National and Regional e-Business Policies for SMEs*. Final report of the E-Business Policy Group. 28 June 2002. Retrieved May 7, 2003 from <http://europa.eu.int/comm/enterprise/ict/policy/benchmarking/final-report.pdf>
- Evans, R. (2002). E-commerce, competitiveness and local and regional governance in Greater Manchester and Merseyside: a preliminary assessment. (Statistical Data Included). *Urban Studies*, May 2002, 947-975.
- Feeny, D., & Willcocks, L. (1998). Re-design the IS function around core capabilities. *Long Range Planning*, 31(3), 354-367.
- Fong, T., Fowler, D., & Swatman, P. M. C. (1998). Success and Failure Factors for Implementing Effective Electronic Markets. *Electronic Markets*, 8(1), 45-47.
- Gengatharen, D. E., & Standing, C. (2003a). A Conceptual Framework to Support the Development of Government-Sponsored Community-Portal Regional Electronic Marketplaces for SMEs: A Stage Approach. In *Proceedings of the 14th Australasian Conference on Information Systems (ACIS)* (Lethbridge, N. Ed.), We-B Centre, Edith Cowan University, Perth, Western Australia.
- Gengatharen, D. E., & Standing, C. (2003b). A Proposed Model to Evaluate the Benefits of Government-Sponsored Regional Electronic Marketplaces for SMEs: Extending the Updated DeLone & McLean IS Success Model. In *Proceedings of the 4th International We-B Conference* (Croft, L., Lachowicz, E. & Knight, S. Eds.) We-B Centre, Edith Cowan University, Perth, Western Australia.
- Grewal, R., Comer, J. M., & Mehta, R. (2001). An investigation into the antecedents of organizational participation in business-to-business electronic markets. *Journal of Marketing*, 65(3), 17-33.
- Grieger, M. (2003). Electronic marketplaces: A literature review and a call for supply chain management research. *European Journal of Operations Research*, 144(2), 280-294.
- Harrison, D. A., Mykytyn Jr, P. P., & Riemenschneider, C. K. (1997). Executive Decisions About Adoption of Information Technology in Small Business: Theory and Empirical Tests. *Information Systems Research*, 8(2), 171-195.
- Ho, D. C. K., Au, K. F., & Newton, E. (2003). The Process and Consequences of Supply Chain Virtualization. *Industrial Management & Data Systems*, 103(6), 423-433.
- Hunter, M., Doz, Y. (2002). *Opening the Gate* on gatetrade.net. Fontainebleau, France: INSEAD. Retrieved November 3, 2003 from <http://knowledge.insead.fr/>

- Iacovou, C. L., Benbasat, I., & Dexter, A. S. (1995). Electronic Data Interchange and Small Organizations. *MIS Quarterly*, 19(4), 465-485.
- Igabria, M., Zinatelli, N., Cragg, P., & Cavaye, A. L. M. (1997). Personal Computing Acceptance Factors in Small Firms: A Structural Equation Model. *MIS Quarterly*, 21(3), 279-305.
- Koch, H. (2002). Business-To-Business Electronic Commerce Marketplaces: The Alliance Process. *Journal of Electronic Commerce Research*, 3(2). Retrieved March 21, 2003, from <http://www.csulb.edu/web/journals/jecr/>
- Kurnia, S., & Johnston, R. B. (2000). The need for a processual view of inter-organizational systems adoption. *The Journal of Strategic Information Systems*, 9(4), 295-319.
- Le, T. T. (2002). Pathways to Leadership for Business-to-Business Electronic Marketplaces. *Electronic Markets*, 12(2), 112-119.
- Lenz, M., Zimmerman, H.-D., & Heitman, M. (2002). Strategic Partnerships and Competitiveness of Business-to-Business E-Marketplaces: Preliminary Evidence from Europe. *Electronic Markets*, 12(2), 100-111.
- Mata, F., Fuerst, W., & Barney, J. (1995). Information Technology and sustained competitive advantage: A resource-based analysis. *MIS Quarterly*, 19(4), 487-505.
- Poon, S., & Swatman, P. M. C. (1997). Internet-Based Small Business Communication: Seven Australian Cases. *Electronic Markets*, 7(2), 15-21.
- Prananto, A., Marshall, P., & McKay, J. (2003). A study of the progression of e-business maturity in Australian SMEs: Some evidence of the applicability of the stages of growth for e-business model. In *Proceedings of the 7th Pacific Conference on Information Systems (PACIS)*, University of South Australia, Adelaide, South Australia.
- Raish, W. D. (2001). *The eMarketplace. Strategies for Success in B2B Ecommerce*. New York: McGraw-Hill.
- Riemenschneider, C. K., Harrison, D. A., & Mykytyn Jr, P. P. (2003). Understanding IT Adoption Decisions in Small Business: Integrating Current Theories. *Information & Management*, 40(4), 269-285.
- Rogers, E. M. (1995). *Diffusion of Innovations* (4th ed.). New York: The Free Press.
- Sawhney, M. (2002). Putting the Horse First; B2B exchanges failed because they got their business models backward. *CIO*, 15(15), 38-40.
- Scupola, A. (2003). The Adoption of Internet Commerce by SMEs in the South of Italy: An Environmental, Technological and Organizational Perspective. *Journal of Global Information Technology Management*, 6(1), 52-71.
- Rao, S. S., Metts, G., & Mora Monge, C. A. (2003). Electronic commerce development in small and medium sized enterprises: A stage model and its implications. *Business Process Management*, 9(1), 11-32.
- Teo, H. H., Wei, K. K., & Benbasat, I. (2003). Predicting Intention to Adopt Interorganizational linkages: An Institutional Perspective. *MIS Quarterly*, 27(1), 19-49.
- Thong, J. Y. L. (2001). Resource constraints and information systems implementation in Singaporean small businesses. *Omega*, 29(2), 143-156.
- Thong, J. Y. L., & Yap, C. S. (1995). CEO characteristics, organizational characteristics and information technology adoption in small businesses. *Omega*, 23(4), 429-442.
- Timmers, P. (1998). Business Models for Electronic Markets. *Electronic Markets*, 8(2), 3-8.
- Tornatzky, L. G., & Fleischer, M. (1990). *The Process of Technological Innovation*. Lexington, Mass: Lexington Books.
- USSBA. (2001). *The State of Small Business: A Report of the President. 1999-2000*. Washington: Office of the Advocacy, United States Small Business Association. Retrieved May 6, 2003 from http://www.sba.gov/advo/stats/stateofsb99_00.pdf
- Van Akkeren, J. K., & Cavaye, A. L. M. (1999). Confusion With Diffusion? Unravelling IS Diffusion and Innovation Literature with a Focus on SMEs. *Australian Journal of Information Systems*, 7(1), 60-67.
- Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186-204.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425-478.

Walczuch, R., Van Braven, G., & Lundgren, H. (2000). Internet Adoption Barriers for Small Firms in The Netherlands. *European Management Journal*, 18(5), 561-572.