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Innovating B2b E-Marketplaces via the Concept of Value Co-Creation

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Abstract: Business-to-business (B2B) e-marketplaces have generated much excitement upon their introduction to the Internet community. However, though there have been initial success, many B2B sites have failed to hold transaction volumes. Various literature list down many possible reasons, but it is contended that traditional B2B e-marketplaces have been built using the goods dominant logic (GDL) and that this has been the reason why many B2B e-businesses have failed. Shifting to the use of service dominant logic (SDL) is however argued to be able to solve the problems caused by the GDL. SDL redefines value as something which is gained upon use and not just in exchange. It also puts an emphasis in value co-creation, lifting up the customer role. Frameworks for value co-creation exist for business-to-consumer (B2C) e-marketplaces but no working functional requirements definition model exists for B2B systems. This paper attempts to fill that gap and presents a functional requirements definition model and prototype created based on an SDL-based B2B e-marketplace reference model.

Key words: E-innovation, e-marketplaces, value co-creation.

INTRODUCTION

With the rise of the power and tools offered by Internet and ICTs, various companies and organizations have made moves to find their place in the World Wide Web. Businesses and marketplaces are no exceptions and some have started to engage in online business-to-business (B2B) transactions, taking part in what is known as an e-marketplace.

An e-marketplace is generally defined as an information system existing between organisations allowing a number of buyers, sellers, and other stakeholders to communicate and conduct business through a "dynamic central market space" supported by added facilities (Stockdale *and* Standing, 2004). It is tightly coupled with the term e-commerce which takes on the definition as a process where firms use the Internet as a medium to facilitate the exchange of service and information (Zott *et al.*, 2000).

A B2B e-marketplace then is a space online where a number of buyers and sellers can gather in a single trading community to get information to make a decision on buying and selling (Humphrey *et al.*, 2003). It is common for many-to-many business relationships to exist in this type of marketplace. In other words, a single buyer is not limited to buying from a single seller and vice versa. A buyer can have a number of different sellers in the same way that a seller can have a number of different buyers.

B2C (business-to-customer) e-marketplaces also exist but they are different from B2B systems in the way that they involve individual consumers in the transactions, as opposed to involving only business firms (Zott *et al.*, 2000). B2C systems allow consumers not acting as business entities to buy and interact with the business side of the relationship. B2B systems however involve business firms in both the buyer and seller end.

Traditional B2B e-marketplaces commonly have the following characteristics: 1) a centralised repository; 2) opaque interfacing; 3) static information about service offered; 4) a bottlenecked structure; 5) loosely connected members; 6) fixed exchanges; 7) price-based decisions; 8) non-iterated agreements; 9) short-term partnerships; and 10) service charges (Ferreira *and* Ferreira 2004). These characteristics imply that B2B e-marketplaces would involve web features and functionalities such as the following: 1) information repositories or information pools; 2) selling offers; 3) purchase needs; 4) initiate and perform transactions; 5) price lists; and 6) service charges.

It is true that these encompass the basic functionalities of a B2B e-marketplace but display some disadvantages (Ferreira and Ferreira 2004). For example, in the short-term partnership characteristic, buyers have no information about other suppliers' performance in the e-marketplace. Not only that, most information are static and decisions are based mainly on pricing. Also, connections are loose and do not allow the establishment of long term business relationships. Finally, since interfacing is opaque, members of the e-marketplace trust the e-marketplace without necessarily placing their trust in the business with which they are conducting a transaction with. Adding other functionalities and modifying some of the existing ones could therefore improve traditional B2B e-marketplaces.

Some B2B e-marketplaces having additional and modified features include Hong Kong's Global Sources, Alibaba.com, and TradeTextile.com. Global Sources, a trade publishing and catalogue company for various product verticals, publishes detailed reports about financial and web transaction performance data in

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www.globalsources.com. This e-marketplace was awarded for its ability to provide value to business customers "based on efficiency, price, customer service, quality, innovation and trust" (Markus *et al.*, 2002). Alibaba.com, which serves as a hub where businesses can "meet" without fees for deals, limits its e-marketplace functionalities to searching, matching, and negotiation (Guo, 2007). TradeTextile.com, meanwhile, supports offers for selling and buying of textile and apparel, as well as for auctions and reverse auctions of these (Markus *et al.*, 2002).

The B2B e-marketplaces mentioned above are among some of those successful in the B2B e-marketplace venture. The innovativeness of their web functionalities is a probable reason for their success. Other B2B e-marketplaces were not as successful but various literature record many other challenges businesses entering into e-commerce have faced. These challenges and the reasons behind them, however, point out to another problem requiring a solution in the B2B e-marketplace design.

Technical, organizational, economic and legal challenges were among those challenges identified in some of the systems (Dai and Kauffman 2001). Other challenges, particularly for SMES, included the lack of support from market makers, lack of standards, little understanding of the environment, the supply-chain integration, industry environment, the identification of benefits, the global trading, and financial constraints (Stockdale *and* Standing 2004). Implementation issues, security, initial setup costs, and ongoing operational costs were also some of the barriers faced by other firms, especially those venturing into B2B e-commerce in Singapore (Wirtz *and* Wong, 1999).

The reasons varied yet most centred on monetary constraints. Because of the value put on generating wealth and profit, it is contended that the factors contributed by the approach used to develop B2B e-marketplaces is one reason why these e-marketplaces have lost audiences. Current e-marketplaces have been created using what is known as the "goods dominant logic" (GDL). Most B2B systems have focused on creating units of output in order to accumulate wealth. This is one characteristic of a system that makes use of a goods dominant logic. Many authors however have seen the disadvantages of using the GDL in running business systems. A shift to the service dominant logic (SDL) would however address the disadvantages. SDL puts focus on value co-creation and innovates the way that businesses and B2B systems perceive and handle value.

According to SDL, value is not something gained upon exchange but is gained upon use (Vargo *et al.*, 2008). It argues that both buyers and sellers play a role in the value co-creation process. E-marketplaces seeking to implement SDL must therefore make use of a framework different from the traditional GDL-based ones.

Frameworks for value co-creation exist for business-to-consumer (B2C) e-marketplaces but no working functional requirements definition model exists for B2B systems. This paper seeks to fill in that gap. It therefore aims to bring innovation to B2B e-marketplaces via the concept of value co-creation by providing a functional requirements definition model developed from an SDL-based e-marketplace reference model.

Innovation via Value Co-Creation:

GDL, SDL, and Value Co-Creation:

The goods dominant logic (GDL) has been defined as a logic which centres on units of tangible or intangible units of output to be the typical units of exchange (Vargo *and* Lusch, 2008a). This logic has been identified to be the conventional approach used in most marketing strategies.

GDL typically puts units of output into two categories: the tangible (goods) and the intangible (services). "Goods" include those which can be touched physically like wood, automobile, gasoline and the like. "Services" in this logic, meanwhile, include those which cannot be held literally such as transport services, catering, cleaning, and similar activities. These outputs gain value as they are created by the manufacturers and when they are exchanged with items such as money or other goods (Vargo *et al.*, 2008). This is what is known as "value in exchange" and is the usual way in which many businesses perceive value.

"Value in exchange" means that value is manufactured when a firm creates a particular "good" or "service" and this "valuable" good is exchanged in the marketplace for money or for another good. Value lies and is measured in this exchange transaction (Vargo *et al.*, 2008). The problem with this definition of value is that much of the attention is given to the producer (the business creating the goods or services) and to their acquisition of wealth. The role of the consumer is undermined. Stockdale and Standing (2004) claim that when customers do not feel the value in participating in an e-transaction, the e-marketplace would have difficulty in sustaining their transaction volumes. Here, value is the feeling of satisfaction customers gain after being assisted by a service process (Gronroos, 2008). It could also involve customers experiencing benefits relational in nature such as "confidence benefits", "social benefits", and "special treatment benefits" (Gwinner *et al.*, 1998). Gwinner *et al.*, (1998) suggested that customers could remain in a business relationship even if core service attributes are not superior as long as they receive and experience important relational benefits. Relational benefits as value gained in use however are not the focus of the GDL as the end product itself is given importance to rather than the process of delivering the end product. It is however this particular aspect of value in use as opposed to value in exchange that forms the basis of SDL.

SDL is a set of logic bounded by a number of foundational premises. It was first introduced as a set of eight premises (Vargo *and* Lusch, 2004) and was later extended to ten premises (Vargo *and* Lusch, 2008a). The last five premises of SDL, as seen in Table 1, are what redefine the GDL concept of value.

Table 1: Premises six to ten of the service dominant logic.

Foundational Premises of SDL	
FP 6	The customer is always a co-creator of value
FP 7	The enterprise cannot deliver value, but can only offer value propositions
FP 8	A service-centred view is inherently customer-oriented and relational
FP 9	All social and economic actors are resource integrators
FP10	Value is always uniquely and phenomenologically determined by the beneficiary

Source: Vargo *et al.,* 2008

"Value in use" means that value is always co-created and value comes out of a service when the consumer makes use of it (not just when a consumer exchanges money or goods for it). Both consumers and producers play a vital role in creating value as it is seen in premises six and nine. Vargo *et al.,* (2008) explained in their paper how manufacturers put value in a service by applying their skills in the production process and consumers by applying their knowledge and skills and using the service in the context of their lives. In addition to this, consumers may also give their own resources to provide service to the firms and through participating, complete the value co-creation process as premises seven, eight, and ten imply. Thus, the value co-creation process is reciprocal and is mutually beneficial to the parties involved. As more consumers feel engaged in the value co-creation process, more would take part in e-transactions, granting success to the e-marketplace.

Various authors have proposed frameworks for value co-creation, but these have catered mainly to B2C e-marketplaces. These frameworks include the DART Model (Prahalad *and* Ramaswamy, 2004), and a process-based framework by Payne *et al.,* (2008). Though designed for B2C systems, the mentioned frameworks contain significant principles which are also applicable to B2B e-marketplaces. The DART model proposes that e-marketplaces should be built upon dialogue, access, risk, and transparency. It implies that e-marketplaces should have avenues where users can conduct exploration, exploitation, and relationship establishment. The work of Payne *et al.,* meanwhile suggests a model involving encounter processes between supplier and customer processes. This concept of having an encounter process is also applicable to a B2B e-marketplace.

Still, B2B and B2C systems have noteworthy differences. Payne *et al.,* (2008) pointed out that mapping customer processes is more complex in B2B markets. Thus, a framework designed specifically for B2B systems is necessary.

An SDL-based framework for B2B e-marketplaces should allow the discovery and exploitation of interdependencies among companies. Forsstrom and Tornroos (2005) asserted that, for value to be created in a buyer-seller relationship, a buyer and seller must first realize that they are interdependent with one another. Interdependencies, together with the creation and exploitation of these, maximize the value co-creation potential. Relationships without interdependencies maximized tend to be short-term and value co-creation tends to be minimal. Interdependencies are already inherent and actors only need means to explore so that they would be aware that such interdependencies exist between them and another company.

In addition to allowing the discovery and exploitation of interdependencies, the SDL-based framework should also allow partnerships to be established. Partnerships are high-involvement, long-term relationships, which allow the maximization of the value co-creation potential. It is a relationship that has been through a process involving trust and commitment, leading to effective communication and flow of information, reduced problems and misunderstandings, chances for both companies to cope with uncertainties, enhanced efficiency of the combination of the efforts of the two companies, and a "division of labour" based on the abilities and resources of the companies involved in the partnership (Forsstrom *and* Tornroos, 2005). The potential for value co-creation is maximized when partnerships are established. Key terms in the establishment process are commitment, communication and trust. Partnerships however are not the end-point, as more interdependencies can be discovered at this phase and can be exploited continually.

Also, Ng *et al.,* (2010) identified attributes of value co-creation (AVCs) which could be integrated to an SDL-based reference model, to ensure that value is co-created in all stages of the encounter process. Seven generic AVCs were enumerated in the research: 1) complementary competencies; 2) process alignment; 3) behavioural alignment; 4) perceived control; 5) empowerment for customer and firm transformation; 6) behavioural transformation; and 7) congruence of expectations. These AVCs were discovered through qualitative data matched with previous literature. These AVCs would give a starting point towards changing the businesses' internal organization to create more creative interfaces with the customer.

From the stage of discovering interdependencies to the stage of establishing a partnership, an e-marketplace however has to go through stages where phases of market transactions occur. These are the information phase, agreement phase, and settlement phase (Schmid *and* Lindemann, 1998). The information phase is an exploration phase where businesses gather information such as the general business environment and technology of

potential business market partners. The agreement phase begins when a service offer is received and is that phase where negotiations about the terms and conditions of the business transaction are made. The settlement phase is when the terms and conditions are finally accomplished. This model was created as a general reference for e-marketplaces, but does not yet have the concepts of SDL and value co-creation integrated into it. Relating it however to value co-creation through the exploration and exploitation of interdependencies, the information phase mentioned is actually an exploration stage which could allow the discovery of interdependencies. The agreement and settlement phases allow the exploitation of interdependencies to occur, but it is necessary that partnerships are established once the settlement phase ends. However, it is possible that business transactions going through the phases mentioned would lead to partnerships, given that trust, communication, and commitment are involved.

In summary, certain principles and elements can be drawn from existing B2C value co-creation frameworks but have to be integrated with principles of interdependencies, partnerships, and AVCS. The same is true with the existing phase model of marketplace transactions. It contains principles useful for the creation of a new reference model, but has to have the mentioned SDL and value co-creation related principles incorporated into it. The integration would form an SDL-based reference model for B2B e-marketplaces.

An SDL-Based Framework for B2B E-Marketplaces:

The review of literature summarized in the previous section led to the development of an SDL-based reference model for B2B e-marketplaces. This model, the EEE (Explore, Exploit, Establish) Encounter model, was created based on the works of Prahalad and Ramaswamy (2004), Payne *et al.*, (2008), Ng *et al.*, (2010), Forsstrom and Tornroos (2005), and Schmid and Lindemann (1998). The background on SDL (Vargo *et al.*, 2008) was also essential. Figure 1 shows this model.

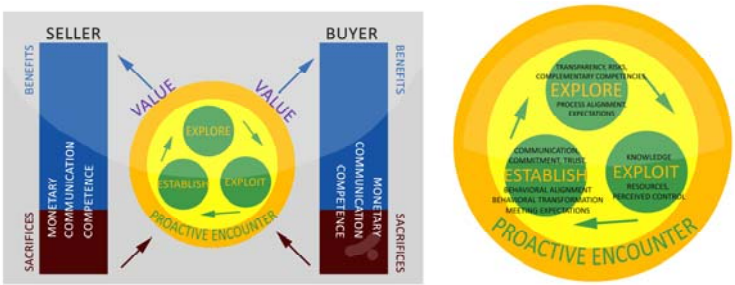

Fig. 1: The EEE Encounter Model.

The EEE Encounter Model proposes that B2B e-marketplaces be built with features and functionalities that allow users to explore and exploit interdependencies and eventually establishing relationships through a pro-active encounter. With the AVCs of value co-creation incorporated in each stage, the model ensures that all players play an integral role in every part of the encounter process.

The following mapping shown in Figure 2 was done to translate the reference model into a functional requirements definition model and eventually into a working prototype.

The basic functionalities in this mapping were derived from the literature presented by Ferreira and Ferreira (2004). Functionalities used from the authors' consolidation of traditional e-marketplace features include the service offered and service needed portion of the company profile, the common pool for information and resources, and the basic transaction system. New features existing in websites such as social networking, media sharing, and outsourcing sites (such as facebook.com, youtube.com, and odesk.com, respectively) were also added and mapped to elements in the e-marketplace reference model where mappings of functionalities from Ferreira and Ferreira's (2004) work did not exist. Social networking sites, for example, allow users to create their own profiles. In an e-marketplace, this can be contextualized to a company profile to allow exploration with risk and transparency among companies. Outsourcing sites like odesk.com, meanwhile have a feedback and recommendation where employers can rate and give feedback and evaluation of their contractors. This was mapped to elements in the establishment portion of the model. Media sharing sites also allow users to comment and give ratings to knowledge and resources posted in the web. Sharing knowledge and resources based from the example of these sites allows exploitation while rating allows establishment through behavioural alignment and transformation. A messaging system which does not usually exist in e-marketplaces (Ferreira and Ferreira, 2004) but is used in the aforementioned sites was also added to foster establishment by building communication, commitment, and trust in the e-marketplace. The expectations form, though not existing in the other websites mentioned, was also added to complete the mapping.

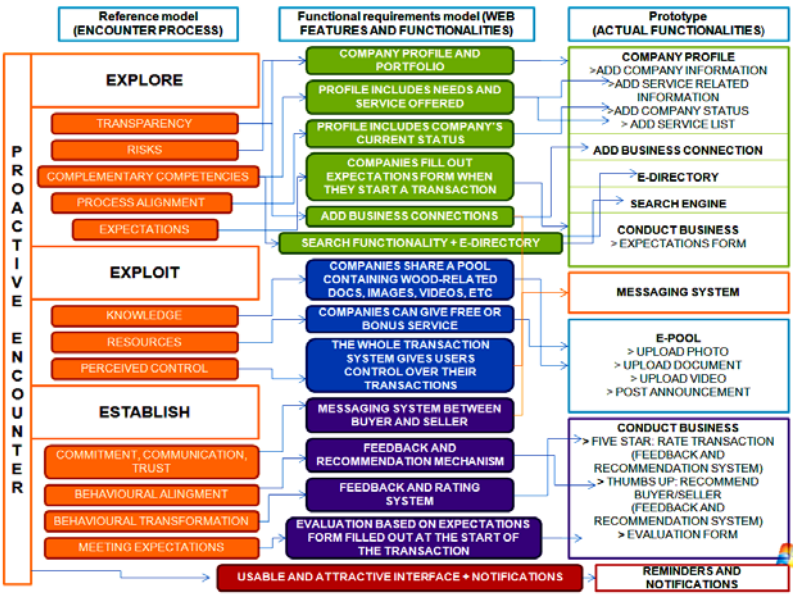

Fig. 2: Mapping of features and functionalities to the EEE Encounter Model.

Case studies done one five Malaysian wood companies in Kajang, Rawang, and Selangor (October-November, 2010) also provided feedback as to what other features could be added to a B2B e-marketplace, especially one designed for wood-based companies. Unstructured interviews revealed that, aside from the initial functionalities mapped into the model, other functionalities could still be included in the model. The functionalities added based on these interviews were the following: 1) an add business connections functionality mapped to the transparency element of the explore process; 2) a search functionality mapped to the complementary competencies; 3) an e-directory mapped to the transparency portion of the explore process; and 4) notifications mapped to the pro-active encounter.

The functional requirements definition model served as the requirements specification for an e-marketplace prototype developed for wood-based companies in Malaysia. Woodboard, the study's prototype, was created using *Drupal 6.19*, a PHP based content management system (CMS). Modules uploaded by the *Drupal* community were used to develop the functionalities specified in the functional requirements definition model. PHP coding was also used when no module for a specific functionality existed. Figure 2 also shows the actual functionalities that the Woodboard prototype contained.

By using these web features and functionalities, the e-marketplace's users should be able to perform exploration, exploitation, and establishment encounter processes, thereby co-creating value. For example, a user in an exploration process may use the e-directory and browse through a different company profiles to find a buyer or seller suitable for their business needs. They can then perform a business transaction with the aid of the conduct business transaction functionality in the Woodboard prototype. Buyers and sellers can also use Woodboard to exploit each one's knowledge and resources through the e-pool. In addition, they can establish long term business relationships by building communication through the messaging system and by giving feedback through five stars, thumbs up, and evaluation forms. These and the other functionalities allow users to go through the whole encounter process, fostering the co-creation of value in use.

The five companies who took part in the initial studies also took part in testing and evaluating the Woodboard prototype. The companies were asked to give ratings on usability and value to their company. The companies were also asked to give comments and suggestions. The testing and evaluation phase showed that an e-marketplace such as Woodboard is usable and is of moderate value to companies, though the value could increase upon the improvement of some functionalities. In addition to these, the testing and evaluation phase revealed that companies found the e-marketplace based on SDL to be good, useful, interesting, and innovative.

Conclusion:

Since the prototype based on the proposed framework was found by the companies to be good, useful, interesting, and innovative, it can be concluded that the proposed framework indeed brings innovation to B2B e-marketplaces by integrating the concept of value co-creation in the B2B business encounter process. The study is however limited since the prototype wasn't fully deployed and the actual value co-created through the e-marketplace is undetermined. This could however be addressed by conducting future studies. Studies could also be done to further refine the proposed e-marketplace model and functional requirements definition model.

The B2B e-marketplace reference model used in this study could be used as a base for functional requirements definition models for other industry verticals. The one presented in this study was designed specifically for wood companies, but further studies can also be conducted to determine if it would fit the requirements of other companies as well.

This study therefore contributes to the B2B e-marketplace community by presenting a functional requirements definition model and prototype created based on the EEE Encounter Model where work lacks. This study thus fulfils the objective of bringing innovation to B2B e-marketplaces via the concept of value co-creation.

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