

Summary of the Electronic Commerce Life Cycle

Andrew J. Marsiglia, PhD, CCP

Electronic Commerce is “The use of the Internet or non-traditional forms of electronic marketing between a company and its customers, suppliers, or other business partners”. Electronic Commerce is also known as e-commerce or e-business but for the purpose of this paper it will be referred to as e-commerce or EC. Through e-commerce we can use a PC or smartphone to connect to the Internet and conduct business, email, purchase a plethora of products, and acquire research information virtually anywhere in the world. This powerful capability appears to be ubiquitous and dependable but EC has had a problem plagued growth that was overcome in only about the last five years. E-commerce, however, has gained consumer trust and global usage, and businesses are investing heavily in its future.

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Executive Summary

Electronic Commerce is “The use of the Internet or non-traditional forms of electronic marketing between a company and its customers, suppliers, or other business partners” (Ruppel, 2003) p. 33. Electronic Commerce is also known as e-commerce or e-business but for the purpose of this paper it will be referred to as e-commerce or EC.

Through e-commerce we can use a PC or smartphone to connect to the Internet and conduct business, email, purchase a plethora of products, and acquire research information virtually anywhere in the world. This powerful capability appears to be ubiquitous and dependable but EC has had a problem plagued growth that was overcome in only about the last five years. E-commerce, however, has gained consumer trust and global usage, and businesses are investing heavily in its future.

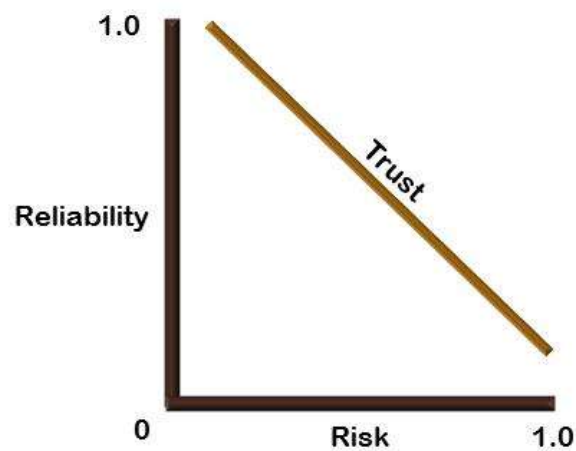
Fundamental Considerations of Electronic Commerce

Electronic commerce is a relative recent phenomenon in the history of business with the term first appearing in business vocabulary in the 1970s (Wigand, 1997). EC became possible by the proliferation of inexpensive information technology (hereafter IT) devices and reliable telecommunication systems but despite the new technology, businesses had to change their idea of the retail business paradigm. Businesses had to realize that EC does not only have potential to generate new business, but rather, it changes the point of purchase (Wigand, 1997).

Some of the macro-level considerations that should be addressed before launching an EC project, especially a retail project, is that customers need to trust the purchase mechanism or website, there must be an adequate product or service mix, the shopping experience must be

convenient to customers, and there must be satisfaction with the purchase (Freedman, 1998). Trust is a particularly important issue because if customers feel that the EC system is unreliable or perceived to be too risky for monetary transactions, they will refrain from using it (Ruppel, 2003). As shown in Figure 1, the higher an EC system's reliability and the lower the perceived risk, the higher the customer's level of trust and the greater the success of the EC site.

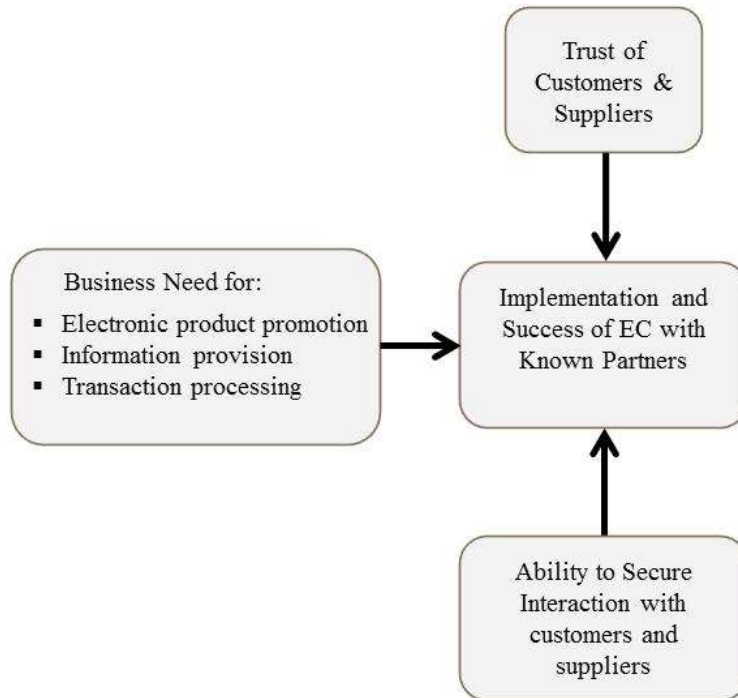
Figure 1
Relationship of Reliability and Risk to Customer Trust



In addition to having access to an electronic delivery system, businesses had to clearly define how they planned to incorporate the new business channel into their existing operations. The EC delivery system, whether based on telephony or Internet, had to be designed relative to the organization's goals in order to ensure it interacted well with the way the organization was doing business; i.e. form fits function (Jutla, 1999). Ruppel (2003) suggested that the purposes of a successful EC site are, “. . . 1) promotion of product and service, 2) provision of data and information, and 3) processing business transactions” p. 28. With these purposes in mind, the successful EC site will satisfy the business need for electronically promoting a product,

providing information, and providing appropriate transactions in a secure, reliable, and trustworthy manner as presented in Figure 2. Figure 2

Factors Contributing to a Successful E-Commerce Venture



Source: (Ruppel, 2003, p.32)




The Electronic Commerce Life Cycle

The phenomenon of e-commerce has frequently been referred to in colloquial terms as a revolution in business and particularly a revolution in retailing. In professional and academic organizations, however, EC is not recognized as a revolution per se but rather is considered to be a short-term disruption in retail business much like the disruption caused by Sears, Roebuck, and Company when they introduced the mail-order catalog system or like the disruption caused by the introduction of big box discount stores (Freedman, 1998), (McDougall, 1995), (Williams, 2009). The disruptions initially attracted considerable attention from consumers because of the delivery system’s novelty. Shortly thereafter these retail innovations became accepted as normal

channels for purchasing products. So too, we are witnessing a similar effect for EC after it has progressed through its life cycle stages from pre-Internet to a widely accepted means of acquiring goods and services.

Williams (2009) developed taxonomy of the evolution of e-commerce and divided it into four major stages as shown in Figure 3. This writer has included a component for consumer trust since it has a significant impact on a person’s inclination to engage in an EC transaction (Ruppel, 2003).

Figure 3
Life Cycle Stages of Electronic Commerce

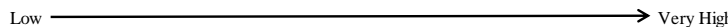
Stage 1 Hype & Experimentation	Stage 2 Retrenchment & Sobriety	Stage 3 Sustainability	Stage 4 Focus & Fragmentation
Rapid & Erratic Change	Slower & More Predictable Change	Stability with Predictable Cyclical Patterns	Differentiation by Low Prices or Specialization
E-tailing Revolution: The Wild Wide Web	Early e-tail pioneers forced to adapt or die. Surviving best of breed specialists adapt and increase their odds of survival and a few become successful settlers.	Consolidation	Increased business efficiencies increases ability to offer lower prices
Entrepreneurial pioneers pursue ambitious & undisciplined expansion	Physical store retailers are in acknowledgement and adaptation. These eventual market leaders enter from other sectors and channels using various modes of entry: direct, acquisition, alliance and ‘clicks and bricks’	Focus strategy through cost-leadership or differentiation	Integrated multichannel systems
High Start-up & Failure Rate			Mass-customization and hyper-targeting facilitates personalization
Opportunistic experimentation with many novel formats that defines e-tailing’s basic function and form			Micro-communities served through branded channels
Physical store retailers fear being ‘Amazoned’ – are in shock and denial			Infomedaries and co-option via alliances, marketing relationships, networks and open systems and cross retail collaborations occur in a period of ‘Wikinomics’
Fragmentation involving experimentation			Physical stores still dominate
Disruptive Innovations	Shakeout: A dominant model emerges.	Maturity: Competitive advantages are based on operational efficiencies based on incremental improvements and offering distinctive value.	
Competition Based on Functionality	Sustaining 	Competition Based on Reliability 	Competition Based on Convenience & Price
Low Consumer Trust Level	Low 		High

Adapted from (Williams, 2009, p. 227)

Pre-Internet Life Cycle Stages

Organizations began performing e-commerce activities in the late 1970s such as SWIFT, EDI, Telex, Electronic Bulletin Boards, and EFT (Wigand, 1997). Most of these activities were performed over dedicated telecommunication lines or conventional dial-up lines as listed in Figure 4. All of the pre-Internet communication systems were slow when compared to modern high speed internet but the speed was adequate to transmit documents, quotes, and orders worldwide and in a relatively short time. There was little Business-to-Consumer (hereafter B2C) volume. Businesses, however, were interested in increasing both communication speed and EC capabilities thereby motivating the IT and communications industries to develop more robust technology. It is often assumed that “. . . technological changes shape an industry’s evolution but industry changes also influence technological opportunities” (Williams, 2009) p. 243. In the pre-Internet stage of EC, telecommunications and data processing were being affected by industry in much the same way that forty years earlier, computers were born out of the need to generate gunnery table data and perform cryptanalysis of German Enigma codes.

Figure 4
Technological Effects on the EC Life Cycle

Technology	Pre-Internet	Stage 1 Hype & Experimentation	Stage 2 Retrenchment & Sobriety	Stage 3 Sustainability	Stage 4 Focus & Fragmentation
Year	1983-	1990-1995	1995-2000	2000-2003	2003-2010
Communications – Access to Internet	Direct Dial @ 28kbps, Low Speed	Internet via Telephone @ 56kbps - Low Speed	T1, DSL Cable @ 1-2Mbps Moderate Speed	DSL, Cable, Mobile High Speed	DSL, Cable, Mobile Up to 24Mbps High Speed
Predominant Access Devices	PC using CP/M or MSDOS, Terminals, Interactive Voice Response (IVR)	PC using MSDOS or Windows 95, IVR	PC using Windows, Mobile Phones	PC & Smart Phones Optimized for Internet Browsing	PC & Smart Phones Optimized for Internet Browsing
Types of Electronic Commerce	EDI, EFT, Electronic Bulletin Boards	Simple Transactions, APOLLO, SABRE, Telephone Banking	Procedure Coding System (PCS) – based applications for mobile phones	Electronic Shopping, Electronic Banking, Government Services	Full-fledged EC utilizing Pure-Play & Clicks-and-Bricks businesses
Consumer Acceptance	B2C – Very Low B2B - Moderate	Low  Very High			

Adapted from (Wigand, 1997, p.6)

Stage 1: Hype and Experimentation

In Stage One of the EC life cycle the Internet in the form of the World Wide Web was accessible to consumers due to the introduction of limited-capability personal computers and reliable analog telecommunications (hereafter telecomm). As Internet traffic increased, however, consumers and businesses requested greater telecomm and IT capabilities. In response, PC operating systems and communication software were improved in addition to the introduction of dedicated web browser applications. Interactive Voice Response (hereafter IVR) systems enabled the telephone to be used as a data terminal thereby allowing consumers to perform EC functions such as telephone banking, paying bills, and purchasing airline tickets. In addition, businesses were using the Internet and IVR to perform such tasks as checking inventory, gathering sales data from the field, and recording employee timesheet data.

The Internet presented a powerful transport system to make e-commerce applications practical and convenient. Constant cost reductions and improvements in IT capabilities for website servers, telecomm controllers, and PCs opened the way for a myriad of organizations and individuals to create powerful internet-based EC applications. Unfortunately, many Internet website developers had greater knowledge of technology than they did about running a business and because venture capital was so readily available, the developers spend their funds without considering the profit and loss aspects of running a business. Even some established businesses discovered that in their rush to implement EC functions, they failed to control transaction costs such that the cost of conducting EC was as much as four times the cost of conventional retail transaction in some instances. Consequently, many developers went out of business and many businesses ceased EC operations (Jutla, 1999), (Wigand, 1997), (Williams, 2009). Consumer confidence was low but their interest in EC was still high; businesses were cautious.

Stage 2: Retrenchment and Sobriety

Stage Two of the EC Life Cycle is aptly named “Retrenchment and Sobriety” because the shock and publicity of so many EC and *dot com* failures motivated the remaining players to invoke the serious business sense that was missing in the previous stage. Many businesses that had not experienced EC success previously, began to analyze the problem and make corrections to improve their EC channel. Many traditional bricks-and-mortar organizations made ventures into EC by creating an electronic channel to complement their traditional retail operations. In addition, experienced business people that were well versed in retail sales and the corresponding supply chain, were starting e-commerce businesses (Ruppel, 2003), (McDougall, 1995).

Technology had improved to the point that moderate speed, full-time Internet connections were available to consumers and businesses that were using PCs optimized to provide rapid Internet response. Mobile phones were being used to perform IVR and procedure coding systems applications (Williams, 2009).

Stage 3: Sustainability

Stage Three represents a turning-point in e-commerce because websites were gaining maturity, stability, reliability, and consumer trust. The retail component of EC was being managed by people experienced in retail sales and marketing, and the supporting supply chain. Many EC providers and website developers had consolidated in order to achieve economies of scale. Most importantly, EC providers began to focus on using well-developed marketing data to guide their EC operations. In addition, there was emphasis on cost control, low transaction costs, and differentiation between traditional retail products and their EC counterpart, as well as improving the consumer’s overall value proposition (Williams, 2009) (Turban, 2006).

Proliferation of cellular smart phones made mobile-commerce (hereafter m-commerce) practical. This was largely due to significant increases in telecom speed and coverage coupled with EC applications specially designed for smart phones.

Increased capabilities, and cost reductions in IT equipment and services enabled EC providers to increase the scope of their applications while improving the visual appeal thereby making the user's Internet experience more enjoyable. During this stage, Microsoft Corporation placed considerable emphasis and corporate resources to becoming the world leader in Internet equipment, software, and functionality. The net result was significant improvements in EC reliability while lowering the perceived transaction risk thereby improving consumer trust as shown in Figure 1.

Stage 4: Focus and Fragmentation

In Stage Four, e-commerce became a respectable, reliable, low-risk channel for business-to-consumer, business-to-business, government-to-consumer transactions. EC organizations provided competitive advantages based on operational efficiencies, incremental improvements, and by offering distinctive value to products acquired through the Internet (Turban, 2006). In addition, robust EC sites are able to offer mass-customization and personalized shopping. Even though traditional retail stores still dominate the retail industry, many of them complement their operations with an e-commerce channel (Turban, 2006). Williams (2009) stated, “. . . it is necessary to think in term of channels within retailers, rather than retailers within channels” p. 243.

From a technology perspective, Stage Four represents a high point for EC capabilities due to the proliferation of PCs and smart phones especially the iPhone and its contemporaries. Using wide coverage, very high speed telecomm systems, these devices enable a consumer to transact

business, make purchases, send email, and perform informational searches virtually anywhere in the world (Turban, 2006).

Summary

Throughout the history of the United States innovations in business and commerce have had a temporarily disruptive effect on the economy starting with the introduction of mass retail purchasing in the post-Civil War era (Jacques, 1996), to mail-order shopping, big-box discount stores, to e-commerce. From the Pre-Internet stage to the present, the Electronic Commerce Life Cycle has had a startling effect on worldwide commerce. Despite its fitful start and tumultuous growth, EC has opened new avenues of product acquisition and information retrieval that are efficient, convenient, and cost effective. “Electronic technology has changed the way we think about money and monetary value. It’s changing the way companies organize themselves and do business. . .” (McDougall, 1995) p.1.”

References

- Choi, S. W. (1999, January). The Future of E-Commerce: Integrate and customize. *Computer*(January), pp. 133-138.
- Freedman, L. (1998). E-Commerce = Evolution or Revolution. *Discount Merchandiser*, 38(8), pp. 130-133.
- Jacques, R. (1996). *Manufacturing the Employee: Management knowledge from the 19th to 21st centuries*. San Francisco: Sage Publications.
- Jutla, D. B. (1999, March). Making Sense of Electronic Commerce. *Computer*, pp. 67-75.
- McDougall, B. (1995). Electronic Evolution. *Canadian Banker*, 102(5), pp. 25-35.
- Ruppel, C. U.-Q. (2003). E-Commerce: The role of trust, security, and type of e-commerce involvement. *e-Service Journal*, 2(2), 25-44.
- Turban, E. K. (2006). *Electronic Commerce: A managerial perspective 2006*. Upper Saddle River, NJ, USA: Pearson Education, Inc.
- Van Schouwen, S. &. (1998). The Evolution of Electronic Commerce. *Business West*, 14(10), pp. 43-44.
- Wigand, R. &. (1997). Electronic Commerce: Definition, theory, and context. *The Information Society*, 13(1), 1-16.
- Williams, D. (2009). The Evolution of E-Tailing. *International Review of Retail, Distribution & Consumer*, 19(3), 219-249.