E-Commerce Systems and Configuration Management for Virtual Enterprises

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Abstract – This research paper provides a detailed evaluation of the business concepts in Electronic Commerce (E-Commerce). The concept of E-Commerce defines the exchange of goods and services with monetary value between consumers and companies. E-Commerce is a web-based catalogue whereby buyers can possibly place order and sellers possibly accept payments. E-Commerce incorporates two forms of business: Business-to-Business (B2B) and Business-to-Consumer (B2C), which provide a definition of the commerce transactions between enterprises, such as between the wholesalers and the manufacturers or the retailers. B2C E-Commerce provides enterprises with the model, which allows businesses to deliver purchasers to the relevant merchants and achieve from the commission rewards given by the merchants. This paper will evaluate the two forms of business with relation of management of Virtual Enterprises (VE) in the field of E-Commerce. The paper will end with an analysis of VE before projecting future directions for health of B2B and B2C in business.

Keyword - Business-to-Business (B2B); Business-to-Consumer (B2C); Virtual Enterprises (VE); Electronic Commerce (E-Commerce).

1. Introduction
The concept of Business-to-Business (B2B) is applicable to the enterprises that purpose to market their services and goods exclusively to other forms of business aside from the consumers. On the other hand, the Business-to-Consumer (B2C) is meant for the enterprises that focus on marketing services and goods to consumers. B2C and B2B virtual enterprises represent the online store for the businesses where buyers and can access goods and services directly from the company without physically visiting the enterprise. The main variation between the two forms of businesses is that B2B does its business transactions between other available businesses whereas B2C conduct their businesses directly with the consumers whereas eliminating any possible intermediaries. Diminishing the innovation cycles, transforming market situations and advancing specialization in market segments demand for the application of novel means of economic comprehension, which forcing companies into agreements, while sometimes advancing to direct competitors. These agreements allow enterprise to share their skills, funds and access resources or markets at the same time while also decreasing the investment risks. Currently designated and discussed as cooperation and corporate models of the future is Virtual Enterprise (VE), which different from the cooperation models.

The terminology Virtual Enterprises (VE) is generally connected to the virtual memory applied in Information Technology (IT). This terminology obtained it present significance for enterprise economics from Davidow and Malone landmark book. VE is defined as a temporary network for enterprises to share costs, skills and access potential markets [1]. VEs are a cooperation of legally independent individuals, institutions and enterprises that provide services based on standardized agreements in business. The cooperating elements mainly add to the core competency, which act to the externals of single corporations. The corporation refuse the institutionalization aspect, i.e. through centralized offices, other than the cooperation managed by feasible data and communication initiatives.

VE E-Commerce, as defined above, permits a person to do business electronically. The issue therefore becomes, how do businesses make this possible? In the late 1990s, there were about 250,000 cyber-enterprises in the United States according to a report done by the European Commission. The micro-enterprises were considered mostly dominant since they have managed to profit based on the merits of the data infrastructure, and certainly as one of the major elements of the internet. They have selected the internet as a sole instrument for distribution, logistics, promotion and sales. These are referred to as virtual since the end-users do not necessarily have to get to the actual location of the store or meeting the members of the industry. When physical products are considered solid e.g. computer products, the delivery logistics are contracted electronically to organizations for Fedex and UPS. Amazon is one of the best examples of virtual enterprise in its modest form. Although the industry was structured a few decades ago and has no single point of sale, it is becoming of the largest bookseller in United States, with
more than four million titles as the best home delivery service [2]. The value chain is considerably simple in the visualizing of the value-added activities of enterprises in service and manufacturing segment. Fig 1 below shows that many activities are carried in a virtual or electronic mode.

For instance, Dell Computer Corporation can be referred to as a virtual business, since it has been capitalized on opportunities provided by e-commerce. At the corporation, components or parts are typically not ordered from the contractors until the client has placed the order. The computers is on the delivery truck less than 24 hours after the ordering process has been completed. To meet the shipping criteria, the optimize production and inventories minimize the time to market, and electronic texts in less than two hours. The internet-centred sales are advancing in an exponential manner with the present value of greater than $14 million in a single day [3]. Lastly, on average, it is about a single day for the sales to be done. The Dell corporation provides its corporate customers (about five thousand United States Companies) virtual personized services in the manner of premium page programs, which is a form of mini-website linked to the customers’ intranet. This permits the customers to effectively configure microcomputers and obtain immediate accessibility to technical support, which also incorporates following up with the placed orders.

The premium page programs produce approximately five million dollars in a single day. Dell is a competitor with an approximate selling price, which is 15% less compared to competitors. We might provide such examples and the success of this novel form of enterprise to inspire other businesses to get to the business [4]. The virtual enterprise, in the manner that has been described in this research, it identified in the various sectors of the economic in the varying dimensions. Whereas some businesses are becoming completely virtual, other proceed partly, whereas others select for strategic purposes to eliminate the activities from the virtualized realm. An example of the final case is the banks, whereby routines and services are considered virtualized, but more specialized services such as mortgage negotiation or financial planning based on the customers’ home. This might be referred to as High Social or High-Tech Contact methodology. The banks are however becoming more virtual, since the physical geographical location where transactions happen are increasingly becoming less important. This paper has been structured as follows: Section II provides an in-depth evaluation of the three business forms (B2B, B2C and VE). In Section III, related terms are presented and defined. Lastly, Section IV concludes the paper and provides future directions.

2. Critical Analysis Of Business Forms

*Business-to-Business (B2B)*

B2B defines the commerce transaction between different businesses, such as between different wholesalers and manufacturers, or between retailers and wholesalers. The B2B business form of E-Commerce can make and save enterprise funds incredibly. The form is also applicable in the aspect of business collaboration and communication. Many businesses are presently utilizing social media to link up with their consumers in what we call B2C. Nonetheless, they are presently utilizing the same tools within businesses so that employees can link up with one another. When communication is happening among workers, this is considered as B2B communication [5]. Many recent discussions on E-commerce have concentrated on B2C segment activities as shown in Fig 2 below. This is considered natural since there are more than a hundred million consumer households, which makes markets attractive. Nevertheless, as recent comportments of expert investors indicate, the available opportunities in B2B may be greater.
(a) Sell aspect B2B

(b) Buy aspect B2B

(c) Electronic exchange
**Benefits**

Some means companies have benefited from B2B E-Commerce include management of inventories, which includes the management of inventories in an efficient manner; transforming the demands of consumers; availing products to the market quickly; cutting the expenses of doing paperwork; reigning rough sells; and receiving lower prices on supplies.

**Models**

Many enterprises are applying E-Commerce in various ways and accepting tangible results. However, as electronic commerce develops and matures, these means are potentially likely to transform based on accelerated rate of adoption [6]. In reference to reviews on the business form, three models are beginning to appear in the marketplace.

**Transaction Based**

A single enterprise establishes a single transactional approach for doing business with its main suppliers and key customers. This offering is the same in the various business units within the enterprise and incorporates common infrastructure, techniques and tools.

**Process Based**

Two enterprises establish the same business process to effectively conduct businesses effectively and efficiently between two various enterprises. The enterprises share and establish this same practice jointly, in the firm and outside the enterprise with the predetermined trading partners.

**Strategic Connection Based**

This defines two or more companies creating a strategic connection and partnership in relation to the key interactions between different organizations. This incorporates the collaborations, processes and transactions between various organizations. From the perspective of technology, this incorporates linking ERP, CRM and SCM framework of two different enterprises [7]. In this manner, every company can possible monitor sales activities, inventories, production schedules and technical services being exchanged.

### 3. Website Types

The B2B websites (Fig 3) can be different from each other in reference to the functions, which they solely operate. The following are the basic forms of B2B websites, which businesses can opt to.

**Websites for Enterprises:** In many cases, the targeted customers for B2B enterprises are other enterprises. For this purpose the suppliers create enterprise websites, which permit them to exhibit their services and products. These B2B sites might also incorporate options for the registration of users, actual-time inventories and distributor locators or the distributor logins.

**E-Procurement Websites:** The E-procurement websites are the B2B sites, which allow the purchasing agents of
enterprises to submit requests for the business proposals to bid for products and buy them from the available vendors [8]. These vendors are normally custom-built to serve the correct niche market or a certain business.

Broker Websites: These sites act as the mediator between the users who want to buy products and the distributors in the business. These sites incorporate the suppliers and the buyers in the enterprise.

Business Vertical Portal: These websites can give data about the products in a certain industry hence permitting users to carry out discussions and issue product listings that serve a broad aim contrasted to other forms of B2B procurement websites.

Business-to-Consumer (B2C)

B2C illustrates the kind of activities for businesses serving the end consumers with services and products. Buyers have to visit the company’s website before purchasing a specific product. They therefore have to click through the shopping links that direct them to the collection of the available online merchants. Selling is done as though the buyers have actually visited the merchant. The purchases are transferred to buyers and the referring enterprise receives commissions on any single sales [10]. B2C E-Commerce gives an enterprise with the required system, which permits them to send buyers to the online merchants and benefit from the commissions given by the merchants.

Elements

B2C incorporates various elements such as:

Cataloguing: The cataloguing represents the process of displaying the items from the available databases in reference to databases of classes and sub-classes chosen by customers. It forms a simple ecommerce framework, which permits buyers to choose items to buy from the catalogue. Cataloguing is a fundamental operation utilized in B2C E-Commerce. Buyers can communicate with the lines of shops via a network framework utilized in business. For this reason, an approach has to be utilized to fulfil the necessities of the potential clients. To conduct online shopping, some catalogues have to be considered to define the brand, price and quality of the items available for consumers.

Order Generation and Order Planning: Order generation and planning (Fig 4) allows the initiation of personal orders, which also incorporates the block of orders in an easy-to-use approach, which is also flexible. Every order penetrates through a full-defined life cycle. The condition of the order shows the stages of lifecycle that a particular order resides, which includes the validated, initiated and validated with warning cancelled or sent.

Fig 3: B2B webpages
Cost Evaluation: Before pricing is made, there had to be complete evaluation of the costs. Pricing establishes the bridge between company capabilities and the customer needs. Pricing for custom orders is dependent on the comprehension of the customer value, which are generated by every order, assessing the costs of filling every order. After ordering process is complete, the evaluation of costs has to be done and therefore set the pricing process.

Accounting and Order Receipt: When the process of setting prices is complete, product accountability with costs is effectively maintained. This is the major and basic step in the accounting framework. After the acceptable pricing quote, the consumers enter the receipt of the order followed by the entry phase of product ordering. The order receipt is essential for the billing process of various products or services.

Order Prioritization and Selection
After effectively setting the prices for products, major operations are based on order selection, which sets the priorities for choosing the final products. The customer services stakeholders are responsible for selecting the orders that have to be acknowledged and the ones to be declined.

Order Scheduling: This process is applicable in a healthy customer environment. In this stage, the prioritized orders are slotted into real productions or the sequence of operation.

Order Delivery and Fulfilment: After finishing the order scheduling process, the following step is the fulfilment and delivery of the orders. During this step, the real provision of the products and services is attained.

Benefits
Anonymous clients can possibly login to the encrypted websites to make purchases. All the activities completed by the clients are safeguarded by Secure Sockets Layers (SSL) protocols that provide customers and businesses with the required guarantee. Clients can analyse the services and products that enterprises provide and evaluate their prices and availability. This permits the clients to evaluate their individual accounts indicating prior purchases, credits and payments provided, or the various forms of adjustments to their accounts. As clients browse the sites, they might possibly add products they require to their cart and therefore facilitate check out processes that will necessitate credit card details to be issued. Confirmations of emails can be produced automatically after receipts of orders and following shipment. Clients who have to know the condition of their orders can possibly check their sites at any given time and access detailed status data. Data concerning shipment in transit can therefore be presented to clients using links to the carriers such as UPS and FedEx [11].

4. Business Types
B2C businesses are classified into five essential classes:
  Direct Sellers: The direct sellers, like the online retailers, have the capacity to sell services and products directly to the consumers through a websites. One might effectively divide sellers into manufacturers and retailers. The electronic retailers are the ones that ship products from warehouses or facilitate deliveries from other enterprises and stocks. Product manufacturers utilize the internet as a possible catalogue and sales channels to operate as intermediaries. The business permits non-B2C enterprises to enjoy a number of benefits. The intermediaries provide buyers the services and aid the sellers by potentially altering the price sets and processes.
  Marketing-based Models
Major Websites depend on the marketing-based models. These websites provide free services to the consumers and
utilize marketing revenues to cater for the potential costs. They draw significant number of visitors, hence transforming them to ideal marketing streams for other enterprises. Marketers will cater for the premium for the sites, which deliver high numbers of traffic.

Society-based Models
The community-based models link up the advertising approach, which depends on the traffic sites focusing on the specialized segments meant to create communities. The community sales and marketing makes use of network and social networking by concentrating on specific segments, which want certain products.

Free-based Models
Pay as you go or paid subscriptions fall use this category. For instance, the most common of these online subscriptions, currently, is NetFlix, which is a movie site. The companies depend on the quality of content to effectively convince users to pay a particular nominal fee.

5. Variation Between B2B and B2C
Advertisement includes a broad array of activities whose sole purpose is conducting sales. B2C and B2B are two different business advertisement frameworks where sales are considered as the result. However, this does not consider the models the same. B2B is used to signify the form of commercial transaction, which involves the buying and selling of merchandise that are undertaken between two different business houses, such as supply materials to production, or corporations providing a service to another. B2C is another key model that is involves businesses selling goods and services to final consumers [12]. These corporations whose services and products are consumed by the end-users are considered as B2C corporations.

The major variation between B2B and B2C include:

- B2B is a business framework where businesses happen between two different corporations. B2C is another business framework where companies sell their goods directly to the final buyer.
- B2B has the client as the business entity, whereas the client is the consumer in B2C.
- In B2B, the selling and buying cycle is widely contrasted to B2C.
- B2B concentrates it relation with organizational entity; whereas B2C concentrates on products.
- In B2B, the business connections are lengthy; however, the connection between the seller and buyer is shorter in B2C.
- B2B has the decisions completely planner and in a logic manner whereas in B2C the decisions are based on emotions.
- The merchandize volume, which is sold in B2B is significant. However, in B2C minimal quantities of the merchandize are sold.

- The company value is formulated in basis of trust and personal connection of the organizational entity. However, B2C promotion and advertisement is done to create the organizational value.

The process of making decision is challenging a result of the voluminous transactions in companies. In B2B, the businesses are considered more oriented towards effective personal connection with other transaction parties, as the target market is smaller in size compared to most objective customers. The process of making decisions in B2C is easier due to the ideology that transactional steps is considered a single step and is not involving many persons. The targeted market is wide with many consumers, in that case, most make the purchasers from the shoppers. In the present times, the consumers can buy goods online [13]. This also includes B2C transactions where consumers can choose the products online and place an order for the company to deliver it as the residence of consumers.

Virtual Enterprises (VE)
Presently, the time intervals within which products can be marketed are incredibly decreasing, hence exposing businesses to some form of competition. VE is a considered a temporary alliance of enterprise, which collaborate to share core competencies and skills, including resources to respond to business opportunities, whose cooperation is supported by computing networks. Two keyword elements in the explanation are cooperation and networking. Presently, there is the tendency to illustrate the virtual enterprises as a system of cooperative enterprises. There is a more clear trend of the process of manufacturing not to be based on value (the manufacturing chain step_ to the complete production cycle. In VE, manufacturers do not typically produce finished products in isolated facilities. Instead, they operate networking nodes in networking engineers, customers, suppliers and other more specialized functions of services [14]. In that regard, in this paradigm, pre-existing organizations or enterprises with a number of common goals collaborate hence creating interoperable networks acting as one organization. In other words, VE materializes based on one business entity. Actually, the establishment of cooperate links and agreements between enterprises is not a novel case; based on the present condition of business around the globe. However, the application of communication and IT to support agile cooperation is considered one of the fundamental features of VE concept. This is a more realistic necessity conditioned in a certain industrial manufacturing viewing that advances in technological initiatives have given the base. Cooperation on the intercontinental scale is projected to substantially advance since distance will not be considered a fundamental limit. The paradigm of VE challenges the manner in which organizational manufacturing systems are managed or planned. Organizations, mostly the SMEs (Small and Medium Enterprises) have to collaborate the resources and skills to attain and survive the competitive advantage in the intercontinental market environment. The paradigm materialization allows the more recent advancements in
communication technologies, logistics, computer networks, necessitates novel definition as reference architecture for development and cooperation of more flexible supporting platform and the enhancement of effective mechanisms and protocols.

The Concept of VE
A number of extensions, modifications and re-engineering are fundamental on the aspect of enterprise and organizational culture, which requires critical identification for both socio-organizational and technical aspects included.

6. Related Terms
A wide variety of various networked organizations and the emergency of novel production paradigms have amounted to the production of related terms such as enterprise clusters, supply chain management, networked organizations, virtual organizations and extended enterprise. Some researches utilize a number of terms indistinctly to VE; however, there are variation between their detailed definitions.

- Extended Enterprises: The extended enterprise concept, which is the nearest rival of VE, is effectively applied to organizations whereby dominant enterprises extends boundaries to suppliers whereas VE might be visualized as overall concepts incorporating other forms of organizations, such as the democratic systems that considers cooperation as peer-to-peer. In this manner, the extended enterprise might be considered as a certain case of VE.

- Virtual Organization (VO): The virtual organization concept is the same as the VE, which includes networks of organizations sharing skills and resources to attain their goals and missions. However, the concept is not limited to the enterprise alliance. A sample of VO can be the virtual municipality, connected through computer networks, all the systems of municipalities (such as cadastre services, public leisure facilities, internal revenue services, municipal water distribution services, and city hall). VE is, thus, a certain instance of VO.

- Network Organization: This concept is certainly the most general term connected to any organizational groups interconnected by computer networks, but without necessarily sharing resources or skills, or having one goal. Normally, the network organizations correspond to loose forms of organizations.

- Supply Chain Management: The terminology connects to the supporting mechanisms and policies meant to manage the material flow in the value chain, which are meant to cover different aspects from raw materials distributors to the consumers, and including the product retailers, distributors, and product manufacturers, and supported by the information flow between the supply chains. This concept is applicable to organizations, which are considerably stable, i.e., where core partners is the same for a significant duration of time. Nonetheless, dynamic supply is becoming present. The focus is based on material logistics, product flow and the connected business data.

- Enterprise Cluster: This is a collection of enterprise, which have the capacity and will to collaborate and hence become VE partners. These businesses are typically registered in the directory where core competencies have been declared. In reference to this data, the creators and initiators of VE can chose their partners whenever novel business opportunities have been detected.

Over some other non-directly connected cooperation, e.g. multi-level visibility, incorporate some levels of data visibility that might amount to optimized VE operations. Moreover, tracking the order fulfillment, rescheduling, scheduling, optimized management of resources and workload distribution are a number of advanced task supervision and coordination of VE, which necessitates extensive visibility scope. Multilevel visibility dimension requirement for optimal coordination of activities and joints is in VE. For example, in the demand forecast implementation function other than historical information, it is fundamental to collect data on consumption, forecast, and stock level of the supply chain. Fig 5 below shows how the data generated or available in the subsequent nodes in the supply chain might be generated in a particular node. Node A required accessibility to some data from the various levels of the supply chains (Fig 5).
Irrespective of the foreseeable merits, this level of data sharing among various autonomous VE member corporation and the forecast-generated coordinators is problematic. Unless a high level of trust is structured among the participating corporation, natural overall tendency is for every organization to encrypt the essential strategic data. The paradigm of VE signifies essential research aspects with significant potential in industries and other fundamental sectors, but still facing issues and open queries [15]. Among others, the fundamental concern, which has to be addressed incorporates: effective understanding of its requirements and behaviours, designing of comprehensive reference frameworks, data management architecture and policies, and supporting decision-making tools.

7. Conclusion And Future Directions
In conclusion, B2B E-Commerce platforms, which are structured for B2B businesses provide personalized products and services to help attain objectives in a competitive environment. Enterprises adopting such platforms in the modern business age will achieve agility and flexibility required to minimize expenses, grow and potentially retail clients. At the same moment, B2B E-Commerce technologies will incredibly become an essential factor for enterprises wishing to maintain and achieve competitive advantage in the market. Critical commitment to advancing the future of E-Commerce is not evident momentarily. In that case, it is fundamental to elaborate on the elements on attaining consumer satisfaction and actualizing emotional involvement. Future researchers should understand how they would effectively blend fundamental investments for e-trust to assure minimum aspects of e-effective commitments and e-satisfaction. It would be fundamental to conduct research in various geographical fields and assess the consumer e-effective commitments and e-satisfaction.

References


