

VALUE CREATION FOR SMES USING COLLABORATIVE COMMERCE MARKETPLACES

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Abstract: To compete with low cost competitors from other regions of the world, collaborative commerce marketplaces (CCMs) can assist SMEs to innovate and rejuvenate their business. For instance, CCMs allow the configuration of partners' capabilities very quickly in response to market's demand to collectively bid for tenders/projects. Through collaboration with partners in the CCM, SMEs are able to venture outside their regions to capture new markets. A comprehensive, visual and dynamic CCM model is presented in this paper which can be used as a basis for further study of CCMs. Two selected case studies from a CCM are used to verify the proposed model. The layered approach of the model provides opportunities for further examination of the dynamic and complex interactions in CCMs

1 INTRODUCTION

The introduction of Internet technology and electronic communication in the mid 1990s initiated the inception of electronic marketplaces (eMarketplaces) which created a lot of hype about how businesses could benefit from this new electronic environment and how they could have access to global economy (Burke, 1997; Hodge and Cagle, 2004; and Mehler et al., 1997). Despite the publicity, many businesses, in particular small-to-medium enterprises (SMEs) who employ less than 200 full-time employees (ABS, 2003) find it very difficult to participate in global economy. If they join a major supply chain via an eMarketplace they will be near the bottom of the industry with the constant prospect of being replaced by low-cost competitors from nations like China and India. If they try to go it alone by directly reaching major customers they usually exhaust their business development resources well before they can land the required contracts given the length of time and costs

associated with product development lead times and selling cycles. Further, it is very difficult for SMEs to go outside home markets which inevitably lock companies into lower profit margins, eroding the necessary profits to keep innovating their products and services to stay competitive.

Even though there are at least one eMarketplace and sometime as many as ten in each industry sector, the actual user take-up of eMarketplace is modest. In the UK only two percent of business-to-business (B2B) transactions are currently going over the web, despite the fact that a quarter of businesses have signed up to eMarketplaces. We believe that these figures are misleading as most of the businesses that have signed up are generally only participating in free on-line trials. More significantly, only two percent of companies' suppliers relationships are conducted over the web, with an overwhelming 92 percent of supplier relationships are still being maintained through traditional channels. It seems that the current eMarketplaces' business models are not working as anticipated (Bal, 2005).

However, there is considerable research underway in Europe on effective collaborative commerce models (CCMs), one such project is the European Collaborative Networked Organisations Leadership Initiative (EcoLead, <http://ecolead.vtt.fi/>) which starts off with the vision:

“In ten years, in response to fast changing market conditions, most enterprises and particularly SMEs will be part of some sustainable collaborative networks that will act as breeding environments for the formation of dynamic virtual organizations.”

One of the most advanced practical examples is the West Midlands Collaborative Commerce Marketplace (WMCCM, www.wmccm.co.uk). This is one of the first practical examples of breeding environment for collaborative networked organisation. This three year old project has over 3100 registered SME members, covering a broad spread of industrial competences. Over 200 of these members have been competence profiled, to capture what they can do, not just what they do now. It has tenders feeds from a range of partners, over 40,000 tenders in the last year. The system allows quick creation of networked organisations in response to tender opportunities, and this has generated over A\$8 million of new business for the members. Adding value is the key objective for WMCCM, and this is achieved by identifying what members can really do, making that available to the outside world in an independent trusted manner, and creating networked organisations quickly in response to opportunities. On-line collaborative working allows this to be done at low cost.

The objective of this paper is therefore, two-fold:

- To investigate the comprehensive, visual business model for CCM system proposed by Seng et al. (2006) using case studies and
- To identify specific value creation from selected case studies in the WMCCM.

The remainder of this paper is structured as follows: Section 2 provides background information on the differences between existing eMarketplace and CCM; Section 3 discusses the opportunities and benefits of CCM; Section 4 presents the research methodology adopted; background information on two selected case studies are provided in Sections 5 and 6 respectively; Section 7 contains a detailed discussion of the model and its value creation; a brief summary is presented in Section 8; and finally finishes with a conclusion and further work in Section 9.

2 EMARKETPLACE AND CCM

Similar to the traditional marketplace, in electronic marketplaces purchasers and sellers are brought together for the purposes of buying and selling of goods and services; conducting financial activities and transactions as well as information exchange. All these activities, transactions and exchanges take place in the ‘virtual marketplace on the Internet’ rather than at a physical venue.

The early definition of eMarketplace by Bakos (1991) as “an interorganisational information system that allows the participating buyers and sellers to exchange information about prices and product offers” has been widely accepted (Choudhury *et al.*, 1998; Clemons *et al.*; and Forrester Research, 2001). This definition has been refined and updated to take account of the changes and complexity of the eMarketplace environment by numerous scholars (Federal Trade Commission 2000; Grieger, 2003; Raisch, 2001; Sculley and Wodds, 2001; and Weill and Vitale, 2001). eMarketplace in the context of this paper is defined according to Stockdale and Standing (2004) as ‘an interorganisational information system that allows multiple buyers and sellers, and other stakeholders, to communicate and transact through a dynamic central market space, supported by additional services’ (Stockdale and Standing, 2004).

By integrating collaborative supply chain services through eMarketplace, firms, organisations, individuals and/or any other stakeholders can collaborate and share information with each other without relying on one self’s heavily pre-invested infrastructure (such as Electronic Data Interchange or EDI). Indeed eMarketplaces act as a facilitator for seamless information sharing and create visibility in the supply chain (Rudberg, Klingenberg and Kronhamn, 2002).

eMarketplaces can be grouped into horizontal eMarketplace and vertical eMarketplace based on products and industries (Kuglin and Rosenbaum, 2000; and Deloitte, 2000).

According to Li and Li (2005), the current business models for eMarketplace are generally classified into 3 categories (from the perspective of eMarketplace operators), that is, (i) independent eMarketplace; (ii) consortium eMarketplace and (iii) private eMarketplace. Independent eMarketplace is established by an independent third party, whereas consortium eMarketplace is set up by some participants (buyer or seller) in a single industry. In contrary, private eMarketplace is usually operated by one firm to facilitate its own business process, for

instance, eMarketplace of Cisco (Li and Li, 2005; and Raisch, 2001).

Collaborative commerce marketplace (CCM) is an independent eMarketplace system which is based on a group of stakeholders cooperating as market makers for common interest. Common interest may lie within a geographic area, specific goal (ie. business objectives) or the type of industry.

In addition to the existing eMarketplaces' functionality and characteristics, the WMCCM serves SMEs and their customers by supplying competence profiling and brokerage facility; collaborative (virtual) teaming capability as well as electronic communication capability. The independent CCM not only puts strong emphasis on service and capability, but also competence of how an organisation applies its skills and processes in other unrelated products or sectors. The functionality of competency identification will allow a first tier supplier to identify new or alternative sources of supply for product, while the brokerage system will in effect by identifying all possible virtual organisations that can supply those competencies. Furthermore, collaborative (virtual) teaming capability will provide SMEs a framework and mechanism for creating rich relationship across a distributed supply chain with members geographically dispersed.

The CCM will also be able to complement the role of the vertical multi-national industry specific eMarketplaces by presenting them an effective way to reach the lower tiers of the supply chain where SMEs predominate.

3 OPPORTUNITIES AND BENEFITS OF CCM MODEL

In addition to basic business operations, opportunities for innovation have emerged through CCM models. The areas of innovation focus on capability rather than products. CCM models focus more on bringing businesses (based on their capabilities) together to exploit new opportunities. The innovation agenda is of high priority in Australia, the USA and Europe because these regions cannot match the manufacturing cost available to nations such as China and India. CCMs help switch the focus of marketplaces from doing better matched (and thus cheaper!) buying and selling to a focus on quickly putting together resources to exploit new opportunities. Existing eMarketplaces have assisted in making manufacturing a commodity, *if I can't source a*

capacity from Australia, I can get it from China, India or Europe. CCMs switch the focus to *capability*, rather than *capacity*. These systems offer huge opportunities for innovation and adding value to businesses, thus providing competitive advantage over others. Some of these opportunities are listed below:

- Quickly generate new capability or capacity;
- Conduct collaborative new product or service development or enhancement;
- Collectively offer or bid for a project;
- Share expensive infrastructures and resources;
- Access to other national and international markets;
- Increase business agility and
- Make capability more widely accessible

Like other developed industrialised countries, many traditional industries in the UK have been badly affected by low cost competitors like China and others. Manufacturers are no longer limited to local suppliers and restricted by geographical locations. The reality for local or regional SMEs is that they have to innovate to remain in business. One way is to collaborate with other SMEs to bid for new contracts in new markets. In some cases, they may be applying the same processes or their know-how to target new products or markets as shown in one of the cases in this paper.

Another illustration of this is a partner company who for the automotive industry manufactured seat frames. Key skills and process included the ability to "bend and join," wire precisely. They have now become the leading world provider of body piercing jewellery. A product that also requires the skills and capability to "bend and join," wire precisely. The profit margins are much higher and they judge the work as more interesting.

Through collaboration with others in the eMarketplace, new and more attractive offers can be made collectively to the market rather than as individual offers. Also, CCMs enable the sharing of expensive resources which SMEs on their own may not be able to afford. Thus such platforms provide low cost, high quality and timely resources.

Besides enabling SMEs to keep pace with an ever-changing business landscape, other opportunities in the form of access to global markets, changed (or new) production methods and costs, enhanced communication, reduced transaction costs and stimulated competition are all drivers for enabling SMEs to survive in today's global economy (Sculley and Woods, 2001; Timmers, 1999; Tumolo, 2001; and Stockdale and Standing, 2004).

From the above descriptions of CCMs, the CCM model needs to be very dynamic in nature and adaptable to changes in highly unpredictable situations. It aims to offer different structures to participating parties seeking adaptability and flexibility in highly dynamic environments. This flexibility allows businesses to respond to fierce global competition, short product life cycles and heightened customer demands. In addition, the CCM model also allows participating parties to maintain close technology-enabled relationships until business objectives are completely achieved. It potentially allows organisations to fully exploit the low procurement costs associated with arm's length relationships and shared risks and expertise of traditional supply chain (Williams, Esper and Ozment, 2001).

4 RESEARCH METHODOLOGY

According to Cavaye (1996), case study research investigates pre-defined phenomena but does not involve explicit control or manipulation of variables. A research methodology using the case study approach combines data collection techniques such as interviews, observation, questionnaires and document and text analysis. Following data collection, both qualitative data and analysis methods and quantitative methods may be used (Yin, 1994). Here the research has less prior knowledge of constructs and variables and the aims of case research are list below:

- To provide a description of phenomena;
- To develop theory;
- To test theory;
- To provide evidence for hypothesis;
- To explore areas where existing knowledge is limited.

For the reasons mentioned above, we aim to use case studies to test the proposed CCM model. Initially we have selected two case studies from different industry types to verify the proposed model. These case studies are described below.

5 CASE STUDY 1: RAILWAY TOILET MODULES

An initiative undertaken by the West Midlands Regional Development Agency (UK) in 2004 to examine the prospects for railway manufacturing predicted a three percent year on year increase in the coming decade. Discussions with the main OEMs

(French and Canadian companies) identified several areas where there was a shortage of suppliers; one of these was for passenger carriage toilet modules. From an engineering perspective, processes to manufacture a particular product or component can be identified by physical examination of the product or component. For example, in the case of the railway toilet modules, some processes are metal fabrication, plastics moulding, electrical harness design and manufacture and assembly of parts/components. In the region it was difficult to find a single company that possessed all these capabilities. This is often the case; it is too difficult to build up a supply chain with the necessary competences. Our model, as implemented in the WMCCM, since it focuses on competences, and not existing products, allows us to configure a capability from local suppliers very quickly in response to a demand or need.

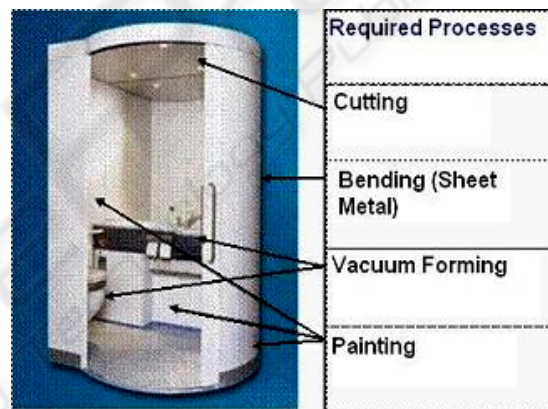


Figure 1: Processes required for the Railway Toilet Module.

In this case, using the partner search function, a networked organisation, with all the necessary competences was put together, and asked to build a prototype on behalf of the OEMs. They used the Collaborative Project Spaces on the WMCCM system to co-ordinate the work. Import substitution capability of this type, provides immediate opportunities for local SMEs in the West Midlands region.

The innovation of this case is that by looking at local end products, there was no way of meeting this need, but by looking at competences in terms of engineering processes and skills, we can nearly always build a local capability. In addition, it also provided an opportunity to introduce local suppliers to a market leader in the railway toilet field (in this case either Swedish or Finnish) to assist in capacity building.

6 CASE STUDY 2: INJECTION MOULDING TOOLING

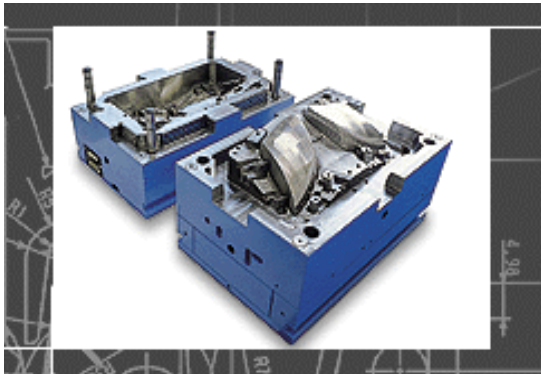


Figure 2: Injection Moulding Tooling.

Through the WMCCM, an inquiry was received from a South African Automotive industry injection moulded components supplier (in the Port Elizabeth region) regarding possible suppliers of tooling for them. This demonstrated the ability of the system to publicise competences worldwide, something that SMEs alone would find it hard to do with their own websites, because of trust and accessibility reasons. The WMCCM enabled this company to be in contact with three local partners in the West Midlands who had the capability. Eventually a local company became the main tooling provider to the South African company. The company made the choice of moving from a Taiwanese supplier because of the capacity to use English with the provider and also because the timeline was the same.

This case illustrates a number of key points. Firstly SMEs need an independent trust rating and it is difficult for others to believe everything that is published on all the individual websites, to win business from afar. Secondly, complementary competences can exist between regions. Port Elizabeth in South Africa is a region with many automotive assembly operations but there has not been time for a full support infrastructure for the industry to be developed. On the other hand, the West Midlands in the UK, is one region where automotive assembly is dying out, but a very good support infrastructure still exists. There are obvious synergies in helping connect via, a marketplace such as that proposed. In this particular example, one of the goals is for the UK tooling supplier to act as an agent for the South African injection moulders in the WMCCM region, and the reverse, the injection moulder to act as an agent for the tooling capability of the UK SME in the Port Elizabeth region.

This case study demonstrates the possibility of linking partners anywhere in the world and from there new businesses can be created to benefit those regions concerned. Even though this case study is concerned with injection moulding tooling, any types of businesses is possible. The innovation is in enabling the connection in trusted environment in the first place. To this effect WMCCM have just recently signed an agreement with the National Small Industries Corporation of India, the government body for supporting small businesses to explore complementary competences between regions.

7 APPLICATION OF BUSINESS MODEL FOR CCMS

The comprehensive, visual business model for CCM described in Seng et al. (2006) has been refined to include two layers as depicted in Figure 3. The first layer is concerned with the strategic direction of the CCM systems. It deals with emergent inter-organisational strategy and with fundamental and mean objectives. The second layer looks at the tactical and operational aspects of the CCM systems. It deals with the interactions between core business competencies, emerging competencies and support competencies and how they may co-operate to attain objectives and value creation.

7.1 Strategic Layer

In the context of the CCM model, an “emergent strategy” encompasses value creation which includes *new opportunities* and *latest innovation*. This emergent strategy of value creation is interconnected with fundamental objectives that are defined by Keeney (1994) as “a statement of something that one wants to strive toward”. Therefore applying this business models to the two case studies described in previous two sections, we have the following SMEs requirements as interpreted in terms of fundamental objectives as:

- “I need to find companies to help me do ‘X’” as in Case Study 1
→ “*Maximize partner formation*”
- “I need access to new customers and markets” as in Case Study 2
→ “*Maximize access to new business*”

These objectives are then decomposed into means objectives which are “methods to achieve ends” (Keeney, 1994).

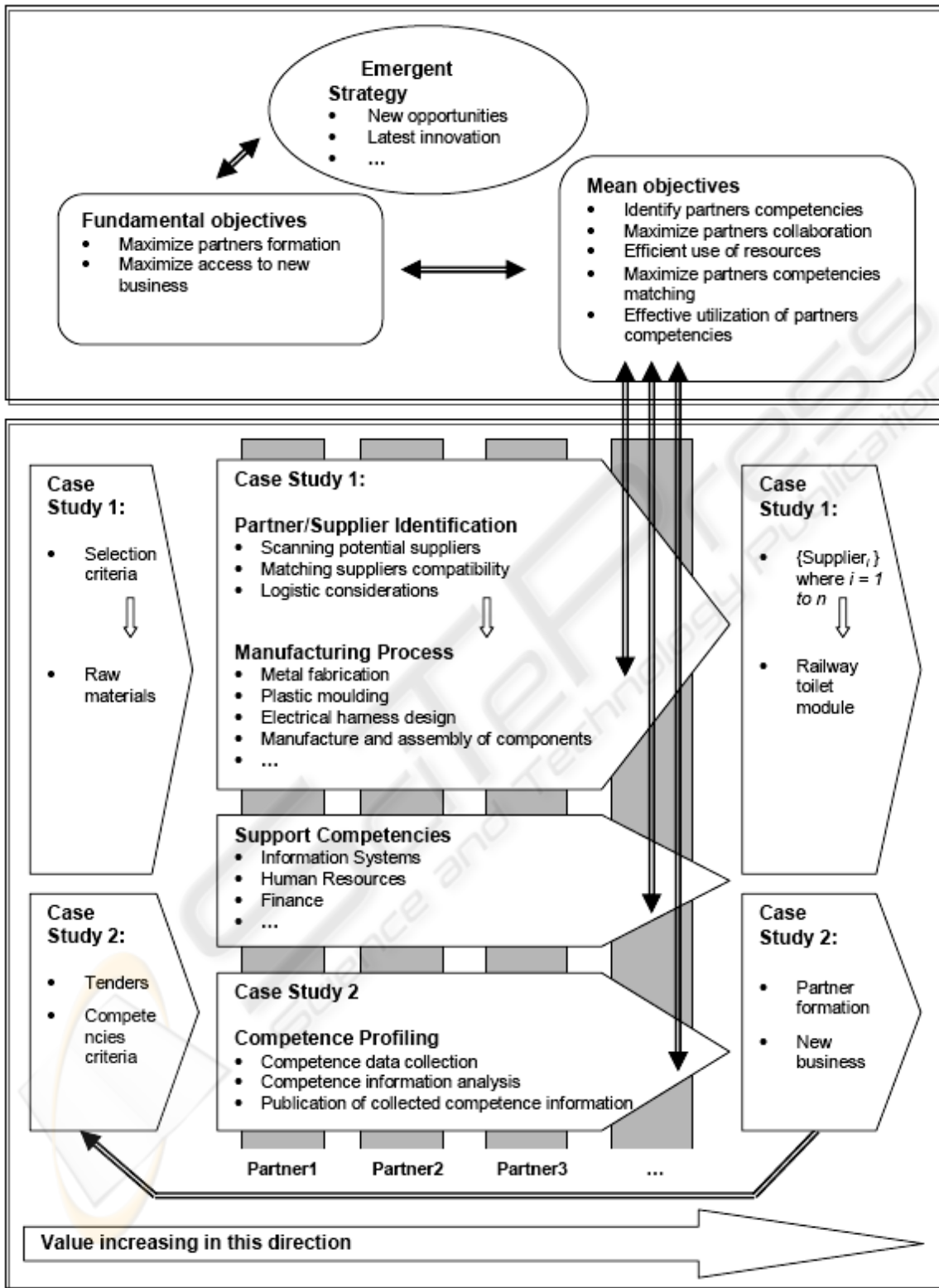


Figure 3: Application of business model for Case Study 1 and Case Study 2.

Accordingly “*maximize partner formation*” may be achieved by *identifying partners competencies, maximize partners collaboration and efficient use of resources*. “*Maximize partner formation*” on the other hand may be accomplished through *maximize partners competencies matching and effective utilization of partners competencies*, among others.

7.2 Tactical and Operational Layer

The second layer of the CCM model deals with both tactical and operational aspects of the CCM. In the context of Case Study 1, the main tactical emergent competency is *partner/supplier identification*. As mentioned in Section 5, it is very difficult for a SME to possess all the capabilities necessary to build the railway toilet module. The availability of all members’ skills in the CCM allows the configuration of partners’ capabilities very quickly in response to market’s demand. This ensures new opportunities are embraced through collaboration with partners in the CCM.

Another aspect of this model is the decomposition into an underlying layer that deals with operational or actual processes that contribute to the manufacturing of the product. For instance, the processes required to manufacture the railway toilet module are: *metal fabrication; plastic moulding; electrical harness design; and manufacture and assembly of components*.

The tactical emergent competency used to support Case Study 2 is *competence profiling* which consists of three main activities. Firstly competence data (key skills, key capabilities and ability to change and to adapt to different situations, among others) are collected from partners. Secondly, the information collected is then validated which assists towards overcoming issue of trust and confidence between trading parties. Lastly, the information is made available to the outside world in a trusted manner. This case study demonstrates value creation (becoming a major tooling provider after receiving an inquiry) for SMEs through the availability of the CCM that allows connections between previously unknown parties.

In addition to both emergent competencies, underlying standard core business and support competencies such as information systems, human resources and finance, among others are also components of this model.

8 DISCUSSION AND SUMMARY

SMEs in regional areas of the UK are struggling to face competitions from cheap imports of countries such as China and India. To remain competitive and in some cases to remain in business, SMEs can benefit from the potentials offered by CCMs. By working in trusted domains such as the WMCCM, benefits far outweigh initial set up costs. By presenting their capabilities through competence profiling, SMEs in CCMs are accessible to many potential customers and projects not just within their own regions but also to others outside their regions as demonstrated in the case studies. At the same time, numerous opportunities for new business and partnerships are made possible in CCMs.

There is a lack of business models that address CCMs in particular. Most traditional models are one way models pushing products to customers (or other business as in the case of business to business applications). However CCM models are dynamic in nature and adaptable to changes in highly unpredictable situations. Thus they are multi-way systems pushing products and pulling information/participation from users of the CCM system. In this paper we have presented a comprehensive, visual and versatile model for CCMs. This provides a framework for investigations and study of CCMs such as identifying innovations and values offered by CCMs and the interactions between the various layers of the CCM.

9 CONCLUSION AND FURTHER WORK

In conclusion, CCMs are emerging trends in conducting business over the Internet, in particular they can provide huge benefits to SMEs. In regions where SMEs are struggling to compete with other low cost competitors such as China or India, CCMs provide opportunities for business innovations and business rejuvenation which would not have been possible otherwise. New products and new markets are some of the opportunities created in CCMs.

Traditional business models are inadequate in addressing the dynamic and multi-way collaborations of CCMs. To address the dynamic and multi-way collaborations of CCMs, a layered model of CCM is proposed in this paper. This layered model addresses the strategic, tactical and operational layers of the system allowing the emergent strategy to drive the subsequent layers of the model. Importantly, this framework also

provides a basis for numerous opportunities to further study CCMs.

Some areas for further study of CCMs are given below. The layered model enables each layer of the model to be investigated in detail. For instance, at the operational level, new or emergent processes can be identified and mathematical models comprising value functions can be developed to quantify the value added to the CCM. Keeney's value-focused thinking methodology of fundamental and mean objectives can be further explored in the CCM model, particularly in linking them to the interactions with the subsequent layers of the model.

Further mining of innovations from the WMCCM is needed to capture knowledge of CCMs. Thus more case studies from the WMCCM will be investigated in the future for refinement of the proposed CCM model. Other areas for future work are to capture experiences gained from past tenders/projects and to determine the success and failures of partnerships in CCMs.

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