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A Comprehensive study on E-Commerce Models: Merits, Demerits and Future Scope

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Abstract

The use of e-commerce technologies is now almost essential in any commercial/business or industry/ institution. The rapid growth in e-commerce gradually leading the industries to adopt an e-business. The "e-business" is a relatively new concept but still there already exists a substantial base of experience in designing and implementing e-business initiatives and measuring their impact. The firms seek to go beyond the initial and often imitated online store examples to the less obvious areas of their business that could be transformed with e-business technologies; there is a need for benchmarking the existing base of e-business experiences. The failures of implementation of e-commerce and e-business prescribes that more research work should be taken in implementing such ventures. However, there is a little research work done in this direction. In the present work the authors highlight and overview of business models along with their importance, challenges and strategies. The authors also considered the existing frameworks and models of both e-commerce and e-business in various aspects and tried to find out some deficiencies from those along with their relevancies of applicability. The present paper aims to highlight existing e-Business models and the strategies with some building blocks, some existing e-business frameworks, some identified deficiencies and finally the conclusion and some new findings.

Keywords

e-business, e-commerce, business models, e-business experience building blocks, e-business framework

1. Introduction

The basic idea of a business model is the method of doing business by which a business house or a company can sustain itself or in other words it generate revenue [1]. The business model spells-out how a company makes money by specifying where it is positioned in the value chain. Some models are quite simple. A company produces a good or service and sells it to customers. If all goes well, the revenues from sales exceed the cost of operation and the company gets a profit. There are few other models which can be more intricately weaker. Broadcasting is a good example. Radio and later television programming has been broadcasted over the airwaves free to anyone with a receiver for much of the past century. The emerging e-business market affords companies of all sizes and types the opportunity to leverage their existing assets, employees, technology infrastructure, and information to gain or maintain market share [2]. The challenge for an organization is to turn the vision and the market opportunity into a viable business to develop the marketing strategy and plans and designing and deploying the business solution is key [2]. Those who successfully architect, develop, and deploy e-business solutions will need to formulate and adopt a comprehensive business plan. Because of the critical role of Internet technologies and integration requirements, it is recommended that organizations need a comprehensive planning framework—an actual e-business model. This structured planning approach enables the organization to assess, plan for, and implement the multiple aspects of an e-business. To build an e-business (an integrated value chain) that leverages the Internet's communications capabilities is a complex undertaking [2]. The complex integration requirements of the business solutions, all performing at extremely high levels of availability and scalability, require an e-business model architectural approach. The value chain (comprised of the traditional supply chain management functions, planning, procurement, and inventory management, coupled with the customer-facing functions, typically referred to as customer relationship management) has integration and performance demands that exceed the requirements seen in traditional businesses. In a successful e-business, all of these areas are tightly integrated to provide an organization the ability to quickly and efficiently sell, manufacture, and deliver products or services. Furthermore, in a successful e-business, this value chain rests on a foundation that

leverages the organization's existing core operational business systems, as well as meets the new business-critical operational requirements for reliability, scalability, flexibility, and 24 × 7 × 365 availability in a highly volatile, electronic marketplace.

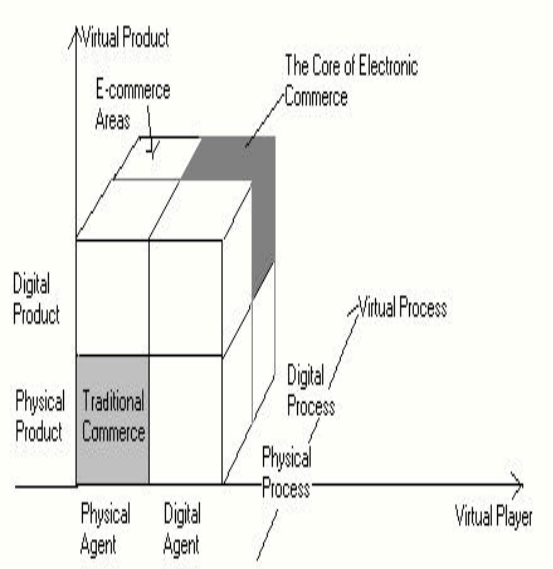

Figure 1: Electronic Commerce Areas (adapted from Choi et al, 1997)

2. E-commerce Existing Models

A. E-commerce Models

Choi et al (1997) presented the Electronic Commerce Areas model (Figure 1). This model depicts differences between e-commerce and traditional commerce. Choi et al shows e- commerce as a three-dimensional space, with purely traditional commerce in the front bottom left area and purely electronic commerce in the back top right area. All other areas represent a mixture of the two traditional commerce and e-commerce. This model also identifies product, agent and process as three key dimensions distinguishing e- commerce from traditional commerce. The representation underlines the fact that e-commerce may be implemented to compliment an existing or new venture, or may be used to establish a totally electronic venture. The model may also assist in identifying the location of an enterprise in the marketplace/ market space and be useful in determining the organization's focus in relationship to technology. It does not, however, assist in developing an e- commerce strategy.

Zwass (1998) developed an e-commerce frame work of seven levels. His premise was that the lower levels support the higher levels. Infrastructure supports services, which, in turn, support products and structures which shown in table-1. A difficulty with the hierarchy is that the sequence of layers may not be sufficiently flexible to accommodate the changing functions and activities of e- commerce. It , focus attention on important technical components to be considered within the e-commerce context [7].

Table-1: The Hierarchical Framework of E-commerce (adapted from Zwass, 1998)

Meta-Level	Level	Function
Products and Structures	7	Electronic Marketplaces and Electronic Hierarchies
	6	Products and Systems
Services	5	Enabling Services
	4	Secure Messaging
Infrastructure	3	Hypermedia/Multimedia Object Management
	2	Public and Private Communication Utilities
	1	Wide-Area Telecommunications Infrastructure

Riggins (1998) advanced The Electronic Commerce (EC) Value Grid (Table-2) to aid managers in determining where Web-based electronic storefronts could improve profitability. This representation compares the value creation dimensions of efficiency, effectiveness and strategy to the dimensions of time, distance, relationships, interaction and product to identify 15 advantageous applications for e-commerce. While the EC Value Grid is useful in identifying opportunities, it is specific to Web-based sales applications and may not transfer to other e-commerce developments. Additionally, it does not identify difficulties that may emerge when adopting e-commerce, such as legal restrictions or financial obstacles.

Riggins and Rhee (1998) contributed the Electronic Commerce Domain Matrix (ECDM) to represent four dimensions of e-commerce (Table-3). The matrix was developed by crossing the location of the application user (external or internal to organization) with the type of relationship (technology enhanced or technology facilitated). The model is useful as a tool for classification but is mainly representative of trading relationships [7]. The matrix suggests possible benefits in adopting e- commerce solutions.

Table-2: – The Electronic Commerce Value Grid (adapted from Riggins, 1998)

Five Dimensions of Commerce	Value Creation: Efficiency	Effectiveness	Strategy
Time	Accelerate User Tasks	Eliminate Information Float	Establish 24X7 Customer Service
Distance	Improve Scale to Look Large	Present Single Gateway Access	Achieve Global Presence
Relationships	Alter Role of Intermediaries	Engage in Micro Marketing To Look Small	Create Dependency to Lock-in User
Interaction	Make Use of Extensive User Feedback	User Controls Detail of Information Accessed	Users Interact Via Online Community
Product	Automate Tasks Using Software Agents	Provide Online Decision Support Tools	Bundle Information, Products, and Services

It provides us with a backdrop to examine an entity to determine if one of the merits will contribute positively to the entity's goals.

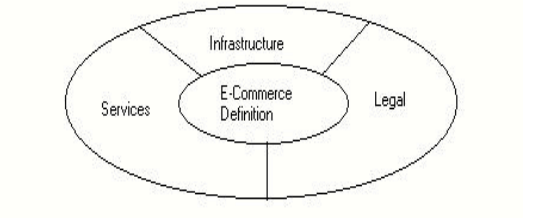

Figure 4: Component Model for E- Commerce (adapted from Chan & Swatman, 1999)

Table-3: Electronic Commerce Domain Matrix (adapted from Riggins & Rhee, 1998)

Location of Application Users	Technology Enhanced	Technology Facilitated
External	Improve Coordination with Existing Trading Partners	Market Creation to Reach New Customers
	Cell 3	Cell 4
Internal	Improve Coordination with Internal Business Units	Information Exchange to Work with New Team Members
	Cell 1	Cell 2

Type of Relationship

Chan and Swatman (1999) developed The Electronic Commerce Component Model (ECCM) (shown in Figure 4). The purpose of the ECCM was to develop a research framework that included all current components and extensions of e-commerce. The meta- view of the model identifies legal services and infrastructure as the components, with the e-commerce definition at its core. Within each component, current aspects of the component are represented. The intent of the model is to provide an illustration encompassing all aspects of e-commerce that will be representative of the concepts as time progresses. As technologies and environments change, the object within the component can also be changed to reflect modifications. The ECCM provides a useful snapshot for evaluating e-commerce. At any given point in time, and for any given configuration, the model may be employed to represent e- commerce concepts. However, it does not provide insight into processes or opportunities available within the context of e-commerce.

B. Models Representing E-commerce Process

A process model may be described as a model that answers how value creating activities are carried out [8]. As such, insight may be gained about methods of conducting e- commerce and possible weaknesses for a specific organization. However, as technology and environment change, models will also need adaptation. Lazcano, Alonso, Schuldt and Schuler(2000) demonstrated a virtual process within the individual business environment. The model recognizes the integration of technology in materials management from the ordering of the product to the delivery of the finished goods. At the physical level, it reflects the traditional business activities of manufacturing, trading, shipping and distribution. At the virtual level, the model diagrams the electronic flow of data to support the physical manufacturing process. The virtual process model presents a

depiction of how virtual tools are incorporated in a specific area of commerce. It does not consider digital products, nor does it represent such e-commerce processes as e-mail or information searching. Therefore, models such as this do not provide much assistance in decision-making processes beyond a highly conceptual level for the particular mode of commerce it represents. At this level, it does provide some insight into process design. Clarke (1993) represented e- commerce as a five - stage process. The model suggests that e-commerce can be utilized in the pre- contractual, contractual, ordering and logistics, settlement and post- processing phases of business activities. It also demonstrates the interrelationships between those activities. The model is compatible with a bricks and mortar manufacturing environment, with e-commerce tools integrated into the process. In making a decision to adopt e- commerce, this model is useful for applicable businesses in that it presents a structure for technological innovation. However, it does not address issues such as funding or receptiveness of customers, nor does it translate well into such digital opportunities as online auctions or content provision.

Table-4: Existing Models in E-commerce Planning Process Context

Model	Comments	Life Cycle Stage
Models Describing E-commerce		
Choi et al, 1997 (Electronic Commerce Areas)	• Assist in locating enterprise within marketplace/ marketspace • Help determine focus in relationship to technology	Planning, Analysis
Zwass, 1998 (The Hierarchical Framework of E-commerce)	• Help focus attention on important functional components within current e-commerce context	Analysis
Riggins, 1998 (The Electronic Commerce Value Grid)	• Aid in determining where Web-based storefronts may improve profitability	Planning, Analysis
Riggins & Rhee, 1998 (Electronic Commerce Domain Matrix)	• Classification relating to trading relationships • Suggests possible competitive benefits in employing e-commerce solutions	Planning, Analysis
Chan & Swatman, 1999 (Component Model for E-Commerce)	• Snapshot for evaluating e-commerce	Analysis
Process Models		
Lazcano et al, 2000	• Helpful in conceptual design for manufacturing implementation of e-commerce solutions	Design
Clarke, 1993 (Phases of Electronic Commerce)	• Demonstrates interrelationships between activities in electronic document flows	Analysis, Design
Business Models		
Viehland, 1999	• Starting point to choose e-commerce • Provides suggestions for possible diversification or strengthening of existing business model	Analysis
Rappa, 2000	• Starting point to choose e-commerce • Provides suggestions for possible diversification or strengthening of existing business model	Analysis

3. Deficiencies & Assumptions in e-commerce

At present the awareness of electronic commerce is problematic, especially for small and medium sized enterprises (SMEs). OECD(1998) reports that lack of awareness is one of the most frequently reported barriers in the adoption of electronic commerce by these companies today, as they do not seem to realize the business opportunities offered by electronic commerce. They also find it difficult to access information about cost, human resources and specific industry sector needs. Additionally, the lack of trust in electronic transactions (Hart & Saunders, 1997, Wilson, 1997) which is also reported as one of the main reasons for relatively low electronic commerce adoption, can be attributed in part to the lack of awareness about the possible risks and corresponding preventive measures. Thus awareness is considered to be a fundamental element of electronic commerce diffusion [7]. There are many e-business models available that demonstrate e-commerce process they provides insufficient guidance in the issues related to e-commerce at the plainning stages. The lack for comprehensive models for planning and analysis in decision to pursue and e-commerce strategy has most certainly contributed to the faliures that are currently being observed. There have been to date insufficient questions raised about the ability of ecommerce to support all business formats. There is a need for further research to develop a model that encompasses

the necessary questions that should be raised prior to embarking an e-commerce venture. Further research needs to be undertaken to identify problems impeding ecommerce success and to develop strategies to address the problems. We suggest that there is a need to develop an ecommerce planning process, which is all inclusive and transportable. A good starting point would integrate the existing e-commerce models for better opportunities.

4. Conclusions and Future Scope

We have to develop and operate complex transaction processing system that supports the core business operations in e-businesses. These core operations include the operational systems that support their particular business, such as claims processing, trade execution, enterprise resource planning (ERP), and enterprise resource management (ERM). Whether a company is just beginning to transform its business into an e-business or is an e-business strengthening its market position, organizations must put in place architectures that support large and complex integrated solutions. E-businesses must address the performance requirements for reliability, scalability, and high availability. These systems also require a high level of flexibility, integration, and often the added complexity of operating in a global business environment. The e-businesses need to integrate their customer relationship management, supply chain, and core business operational systems such as enterprise resource planning, accounting, and general business support systems to operate efficiently. There is a lot scope to do intensive research work to design e-commerce framework and e-commerce implementations in large and small scale business house. The e-commerce or e-business models should be developed from global perspectives and it must be more towards customer oriented. The customer satisfaction is one major issue in e-commerce or e-business. A statistical data analysis is required from traditional business and the e-business which one is better and both positive and the negative side of both the cases. To make the e-business and e-commerce successful in all respects a through data analysis is required in future.

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