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# A Framework for Identifying the Conditions for Effective Collaborative Commerce Adoption

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## ABSTRACT

This paper examines collaborative commerce (c-commerce) in the context of Small and Medium Enterprises (SMEs). C-commerce potentially provides opportunities for SMEs to access new markets, yet this opportunity has not been realized at least in Australia. This paper proposes a framework to identify the conditions that facilitate the adoption of c-commerce by SMEs. This framework is three dimensional – depth of inter-organisational relationships (IORs), degree of integration of IT within organisation strategy and organisational resources. This proposed framework, after validation, may provide a framework to better explain and predict c-commerce adoption.

## INTRODUCTION

Technology increasingly pervades the business world and society generally. According to Walters (2004, p.219) 'markets have globalised, technology has become all embracing, and relationships with suppliers, customers and competitors are undergoing constant change'. These developments potentially raise considerable opportunities for Small and Medium Enterprises (SMEs) to enter into the global marketplace and form 'partnerships' including alliances, networks and collaborative commerce (c-commerce) (Jarrett, 1998). Though exemplars of c-commerce exist in Australia it has not been widely adopted by SME's.

Generally, Australian SMEs have been slow to adopt more complex forms of electronic commerce. The primary reason given for lack of adoption amongst many small businesses is that they see no real benefit in having a web presence, that is they perceive their businesses to be too small, or they had not factored in the on-going maintenance of webpages (ABS, 2003; van Beveren & Thomson, 2002). Fear of the unknown and lack of skills have also been suggest as reasons why the uptake of technology is less for small businesses (Barry & Milner, 2002; Darch & Lucas, 2002).

The different size definitions for SMEs varies according to country however the definitions used in this paper are the standard Australian Bureau of Statistics classifications, which are micro business being 0-4 persons, small business being 5-19 persons and medium being 20-200 persons (ABS, 2002). If firms have been slow to embrace e-commerce, then it is little wonder that the uptake of c-commerce and its requirement to collaborate, has been slow. This paper looks beyond e-commerce and identifies the antecedents and inhibitors to c-commerce adoption.

## WHAT IS C-COMMERCE

C-commerce consists of all of an organisation's information technologies (IT) bases, knowledge management and business interactions with its customers, suppliers and partners in the business communities in which it interacts (McCarthy, 1999; GartnerGroup, 1999; Burdick, 1999) and can be horizontal competitive co-operation or co-opetition (Levy, Loebbecke & Powell, 2003) as well as vertical collaboration along a supply chain.

Essentially this means that firms, including competitors, come together to exploit an opportunity that arises, as and when appropriate. C-commerce signifies an organisational shift in focus from transactions and exchange, characteristic of electronic commerce, to one of relationships between firms (Sheth, 1996). As global competition intensifies many organisations are forming partnerships as an expeditious way to keep up or to access unique or 'pioneering' resources (Ring & Van de Ven 1992, 1994).

## BENEFITS OF C-COMMERCE FOR SMES

C-commerce is concerned with obtaining sustainable competitive advantage from the maximisation of value adding benefits obtained by working collaboratively with others via IT. The adoption of IT has been identified as a possible source of strategic competitive advantage for SMEs (Yetton, Johnston & Craig, 1994), collaboration using IT can generated innovation resulting in further competitive advantage (Ryssel, Ritter & Germunden, 2004).

SMEs are better able to compete in an increasingly dynamic marketplace via the exploitation of the advantages of the web (Grover, Teng & Fiedler, 2002). C-commerce enables small firms to 'grow' their assets, which is important for Australian SMEs due to their size and access markets not previously possible (Holsapple & Singh, 2000; Tetteh, 1999; Ring & Van der Ven, 1994). C-commerce also facilitates innovation and information, knowledge and systems sharing and exchange (Holsapple & Singh, 2000). Internal efficiencies can be generated by the sharing of information via IT within inter-organisational relationships (IORs) (Ryssel, *et al*., (2004). Bitici, Martinez, Albores & Parung (2004, p. 266) concluded that collaborative enterprises or networks 'create new and unique value propositions by complementing, integrating and leveraging each other's capabilities and competencies'.

To enable SMEs to make the most of the opportunities afforded by c-commerce, SMEs need to 'adopt an entirely different approach to strategic planning and management which can enable them to deploy an extensive infrastructure network based on shared resources with other firms' (Tetteh & Burn 2001, p.171). This requires strategic thinking, trust and a realization of the importance of co-opting rather than competition which typically exists amongst individual firms. Therefore, c-commerce requires firms to develop a strategy, both short and long term; adopt appropriate business models; develop and sustain appropriate collaborative cultures engendering trust; invest in ICT to facilitate information and knowledge sharing and set in place appropriate organisational structures to enable collaboration (Kalakota & Robinson, 1999).

Inter-organisational systems (IOS), which include c-commerce, represent one use of IT and allow the transfer of information across organization boundaries. SMEs in Australia have tended not to adopt these systems due to the previously mentioned barriers. In the past electronic data interchange (EDI) and electronic funds transfer (EFT) have been the technologies used to enter into IOS. The standards

required for EDI and the high set up costs have tended to act as a barrier for SMEs to enter into IOS. This potentially is overcome by the internet which facilitates participation by SMEs in c-commerce.

It can be argued that c-commerce is the next step following adoption of the full functionality of e-commerce and e-business. Whether though there is a linear progression from e to c-commerce is debatable given the differing antecedents. A number of models have been developed that depict a progression of the application of e-commerce such as the DTI Model (Martin & Matlay, 2001).

Adoption of e-commerce or e-business, cannot be said to be a direct precursor to c-commerce. However the 'technology' required in these preceding stages needs to be in place for c-commerce to occur. The technology required to enter into c-commerce is more complex and involves other hardware and software in addition to the internet, as well as other factors.

## FACTORS IMPORTANT TO C-COMMERCE ADOPTION

A review of the literature concerning c-commerce has been undertaken and subsequently three major areas have been identified as being important to c-commerce adoption by SME's. The factors identified are inter-organisational relationships, organisational resources and the degree of IT integration within business strategy and will be discussed.

### Depth of Inter Organisational Relationships (IORs)

Global competition increasingly is occurring between networks of firms (Morgan & Hunt, 1994), and so partnerships, including c-commerce, are being established. This requires firms to choose appropriate partners and determine and agree upon the management of relationships (Ritter, Wilkinson & Johnston, 2002; Ring & Van der Ven, 1992; 1994).

In the context of this paper inter-organisational relationships (IOR's) refers to cooperative IOR's that include strategic alliances, partnerships, coalitions, joint ventures, franchises and network organisations. These have been examined by many authors this paper has adopted the framework developed by Holmlund and Tornroos (1997) who developed a classification describing a number of dimensions of IOR's. These being Structural (the resource links, connections with other organisations through the IOR and the institutional bonds such as contractual agreements), Economic (financial investment made in the relationship and expected economic returns form the relationship) and Social (relational concepts including characteristics such as trust, commitment, attractions, atmosphere and social bonds).

A dimension of "Organisational" has been added to encompass characteristics that relate to how the organisation interacts with others. Table 1 builds on these dimensions and summarises factors deemed to be critical to collaborative IOR's and so c-commerce. The extent to which these factors explain the adoption of c-commerce or antecedents to its adoption needs to be considered in subsequent research.

A coming together around IT is secondary to the formation and existence of relationships between firms, since they underpin collaborative relationships (O'Keefe, 2001). Without the cultivation of relationships, firms are not able to capture the full value of technology (O'Keefe, 2001). Such a coming together will only occur if the shared benefits are acknowledged and are deemed to be worthwhile. Perceptions of these benefits and a willingness to engage in c-commerce are influenced by attitudes to and experience of IT as well as the availability of resources able to be dedicated to c-commerce.

### Degree of Integration of IT within Organisational Strategy

Gaddea, Huemerb & Hakansson (2003) define strategy as an organisation's direction, purpose, strategic leadership, organisational and competitive performance. IT potentially plays a significant role in enabling a firm to achieve its strategic objectives. Levy, Powell and Yetton (2001) argue that as well as being a major driver of strategic change, IT facilitates firms exploitation of information to achieve value added benefits.

*Table 1. Four Dimensions/Factors critical to IOR's*

| Dimensions | Category |
|---|---|
| **Structural/Infrastructure** | Information Technology |
| | Institutional Bonds |
| | Infrastructure |
| **Economic/Financial** | Investment in the Relationship |
| | Value |
| | Reduced Productions costs |
| **Organisational** | Compatibility |
| | Flexibility |
| | Intellectual Capital |
| | Organisational Interactions |
| | Communication |
| | Organisational Interconnectedness |
| | Relationship Management |
| **Social** | Commitment to the Relationship |
| | Trust |
| | Organisational Culture |
| | Individual Interaction |

*(Grieger 2004; Holmlund and Strandvik 1999; Holmlund and Tornroos 1997; Humphreys Shiu and Chan 2001; Kauser and Shaw 2003; Lawton Smith and Dickson 2003; Marshall 2004; Pearce 2001; Ritter, Wilkinson & Johnston 2002; Ryssel, Ritter and Gemunden 2004; Sherer 2003; Vyas, Shelburn and Rogers 1995; Walter and Ritter 2003)*

This is less true however for SMEs since they tend to adopt IT to reduce costs (Hagmann & McCahon, 1993) rather than as a way to add value with most SME's tending not to be strategic in their use of IT.

From the SME literature it is widely accepted that there is a limited use of management information systems (IS) amongst SMEs (Premkumar & Roberts, 1999). Consequently few benefits have flowed to SMEs from IS (Cragg & King, 1992). This reflects SMEs limited knowledge of IS which precludes them from taking advantage of the strategic information available from IT systems (Levy et al., 2001).

Furthermore, SMEs that make strategic IT investments fail to obtain strategic benefits unless the IS is integral to the overall strategy of the firm (King, Cragg & Hussein, 2000; Lesjak & Lynn, 2000). On the other hand, firms that adopt a low cost strategy are less likely to take a strategic view of IS (Lesjak & Lynn, 2000). Organisations involved in c-commerce are concerned with maximizing the benefits from value adding through IT. They have already taken a strategic view to invest in IT.

In addition to inter-organisational relationships and organisational strategy c-commerce requires dedicated resources directed to the outcomes of partnerships.

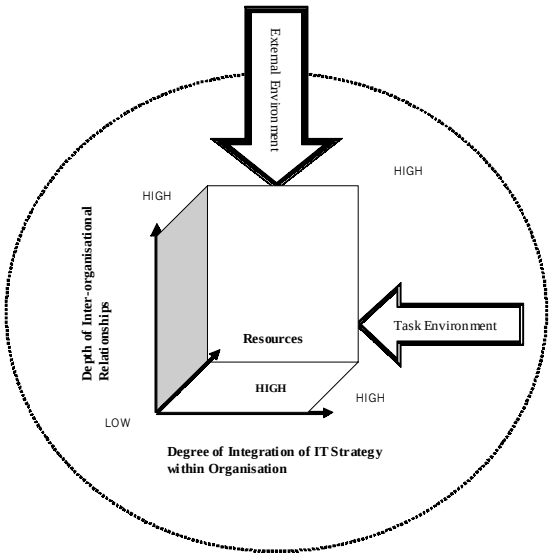
## ORGANISATIONAL RESOURCES

One way of looking at IT adoption and implementation amongst small business is via the resource-based theory (RBT) of the firm (Caldeira & Ward 2003, Feeny & Willcocks 1998). Firms are characterised by a set of competencies or skills and capabilities that are important to enable it to achieve a sustainable competitive advantage. IT expertise is part of this resource set with synergies to other resources.

Size is important as it has a bearing on resources available to the firm. SMEs tend to be resource poor – time, financial and expertise, such as IT expertise, which limits their ability to be involved in other than day to day operations (Thong, 2001). In part this is a function of the size of the business and often results in limited IT capabilities of the firm. This resource poverty has implications for growth and planning for the future, including investment in IT, and poses a critical difficulty for small business. On the other hand c-commerce is one avenue for SME's to overcome resource limitations.

Resources necessary for c-commerce adoption are also relational. C-commerce requires that partners are flexible, are able to provide a

*Figure 3. Framework Depicting Factors Influential to the Adoption of C-Commerce*




strategic advantage to collaborators and have interoperable platforms that facilitate information and knowledge sharing. This presupposes a willingness to share and the existence of trust amongst 'partners'. Robbins (2003) argued that the key to success is to develop a knowledge sharing culture. Trust, which requires a collaborative organisational culture, is critical to encouraging the sharing of information (Ring & Van de Ven, 1992; 1994; Morgan & Hunt 1994) using the internet, and within organisations the intranet.

The sharing of resources and information among firms (Lee & Lau 1999) is critical to the success of emerging business partnerships. Information needs to be communicated efficiently and effectively both within the organisation and between partners in a collaborative arrangement. This is made possible via IT and requires integration of systems within the organisation (Enterprise Application Integration) as well as between organisations. This necessitates interoperable platforms and systems that participants put in place (Holsapple & Singh 2000; Badii & Shariff, 2003) which requires resources and potentially adaptation of systems to achieve interoperability.

## THREE DIMENSIONAL FRAMEWORK

The proposed framework argues that organisations must possess certain characteristics for effective c-commerce adoption as outlined above. The lack of these characteristics and low level of awareness of the benefits of c-commerce is believed to partly explain the low rate of adoption by SMEs in Australia.

The three dimensions plot the nature and quality of the relationships between collaborators, the extent of resources available to support the relationship and the extent to which IT is part of the strategy, vision and direction of the organization.

Aside from the three dimensions which are internal to the organization and collaboration, Storey (1994) argues other external factors may influence c-commerce adoption. The immediate task environment such as the industry sector as well as the broader external environment may impact the organization and so are included in the proposed framework. The proposed framework acknowledges the part these factors play with regard to c-commerce adoption.

This framework enables the position of individual SMEs to be plotted in relation to these three variables should they be validated. By applying this framework to SMEs and plotting their position against the three axis, areas in which they are deficient can be readily identified. This will assist them to become c-commerce ready, should this be an appropriate strategy.

Moore (1993; 1997) argues that businesses are part of an ecology across industries as they co-evolve (Burn, Hackney and Salazar, 2004). Whilst we are focusing on collaboration around IT amongst competitors, c-commerce may transcend industries. The real issue however is the dynamic nature of such collaboration with new challenges emerging depending on the extent of co-evolution.

## DISCUSSION

Firms engaged in c-commerce do so because they recognize the strategic benefits, however c-commerce demands significant investments in IOS. A commitment to the relationship requiring investment in IT from a long term perspective then is critical. Efficiency no longer is the sole motivation for IT adoption (Levy, *et al*., 2002).

Yet to be identified is the relationship between the three dimensions and their relative importance to c-commerce adoption. Research is required to 'test' whether these factors are critical antecedents to c-commerce adoption as well as the interdependence between these and or other factors identified by subsequent research. The proposed model indicates a positive relationship between these dimensions, however this requires validation. Since the development of a checklist depicting c-commerce readiness is an expected outcome of the research, the point at which an organisation is 'ready 'to consider c-commerce needs to be mapped.

Investigation of the external and task environments is also important especially comparing the Australian context with environments where c-commerce is more entrenched in order to identify any significant differences. Given that the majority of research regarding collaborative IOR's and c-commerce has taken place in Europe the impact of the cultural and institutional settings needs to be acknowledged.

In conclusion, c-commerce is an emerging phenomenon in Australia. This paper seeks to identify the antecedents required to facilitate c-commerce adoption for SMEs operating in the Australian environment. The model proposed in this paper will require 'testing' in different national and industry contexts so that validation or refinement can occur.

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